

FINAL ANNOUNCEMENT

Perugia - Italy • June 5-9/2016

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2016
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5th International
Conference
**Smart and
Multifunctional
Materials
Structures & Systems**

11th International
Conference
**Medical
Applications of
Novel Biomaterials
& Nanotechnology**

CIMTEC 2016

<i>Flowsheet</i>	JUNE 5		JUNE 6		JUNE 7		JUNE 8		JUNE 9	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
REGISTRATION										
SYMPOSIUM A			A	A	A	A	A	A	A	A
SYMPOSIUM B			B	B	B	B	B	B	B	B
SYMPOSIUM C			C	C	C	C	C	C	C	
SYMPOSIUM D			D	D	D	D	D	D	D	D
SYMPOSIUM E				E	E	E	E	E	E	E
SYMPOSIUM F			F	F	F	F	F	F	F	F
SYMPOSIUM G			G	G	G	G			G	G
SYMPOSIUM H			H	H	H	H			H	
SYMPOSIUM I			I	I	I	I	I	I	I	
SYMPOSIUM J			J	J	J	J	J	J		
SYMPOSIUM K			K	K	K	K	K	K	K	K
SYMPOSIUM L			L	L	L	L	L	L	L	L
SYMPOSIUM M							M	M	M	M
SYMPOSIUM N								N	N	N
SYMPOSIUM O			O	O	O	O	O	O	O	O
SYMPOSIUM P			P	P	P	P		P	P	P
Joint Session O9/P5									09/P5	
Joint Session O10/P6							010/P6	010/P6		
CONFERENCE Q			Q	Q	Q	Q	Q	Q	Q	Q
Special Session Q5							Q5	Q5	Q5	
Joint Session Q6				Q6	Q6	Q6				
POSTER MOUNTING			◆	◆	◆					
POSTER DISCUSSION										◆
SOCIALS										●



WELCOME RECEPTION



JAZZ CONCERT



CONFERENCE DINNER

SUMMARY

Invitation to attend

CIMTEC 2016 - 7th Forum on New Materials, to be held in Perugia, Italy, June 5 to 9, 2016 will include the 5th International Conference "Smart and Multifunctional Materials, Structures and Systems" and the 11th International Conference "Medical Applications of Novel Biomaterials and Nanotechnology".

The 5th International Conference "Smart and Multifunctional Materials, Structures and Systems" (sixteen Symposia) will cover most promising selected areas of smart and multifunctional materials R&D, from the molecular nanoscales to large complex integrated systems.

The 11th International Conference "Medical Applications of Novel Biomaterials and Nanotechnology" particularly aims to report recent advances on creatively modified stimuli-responsive, active and multifunctional material systems and their implementation in selected challenging areas of nanomedicine.

CIMTEC 2016 organizers are pleased to invite materials scientists, chemists, physicists, biologists, physicians and experts of application fields to contribute to discussion within the frames of what promises to be an exciting meeting, and to enjoy the immense, unique, artistic heritage and wonderful landscape of Umbria region.

Pietro Vincenzini

General Chair CIMTEC Conferences

National Research Council, Italy

Welcome to CIMTEC 2016!

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Chair**Pietro Vincenzini**

General Chair CIMTEC Conferences
National Research Council, Italy

Advisory Boards**5th International Conference****"SMART AND MULTIFUNCTIONAL MATERIALS, STRUCTURES AND SYSTEMS"****SYMPOSIUM A - Stimuli Responsive and Multifunctional Polymers: Progress in Materials and Applications**

Programme Chair: Andreas Lendlein, *Germany* *Members:* Guillermo Ameer, *USA* Walter Caseri, *Switzerland* Daniel Cohn, *Israel* Yakai Feng, *China* Moshe Gottlieb, *Israel* Sunishi Hayashi, *Japan* Ryan Hayward, *USA* James H. Henderson, *USA* Patrick Keller, *France* Christopher J. Kloxin, *USA* Jennifer Lu, *USA* Duncan J. Maitland, *USA* Eduardo Mendes, *Netherlands* Phillip B. Messersmith, *USA* Philippe Poulin, *France* Hans-Joachim Radusch, *Germany* Stuart J. Rowan, *USA* Burkhard Schulz, *Germany* Gianfranco Spizzirri, *Italy* Ole Thybo Thomsen, *UK* Nicola Tirelli, *UK* Matthew Tirrell, *USA* Julius G. Vancso, *Netherlands* Robert A. Weiss, *USA* Itamar Willner, *Israel* Thomas Wilson, *USA* Tao Xie, *China* Ryo Yoshida, *Japan*

SYMPOSIUM B - State-of-the-art Research and Applications of Shape Memory Alloys

Programme Chair: Franca Albertini, *Italy* *Co-Chairs:* Stefano Besseghini, *Italy* Manfred Kohl, *Germany* Shuichi Miyazaki, *Japan* Peter Mullner, *USA* *Members:* Ferdinando Auricchio, *Italy* Vladimir Brailovski, *Canada* Vasilij D. Buchelnikov, *Russia* Eduard Cesari, *Spain* Volodymyr A. Chernenko, *Spain* Peter Entel, *Germany* Sebastian Faehler, *Germany* Oliver Gutfleisch, *Germany* Simo-Pekka Hannula, *Finland* Oleg Heczko, *Czech Republic* Laurent Hirsinger, *France* Wei Min Huang, *Singapore* Richard D. James, *USA* Tomoyuki Kakeshita, *Japan* Ibrahim Karaman, *USA* Yoichi Kishi, *Japan* Yinong Liu, *Australia* Yasukazu Murakami, *Japan* Antoni Planes, *Spain* Eckhard Quandt, *Germany* Xiaobing Ren, *Japan / China* Lara Righi, *Italy* Avadh B. Saxena, *USA* Petr Sittner, *Czech Republic* Minoru Taya, *USA* Kari Ullakko, *Finland* Rie Umetsu, *Japan* Jan Van Humbeeck, *Belgium* Elena Villa, *Italy* Shyi-Kaan Wu, *Taiwan* Yufeng Zheng, *China*

SYMPOSIUM C - Recent Advances in Multiferroic and Magnetoelectric Materials and Applications

Programme Chair: Gopalan Srinivasan, *USA* *Members:* Christian Binek, *USA* Greg P. Carman, *USA* Long-Qing Chen, *USA* Ying-Hao Chu, *Taiwan* Manfred Fiebig, *Switzerland* Josep Fontcuberta, *Spain* Hyun M. Jang, *South Korea* Ram Katiyar, *USA* Andrei L. Kholkin, *Portugal* Tsuyoshi Kimura, *Japan* Wolfgang Kleemann, *Germany* Hermann Kohlstedt, *Germany* Jeremy Levy, *USA* Mario Maglione, *France* Neil D. Mathur, *UK* Ce-Wen Nan, *China* Beatriz Noheda Pinuaga, *Netherlands* Alexandr Nosov, *Russia* Masanori Okuyama, *Japan* Thomas T.M. Palstra, *Netherlands* Silvia Picozzi, *Italy* Shiva Prasad, *India* Wilfrid Prellier, *France* Shashank Priya, *USA* Ramamoorthy Ramesh, *USA* Andreas Ruediger, *Canada* Darrell Schlom, *USA* Nian X. Sun, *USA* Ichiro Takeuchi, *USA* Yoshinori Tokura, *Japan* Evgeny Y. Tsymbal, *USA* Thomas Tybell, *Norway* Narayanan Venkataramani, *India* Dwight Viehland, *USA* Melvin M. Vopson, *UK* Mingzhong Wu, *USA* Weiguang Zhu, *Singapore*

SYMPOSIUM D - Advances in Inorganic Luminescent Materials and Applications

Programme Chair: Joanna M. McKittrick, *USA* *Members:* Marco Bettinelli, *Italy* Luis Carlos, *Portugal* Xueyuan Chen, *China* Martin Dawson, *UK* Volkmar Dierolf, *USA* Pieter Dorenbos, *Netherlands* Christophe Dujardin, *France* Sergey Feofilov, *Russia* Maurizio Ferrari, *Italy* Philippe Goldner, *France* Markus Haase, *Germany* Gustavo A. Hirata Flores, *Mexico* Jorma Holsa, *Finland* Kevin Homewood, *UK* Thomas Juestel, *Germany* Jan Linnros, *Sweden* Ru-Shi Liu, *Taiwan* Andries Meijerink, *Netherlands* Rosa Maria Montoreali, *Italy* S.K. Omanwar, *India* Stephen Pearton, *USA* Dirk Poelman, *Belgium* Markus Pollnau, *Sweden* Jianrong Qiu, *China* Federico Rosei, *Canada* Lauren Shea-Rohwer, *USA* Kwang Bo Shim, *South Korea* Alok Srivastava, *USA* Wieslaw Strek, *Poland* Christopher Summers, *USA* Setsuhisa Tanabe, *Japan* Kenji Toda, *Japan* Xiao-Jun Wang, *USA* Claudia Wickleder, *Germany* Rong-Jun Xie, *Japan*

SYMPOSIUM E - Progress in Metamaterials Research

Programme Chair: Yuri S. Kivshar, *Australia* *Members:* Andrea Alu, *USA* Pavel Belov, *Russia* Filiberto Bilotti, *Italy* Allan D. Boardman, *UK* Igal Brener, *USA* Mark Brongersma, *USA* Nader Engheta, *USA* Nicholas X. Fang, *USA* Andrey Fedyanin, *Russia* Andrea Fratallocchi, *Saudi Arabia* Maria Kafesaki, *Greece* Mikhail Lapine, *Australia* Andrei Lavrinenko, *Denmark* Joshua Le-Wei Li, *Malaysia* Boris Lukyanchuk, *Singapore* Stefan Maier, *UK* Francisco Medina-Mena, *Spain* Ekmel Ozbay, *Turkey* Nicolae Panoiu, *UK* J. Roy Sambles, *UK* José Sanchez-Dehesa, *Spain* Vladimir M. Shalaev, *USA* Gennady Shvets, *USA* Concita Sabilia, *Italy* Costas Soukoulis, *USA* Anatoly V. Zayats, *UK* Xiang Zhang, *USA* Nikolay I. Zheludev, *UK* Lei Zhou, *China*

SYMPOSIUM F - Graphene and Other Emerging 2D-layered Nanomaterials: Synthesis, Properties and Potential Applications

Programme Chair: Swastik Kar, USA *Members:* Luis Balicas, USA Maya Bar Sadan, Israel Francesco Bonaccorso, Italy Cinzia Casiraghi, UK Jean-Christophe Charlier, Belgium Chun-Wei Chen, Taiwan Kuei-Hsien Chen, Taiwan Yongsheng Chen, China Luigi Colombo, USA Keshav Dani, Japan Toshiaki Enoki, Japan Klaus Ensslin, Switzerland Vladimir I. Falko, UK Andrea C. Ferrari, UK Michael S. Fuhrer, USA Daisuke Fujita, Japan Jose Garrido, Germany Joshua Goldberger, USA Byung Hee Hong, South Korea Karsten Horn, Germany Anupama Kaul, USA Jari Kinaret, Sweden Taiichi Otsuji, Japan Luca Ottaviano, Italy Vincenzo Palermo, Italy Marcos Pimenta, Brazil Paolo Samori, France Zexiang Shen, Singapore Dangsheng Su, China Saikat Talapatra, USA Andrew Wee, Singapore Alla Zak, Israel Hua Zhang, Singapore

SYMPOSIUM G - Multifunctional Inorganic One-dimensional Nanostructures: Status and Potential

Programme Chair: Chennupati Jagadish, Australia *Members:* Ritesh Agarwal, USA Jordi Arbiol, Spain Erik Bakkers, Netherlands Yoshio Bando, Japan Lihong Bao, China Guozhong Cao, USA Shadi A. Dayeh, USA Irene Paola De Padova, Italy Horacio D. Espinosa, USA Xuan Gao, USA Dmitri Golberg, Japan Yoon-Bong Hahn, South Korea Jean-Christophe Harmand, France Stephan Hofmann, UK M. Saif Islam, USA Ernesto Joselevich, Israel Hannah Joyce, UK Gregor Koblmüller, Germany Wei D. Lu, USA Liberato Manna, Italy Xiong Qihua, Singapore Heike E. Riel, Switzerland Carsten Ronning, Germany Hadas Shtrikman, Israel Jonathan E. Spanier, USA Katsuhiko Tomioka, Japan Yoke Khin Yap, USA

SYMPOSIUM H - Electroactive Polymers and Shape Memory Polymers: Advances in Materials and Devices

Programme Chair: Jinsong Leng, China *Members:* Alvo Aabloo, Estonia Iain A. Anderson, New Zealand Kinji Asaka, Japan Ray Baughman, USA Federico Carpi, UK Zhongyang Cheng, USA Hyouk Ryeol Choi, South Korea Stephen Ducharme, USA Jian Ping Gong, Japan Salvatore Graziani, Italy Jinlian Hu, Hong Kong Yahya Ahmed Ismail, Oman Edwin Jager, Sweden Keiichi Kaneto, Japan Seon Jeong Kim, South Korea Guggi Kofod, Denmark Roy Kornbluh, USA Gih Keong Lau, Singapore Doug Macfarlane, Australia Hani E. Naguib, Canada Qing-Qing Ni, Japan Hidenori Okuzaki, Japan Yoshihito Osada, Japan Mika Paajanen, Finland Qibing Pei, USA Herbert Shea, Switzerland Anuvat Sirivat, Thailand Witold Sokolowski, USA Ji Su, USA G.P. Tandon, USA Frédéric Vidal, France Qiming Zhang, USA Shaobing Zhou, China

SYMPOSIUM I - New Concepts and Advances in Photocatalytic Materials for Energy and Environmental Applications

Programme Chair: Gabriele Centi, Italy *Members:* Radim Beranek, Germany Carlo Alberto Bignozzi, Italy Juan Bisquert, Spain Shannon Boettcher, USA Artur Braun, Switzerland Zhong Chen, Singapore Peng Chen, USA Anthony S.T. Chiang, Taiwan Wonyong Choi, South Korea Ib Chorkendorff, Denmark Heinz Frei, USA Elio Giamello, Italy Gideon Grader, Israel Zheng Xiao Guo, UK Hiroshi Irie, Japan Ladislav Kavan, Czech Republic Sean Li, Australia Gang Liu, China Gongxuan Lu, China Andrew Mills, UK Bunsho Ohtani, Japan David F. Ollis, USA Leonardo Palmisano, Italy Hyunwoong Park, South Korea Bruce A. Parkinson, USA Krishnan Rajeshwar, USA Benigno Sanchez, Spain Junwang Tang, UK Roel Van De Krol, Germany Dunwei Wang, USA Gunnar Westin, Sweden Hiromi Yamashita, Japan Jincui Zhao, China

SYMPOSIUM J - Functional Nanomaterials for New Generation Solid State Gas Sensors

Programme Chair: Giorgio Sberveglieri, Italy *Members:* Sheikh Akbar, USA Elisabetta Comini, Italy Corrado Di Natale, Italy Martin Eickhoff, Germany Julian Gardner, UK Perena Gouma, USA Ho Won Jang, South Korea Andrei Kolmakov, USA Jyrki Lappalainen, Finland Jong-Heun Lee, South Korea Xiaogan Li, China Peter A. Lieberzeit, Austria Eduard Llobet, Spain Ichiro Matsubara, Japan Meyya Meyyappan, USA Norio Miura, Japan Ralf Moos, Germany Stanislav A. Moshkalev, Brazil Giovanni Neri, Italy Zafer Ziya Ozturk, Turkey Michele Penza, Italy Tilman Sauerwald, Germany Yasuhiro Shimizu, Japan Joseph R. Stetter, USA Pi-Guey Su, Taiwan Michael Tiemann, Germany Alfred Tok, Singapore Ning Wang, Hong Kong

SYMPOSIUM K - Non-volatile Memory Devices: materials, emerging concepts and applications

Programme Chairs: Sabina Spiga, Italy *Co-Chairs:* Marco Bernasconi, Italy Blanka Magyari-Köpe, USA Hideo Ohno, Japan *Members:* Marin Alexe, UK I-Wei Chen, USA Wen-Chang Chen, Taiwan Albert Chin, Taiwan Valentin A. Dediu, Italy Damien Deleruyelle, France Victor Erokhin, Italy Ludovic Goux, Belgium Julie Grollier, France Alexei Gruverman, USA Tsuyoshi Hasegawa, Japan Cheol Seong Hwang, South Korea Hyunsang Hwang, South Korea Daniele Ielmini, Italy Anquan Jiang, China Jinfeng Kang, China Alexander V. Kolobov, Japan Bart J. Kooi, Netherlands Luca Larcher, Italy Chrong Jung Lin, Taiwan Ming Liu, China Massimo Longo, Italy Thomas Mikolajick, Germany Lucian Prejbeanu, France Dafinè Ravelosona, France Yakov Roizin, Israel Jennifer Rupp, Switzerland Abu Sebastian, Switzerland Santiago Serrano-Guisan, Portugal Veronique Sousa, France Dmitri Strukov, USA Eisuke Tokumitsu, Japan Jianhua (Joshua) Yang, USA

SYMPOSIUM L - Smart and Interactive Textiles

Programme Chair: George K. Stylios, *UK* *Members:* Juris Blums, *Latvia* Paul Calvert, *USA* Cosimo Carfagna, *Italy* Victoria Dutschk, *Netherlands* Tushar K. Ghosh, *USA* Yves-Simon Gloy, *Germany* Ana Marija Grancaric, *Croatia* You-Lo Hsieh, *USA* Silvia Janietz, *Germany* James Johnston, *New Zealand* Fatma Kalaoglu, *Turkey* Byung Hoon Kim, *South Korea* Kap-Jin Kim, *South Korea* Izabella Krucinska, *Poland* Yi Li, *Hong Kong* Tong Lin, *Australia* Igor Luzinov, *USA* Uwe Moehring, *Germany* Fernando Nunes Ferreira, *Portugal* Rita Paradiso, *Italy* Amit Rawal, *India* Tahir Shah, *UK* Thomas Stegmaier, *Germany* Xiao-Ming Tao, *Hong Kong* Lieva Van Langenhove, *Belgium* Sigurd Wagner, *USA*

SYMPOSIUM M - Next Generation Micro/Nano Systems

Programme Chair: Leandro Lorenzelli, *Italy* *Members:* Orlando H. Auciello, *USA* Giuseppe Barillaro, *Italy* Joan Bausells, *Spain* Kukjin Chun, *South Korea* Nico De Rooij, *Switzerland* Chang Beom Eom, *USA* Carles Ferrer, *Spain* Hiroshi Funakubo, *Japan* Thomas Gessner, *Germany* Christofer Hierold, *Switzerland* Bernhard Jakoby, *Austria* Dong-Joo Kim, *USA* Amit Lal, *USA* Vincent C. Lee, *Singapore* Jing-Feng Li, *China* Marc J. Madou, *USA* Christoph E. Nebel, *Germany* Yves-Alain Peter, *Canada* Ronald Polcawich, *USA* Denis Remiens, *France* Jose-Luis Sanchez-Rojas, *Spain* Pietro Siciliano, *Italy* Osamu Tabata, *Japan* Susan Trolier-Mckinstry, *USA* Christos Tsamis, *Greece* Michael J. Vellekoop, *Germany* Zhong Lin Wang, *USA* David Wood, *UK*

SYMPOSIUM N - Progress in Wearable/Wireless and Implantable Body Sensor Networks for Healthcare Applications

Programme Chair: Dermot Diamond, *Italy* *Members:* Azar Alizadeh, *USA* Oliver Amft, *Germany* Maria T. Arredondo W., *Spain* Nauman Aslam, *UK* Ilanko Balasingham, *Norway* Steve Beeby, *UK* Dongyi Chen, *China* Wan-Young Chung, *South Korea* Danilo De Rossi, *Italy* Patty Freedson, *USA* Jason C. Heikenfeld, *USA* Roozbeh Jafari, *USA* Emil Jovanov, *USA* Kyung Sup Kwak, *South Korea* Benny Ping Lai Lo, *UK* Berno J.E. Misgeld, *Germany* Kieran Moran, *Ireland* Kwang Suk Park, *South Korea* Joel Rodrigues, *Portugal* Majid Sarrafzadeh, *USA* Mohamad Sawan, *Canada* John Stankovic, *USA* Toshiyo Tamura, *Japan* Manos M. Tentzeris, *USA* Vijay Varadan, *USA* Gordon G. Wallace, *Australia* Jan Weber, *Netherlands* Eric Yeatman, *UK* Yuan-Ting Zhang, *Hong Kong*

SYMPOSIUM O - Mining Smartness From Nature: From Bio-inspired Materials to Bionic Systems

Programme Chair: Julian Vincent, *UK* *Co-Chairs:* Zhendong Dai, *China* Toshio Fukuda, *Japan* Kenneth Sandhage, *USA* *Members:* Hans Arwin, *Sweden* Nurit Ashkenasy, *Israel* Hilary Bart-Smith, *USA* Bharat Bhushan, *USA* Vincent Bulone, *Sweden* Ashutosh Chilkoti, *USA* Hiroshi Endo, *Japan* Peter Fratzl, *Germany* Susan A. Frost, *USA* Stanislav N. Gorb, *Germany* Simon D. Guest, *UK* Frédéric Guittard, *France* Auke Jan Ijsspeert, *Switzerland* Ki-Hun Jeong, *South Korea* Lei Jiang, *China* Pasi J. Kallio, *Finland* Minjun Kim, *USA* Hidetoshi Kobayashi, *Japan* Yuji Kuwahara, *Japan* Giulia Lanzara, *Italy* Jennifer A. Lewis, *USA* Xiaogang Liu, *Singapore* John H. Long, Jr., *USA* Stephen Mann, *UK* Sylvain Martel, *Canada* Raul J. Martin Palma, *Spain* Fiona Meldrum, *UK* Achim Menges, *Germany* Keisuke Morishima, *Japan* Jwa-Min Nam, *South Korea* Roger D. Quinn, *USA* Franziska Schenk, *UK* Nadrian C. Seeman, *USA* Friedrich C. Simmel, *Germany* Robert E. Skelton, *USA* Ian F.C. Smith, *Switzerland* N.A.J.M. Sommerdijk, *Netherlands* André R. Studart, *Switzerland* Panos Trahanias, *Greece* Gerhard Von Der Emde, *Germany* Marc Weissburg, *USA* Hao Yan, *USA* Bai Yang, *China* Di Zhang, *China*

SYMPOSIUM P - Embodying Intelligence in Structures and Integrated Systems

Programme Chair: Fabio Casciati, *Italy* *Co-Chairs:* Hui Li, *China* André Preumont, *Belgium* *Members:* Mehdi Ahmadian, *USA* Biswajit Basu, *Ireland* Jeff Baur, *USA* Ayech Benjeddou, *France* Sara Casciati, *Italy* Fu-Kuo Chang, *USA* Lucia Faravelli, *Italy* Dan M. Frangopol, *USA* Michael I. Friswell, *UK* Claus-Peter Fritzen, *Germany* Alfredo Güemes, *Spain* Daniel Guyomar, *France* Jan Holnicki-Szulc, *Poland* Mohamed Ichchou, *France* Daniel J. Inman, *USA* Hans Irschik, *Austria* Anne S. Kiremidjian, *USA* Michael Krommer, *Austria* Francesco Lanza Di Scalea, *USA* Ying Lei, *China* Wei-Hsin Liao, *Hong Kong* Jerome P. Lynch, *USA* Marcias Martinez, *Netherlands* Sami Masri, *USA* Akira Mita, *Japan* Satish Nagarajaiah, *USA* Aly S. Nazmy, *United Arab Emirates* Yi Qing Ni, *Hong Kong* Akira Nishitani, *Japan* Wieslaw Ostachowicz, *Poland* Jinping Ou, *China* Costas Papadimitriou, *Greece* Seunghee Park, *South Korea* Francesc Pozo, *Spain* Piervincenzo Rizzo, *USA* José Rodellar Benede, *Spain* Andreas Schoenecker, *Germany* Rahmat Shoureshi, *USA* Hoon Sohn, *South Korea* Billie F. Spencer Jr., *USA* Wieslaw J. Staszewski, *Poland* David Wagg, *UK*

Special Session O-9/P-5 - Biomimetic Design and Motion Control in Autonomous and Remotely Operated Underwater Vehicles

Programme Chair: Cecilia Laschi, *Italy* *Members:* Promode Bandyopadhyay, *USA* Frederic Boyer, *France* Zhiqiang Cao, *China* Jeff D. Eldredge, *USA* Huosheng Hu, *UK* Naomi Kato, *Japan* Petros Koumoutsakos, *Switzerland* Rajat Mittal, *USA* Yahya Modarres-Sadeghi, *USA* Claudio Moriconi, *Italy* Evangelos Papadopoulos, *Greece* Fotis Sotiropoulos, *USA* James Tangorra, *USA* Johan L. Van Leeuwen, *Netherlands* Ikuo Yamamoto, *Japan* Mingjun Zhang, *USA* Qiang Zhu, *USA*

Special Session O-10/P-6 - Biomimetic Morphing of Unmanned Aerial Vehicles

Programme Chair: Daniel Inman, USA *Members:* Doug Altshuler, Canada Richard Bomphrey, UK Agus Budiyo, South Korea Martin Egelhaaf, Germany Paolo Gaudenzi, Italy Darren Hartl, USA Jayanth N. Kudva, USA David Lentink, USA Hao Liu, Japan Robert C. Michelson, USA Hans Peter Monner, Germany Gregory W. Reich, USA Davide Scaramuzza, Switzerland Shigeru Sunada, Japan Graham Taylor, UK Stephane Violette, France

Q - 11th International Conference**"MEDICAL APPLICATIONS OF NOVEL BIOMATERIALS AND NANOTECHNOLOGY"**

Programme Chair: Thomas J. Webster, USA *Members:* Russ Algar, Canada George E. Aninwene Ii, USA Serena Best, UK Peilin Chen, Taiwan Smadar Cohen, Israel Luisa De Cola, France Marie-Helene Delville, France Avi Domb, Israel Hongwei Duan, Singapore Peter Dubruel, Belgium Jennifer H. Elisseff, USA Mingyuan Gao, China Dietmar Hutmacher, Australia Esmail Jabbari, USA John Jansen, Netherlands Kazunori Kataoka, Japan Ali Khademhosseini, USA C. James Kirkpatrick, Germany Vinod Labhasetwar, USA Cato Laurencin, USA Pierre Layrolle, France Feng-Huei Lin, Taiwan Patrick T. Mather, USA Samir Mitragotri, USA Yukio Nagasaki, Japan Abhay Pandit, Ireland Ji Ho (Joe) Park, South Korea Genevieve Pourroy, France Sirinath Sirivisoot, Thailand Maryam Tabrizian, Canada Vladimir P. Torchilin, USA Qiangbin Wang, China Jackie Ying, Singapore Baohong Yuan, USA Nobuhiko Yui, Japan Lijie Grace Zhang, USA

Focused Session Q-5 - Biomedical Applications of Carbon Nanotubes and Graphene: Opportunities and Challenges

Programme Chair: Maurizio Prato, Italy *Members:* Laura Ballerini, Italy Vikas Berry, USA Alberto Bianco, France Vincent Castranova, USA Lucia G. Delogu, Italy Bengt Fadeel, Sweden Kostas Kostarelos, UK Michael R. Mcdevitt, USA Vladimir Parpura, USA Giorgia Pastorin, Singapore James F. Rusling, USA David A. Scheinberg, USA Balaji Sitharaman, USA Michael S. Strano, USA Ester Vazquez Fernandez-Pacheco, Spain Masako Yudasaka, Japan

Focused Session Q-6 - Materials Nanotechnologies for Implantable Neural Interfaces

Programme Chair: Stefano Vassanelli, Italy *Members:* Christopher Bettinger, USA Jeffrey R. Capadona, USA Xinyan Tracy Cui, USA Stephanie P. Lacour, Switzerland Charles M. Lieber, USA George G. Malliaras, France Vivian K. Mushahwar, Canada Yoonkey Nam, South Korea Jun Ohta, Japan Christelle Prinz, Sweden Philippe Renaud, Switzerland Davide F. Ricci, Italy Mario I. Romero-Ortega, USA

OUTLINE CIMTEC 2016

5th International Conference

Smart and Multifunctional Materials, Structures and Systems

SYMPOSIUM A

Stimuli Responsive and Multifunctional Polymers: Progress in Materials and Applications

SYMPOSIUM B

State-of-the-art Research and Applications of Shape Memory Alloys

SYMPOSIUM C

Recent Advances in Multiferroic and Magnetoelectric Materials and Applications

SYMPOSIUM D

Advances in Inorganic Luminescent Materials and Applications

SYMPOSIUM E

Progress in Metamaterials Research

SYMPOSIUM F

Graphene and Other Emerging 2D-layered Nanomaterials: Synthesis, Properties and Potential Applications

SYMPOSIUM G

Multifunctional Inorganic One-dimensional Nanostructures: Status and Potential

SYMPOSIUM H

Electroactive Polymers and Shape Memory Polymers: Advances in Materials and Devices

SYMPOSIUM I

New Concepts and Advances in Photocatalytic Materials for Energy and Environmental Applications

SYMPOSIUM J

Functional Nanomaterials for New Generation Solid State Gas Sensors

SYMPOSIUM K

Non-volatile Memory Devices: Materials, Emerging Concepts and Applications

SYMPOSIUM L

Smart and Interactive Textiles

SYMPOSIUM M

Next Generation Micro/Nano Systems

SYMPOSIUM N

Progress in Wearable/Wireless and Implantable Body Sensor Networks for Healthcare Applications

SYMPOSIUM O

Mining Smartness From Nature From Bio-inspired Materials to Bionic Systems

SYMPOSIUM P

Embodying Intelligence in Structures and Integrated Systems

Joint Special Session 0-9/P-5

Biomimetic Design and Motion Control in Autonomous and Remotely Operated Underwater Vehicles

Joint Special Session 0-10/P-6

Biomimetic Morphing of Unmanned Aerial Vehicles

11th International Conference Q

Medical Applications of Novel Biomaterials and Nanotechnology

Focused Session Q-5

Biomedical Applications of Carbon Nanotubes and Graphene: Opportunities and Challenges

Focused Session Q-6

Materials Nanotechnologies for Implantable Neural Interfaces

SESSIONS TIMETABLE

CIMTEC 2016 - June 5-9, 2016

Sunday June 5

15.00-19.00
REGISTRATION
Centro Congressi Hotel Quattrotorri
Via Corcianese 260
Perugia, Italy

Monday June 6

Morning: 9.30-13.00

Opening Session

Welcome Addresses

Plenary Lectures (PL1-PL2)

Symposium A (A-KL and A-1:IL01)
Symposium B (B-1:IL01 and IL02)
Symposium C (C-KL and C-1:IL01)
Symposium D (D-1:IL01 and IL02)
Symposium F (F-1:KL)
Symposium G (G-1:IL01 and IL02)
Symposium H (H-1:IL01 and IL02)
Symposium I (I-1:IL01 and IL02)
Symposium J (J-1:IL01 and IL02)
Symposium K (K-2:IL01 and IL02)
Symposium L (L-1:IL01 and IL02)
Symposium O (O-1:IL01 and IL02)
Symposium P (P-1:IL01 and IL02)
Conference Q (Q-1:IL01 and IL02)

8.30-13.00
14.30-19.00
POSTER MOUNTING

Afternoon: 14.30-19.00

Symposium A (A-1:IL02 to L05)
(A-1:IL06 to L11)
Symposium B (B-1:IL03 to L06)
(B-2:IL01 to IL04)
Symposium C (C-1:IL02 to IL05)
(C-1:IL06 to L08)
Symposium D (D-1:IL03 and IL04)
(D-10:IL03)
(D-2:IL01 to L05)
Symposium E (E-1:IL01 to L04)
(E-2:IL01 to L05)
Symposium F (F-1:L01 to L05)
(F-1:L06 to L10)
Symposium G (G-1:IL03 to IL06)
(G-1:IL07 to L10)
Symposium H (H-1:IL03 to L06)
(H-1:L07 to L10)
Symposium I (I-1:IL04 to L07)
(I-1:IL08 to L11)
Symposium J (J-1:IL03 to L08)
(J-2:IL01 to L03)
Symposium K (K-2:IL03 to L07)
(K-2:IL08 to L11)
Symposium L (L-1:IL03 to L07)
(L-1:IL08 to L11)
Symposium O (O-1:IL03 to L05)
(O-2:IL01 to L06)
Symposium P (P-1:IL03 to L06)
(P-1:IL07 to L11)
Conference Q (Q-1:IL03 to L06)
(Q-1:IL07 to L11)
(Q-6:IL01 to IL03)
(Q-6:IL05 to L09)

20.30-22.30
Welcome Party

Tuesday June 7

Morning: 9.00-13.00

Symposium A	(A-2:IL01 to L04) (A-2:IL05 and IL06)
Symposium B	(B-2:IL05 to L08) (B-2:L10 to L12)
Symposium C	(C-2:L01 to L05) (C-3:IL01 to L03)
Symposium D	(D-3:L01 to L08) (D-3:IL09 to L12)
Symposium E	(E-2:IL06 to L10) (E-3:IL01 to IL03)
Symposium F	(F-2:KL to IL02) (F-3:KL and IL02)
Symposium G	(G-1:IL11 to L15) (G-2:IL01 to IL03)
Symposium H	(H-2:IL01 to L06) (H-3:IL01 and IL02)
Symposium I	(I-1:IL12 to L15) (I-1:IL16 to L20)
Symposium J	(J-2:IL04 to IL06) (J-2:IL07 to L11)
Symposium K	(K-3:IL01 to L05) (K-3:IL06 to L09)
Symposium L	(L-1:IL12 to IL13) (L-2:IL01 to IL04)
Symposium O	(O-3:IL01 to L04) (O-3:IL05 to L09)
Symposium P	(P-1:IL12 and IL13) (P-2:IL01 to L04) (P-4:IL01)
Conference Q	(Q-2:IL01 to L05) (Q-2:IL06 to IL08) (Q-6:IL10 to L13) (Q-6:IL15 to L18)

Afternoon: 14.30-19.00

Symposium A	(A-3:IL01 to IL04) (A-3:IL05 to IL07)
Symposium B	(B-3:IL01 to IL05) (B-4:IL01 to IL03)
Symposium C	(C-3:IL04 to L07) (C-4:IL01 to IL04)
Symposium D	(D-3:IL13 and L14) (D-4:IL01 to L04) (D-5:IL01 to L04)
Symposium E	(E-4:IL01 to IL04) (E-4:IL05 to L08)
Symposium F	(F-2:IL03 to L07) (F-3:IL03 to L06)
Symposium G	(G-2:IL04 to IL07) (G-2:IL08 to IL10)
Symposium H	(H-3:IL03 to IL05) (H-3:IL06 to L08)
Symposium I	(I-2:IL01 to L04) (I-2:IL05 to L08)
Symposium J	(J-2:IL12 to L17) (J-2:IL18 to L21)
Symposium K	(K-1:IL01 to L05) (K-1:IL06 to L10)
Symposium L	(L-2:IL05 to IL07) (L-2:IL08 to L11)
Symposium O	(O-4:IL01 to L04) (O-6:IL01 to L04)
Symposium P	(P-3:IL01 to IL06) (P-2:L05 to IL06)
Conference Q	(Q-3:IL01 to L05) (Q-3:IL06 to L10) (Q-6:IL19 to IL21) (Q-6:IL22 and IL23)

Wednesday June 8**Morning: 9.00-13.00**

Symposium A	(A-4:IL01 to L06) (A-4:L07 to IL09)
Symposium B	(B-3:L06 to L10) (B-4:IL04 to IL06)
Symposium C	(C-3:IL08 to L11) (C-4:IL05 to L09)
Symposium D	(D-6:IL01 to IL03) (D-6:L05 to L07)
Symposium E	(E-6:IL01 to L03)
Symposium F	(F-3:IL07 to L09) (F-3:L11 to L15) (F-6:L11 to L16) (F-1:IL07)
Symposium G	(G-2:IL11 to L14) (G-3:IL01 to L04)
Symposium H	(H-4:IL01 to L04) (H-5:IL01 to L03)
Symposium I	(I-2:IL09 to IL11) (I-2:IL12 to L15)
Symposium J	(J-3:IL01 to IL02) (J-4:IL01 to L05)
Symposium K	(K-4:IL01 to IL04) (K-3:IL10 to IL12)
Symposium L	(L-3:IL01 to IL03) (L-3:IL05 to IL06)
Symposium M	(M-1:IL01 to L04) (M-2:IL01 to L05)
Symposium O	(O-5:IL01 to L06) (O-7:IL01 and IL02)
Joint Session O-10/P-6	(O-10/P-6:IL01 to L04) (O-10/P-6:IL05 to L08)
Conference Q	(Q-4:IL01 to IL03) (Q-5:IL01 to IL04)

Afternoon: 14.30-19.00

Symposium A	(A-7:IL01 to L04) (A-7:L05 to IL07)
Symposium B	(B-3:IL11 to L15) (B-5:IL01 to L05)
Symposium C	(C-5:IL01 to L04) (C-6:IL01 to L04)
Symposium D	(D-7:IL01 to IL04) (D-7:L05 to L09)
Symposium E	(E-5:IL01 to L06) (E-6:IL04 to L06)
Symposium F	(F-4:IL01 to IL04) (F-5:KL to L03)
Symposium I	(I-3:IL01 to L03) (I-3:IL04 to L06)
Symposium J	(J-4:IL06 to IL08)
Symposium K	(K-3:IL13 to L16) (K-1:IL11 to L16)
Symposium L	(L-3:IL07 to L09) (L-3:L10 to L12)
Symposium M	(M-3:IL01 to L04) (M-4:IL01 to L06)
Symposium N	(N-1:IL01 to L04) (N-2:IL01 to L03) (N-4:IL03)
Symposium O	(O-6:IL05 to IL07)
Joint Session O-9/P-5	(O-9/P-5:IL01 to L06)
Joint Session O-10/P-6	(O-10/P-6:IL09 to L11)
Symposium P	(P-3:IL07 to L09)
Conference Q	(Q-2:L09 to L14) (Q-3:L11 to L13) (Q-5:IL05 to L09) (Q-5:IL10 to IL12)

21.30-23.00
Jazz Concert

Thursday June 9

Morning: 9.00-13.00

Symposium A	(A-5:IL01 to IL05) (A-5:L06 and L07)
Symposium B	(B-4:IL07 to IL09) (B-6:L01 to L04)
Symposium C	(C-7:IL01 to L04) (C-7:IL05 to IL07)
Symposium D	(D-8:L01 to L05) (D-9:IL01 and IL03)
Symposium E	(E-7:IL01 to L04) (E-7:IL05 to L09)
Symposium F	(F-4:IL05 to L08) (F-6:KL to IL03)
Symposium G	(G-4:IL01 to L06) (G-5:IL01 and L02)
Symposium H	(H-5:IL04 to L08) (H-6:IL01, L02 and IL05)
Symposium I	(I-3:IL07 to L10) (I-3:IL11 to L14)
Symposium K	(K-1:IL17 to IL20) (K-4:IL06 to L10)
Symposium L	(L-3:IL13 to L16) (L-4:IL01 to L05)
Symposium M	(M-4:IL07 and L08) (M-5:IL01 and IL02) (M-6:IL01 to L03)
Symposium N	(N-3:IL01 to IL03) (N-4:IL01)
Symposium O	(O-7:IL03 and L04)
Joint Session O-9/P-5	(O-9/P-5:IL07 to IL11)
Symposium P	(P-3:IL14+IL11 to IL13) (P-3:IL15 to L18)
Conference Q	(Q-4:IL04 to L08) (Q-5:IL13 to IL15)

Afternoon: 14.30-18.30

Symposium A	(A-6:IL01 to L05)
Symposium B	(B-6:IL05 to IL06)
Symposium D	(D-10:IL02 and IL04)
Symposium E	(E-8:IL01 to L05)
Symposium F	(F-6:IL04 to L09)
Symposium G	(G-5:IL03 to IL05)
Symposium K	(K-4:IL11 to IL14)
Symposium L	(L-4:IL06 to L09)
Symposium M	(M-7:IL01 to L04) (M-8:IL01 and IL02)
Symposium N	(N-5:IL01 to IL03) (N-6:IL01 to L05)
Symposium O	(O-7:IL05 to L07) (O-8:IL01 to L03)
Symposium P	(P-4:L03 to IL06) (P-7:L01 to L04)
Conference Q	(Q-4:IL09 to L15)

16.30-18.30

POSTER DISCUSSION

20.00-23.30

Conference Dinner

Code Number of contributions by Presenting Author (in alphabetical order)

The Code Number X-W:Z00 includes: X Symposium; W Session; Z Type of presentation (PL, IL, L, P)*; 00 Paper number

* PL Plenary IL Invited Lecture L Contributed Lecture P Poster presentation

NOTE: Due to the restructuring of some symposia, the session number included in the Code may differ from the one selected by the Presenting Author in the Abstract Submission Form.

Abd El-Nasser Shady	I:P03	Benea Lidia	Q-2:L14	Cesari Eduard	B:P08
Abels Claudio	O-4:L04	Benjeddou Ayeche	P-1:IL02	Chacham Helio	F-2:L07
Agarwal Ritesh	G-4:IL02	Beranek Radim	I-2:IL06	Chang Fu-Kuo	O-10/P-6:IL01
Aghayan Marina	G-1:L10	Bergenti Ilaria	K-3:L09	Chang Kao-Shuo	I-1:IL16
Agio Mario	E-6:IL04	Bergonzo Philippe	Q-6:L13	Charlier Jean-Christophe	G-3:L03
Akhras George	P-1:L05	Bernasconi Marco	K-2:IL08	Chauhan Abhijit	D:P37
Akiyama Nanako	D:P29	Berry Vikas	Q-5:IL08	Chausov Denis	A:P16
Akwada Damenortey R.	A:P03	Bettinger Christopher	Q-6:IL20	Cheah Kok-Wai	D-2:IL02
Alexeev Arseny	F-3:L14	Bettini Paolo	B:P12	Chehadi Zeinab	I-1:L19
Aliakbarshirazi Sheida	Q:P12	Bichler Olivier	K-4:IL03	Chen Chun-Wei	F-6:IL01
Ameer Guillermo	A-7:IL03	Binek Christian	C-7:IL06	Chen Li-Chyong	F-6:IL05
Amft Oliver	N-3:IL01	Bizzari Gregory	D-4:IL01	Chen Nanguang	Q-4:IL11
Amirav Lilac	I-3:L05	Blugan Gurdial	N-1:IL02	Chen Peilin	Q-1:IL05
Ampaw Edward Kofi	O-3:L09	Bobnar Vid	H-1:L08	Chen Wen Jie	E-8:IL03
Ananta Supon	C:P07	Bochenek Dariusz	C:P11	Chen Xuchao	O-10/P-6:L03
Andrievskaya Elena	D:P04	Bonaccorso Francesco	F-6:IL04	Chen Yit-Tsong	G-5:IL05
Andronic Luminita	I-1:L15	Bonadies Irene	L-4:IL07	Cheng Zhongyang	H-1:IL07
Anthamatten Mitchell	H-6:IL05	Bonfigli Francesca	D-6:IL03	Cheon Miyeon	C-4:L09
Antolini Francesco	D-3:L12	Bosia Federico	O-1:L04	Chernenko Volodymyr A.	B-2:IL04
Arhire Irina	Q-3:L03	Bowman Christopher N.	H-5:IL01	Chiappini Andrea	D-2:IL04
Asaka Kinji	H-1:IL02	Bozhevolnyi Sergei	E-6:IL01	Chiba Seiki A.	H-4:IL02
Ascoli Alon	K-4:L02	Brailovski Vladimir	B-6:L01	Chikte (Awade) Devayani	D:P09
Aseev Vladimir	D-3:L03	Braz Fernandes F.M.	B-6:L04	Chilkoti Ashutosh	O-8:IL01
Ashraf Munir	L-3:L16	Brener Igit	E-4:IL05	Chiriac Aurica	A:P06
Augustynski Jan	I-1:L06	Brezeanu Mihai	J-2:IL05	Cho Woon Jo	D:P02
Bachtold Adrian	Q-5:IL06	Brivio Stefano	K-4:L07	Choeichom Pongpol	J:P06
Baghdachi Jamil	A-7:L06	Buasri Taywin	B:P02	Choi In-Suk	G-2:L13
Bagheri Maryam	Q:P13	Buchbinder Miryam	K-3:IL13	Choi Kyung Cheol	L-3:IL02
Bahel Shalini	C-2:L05	Buchelnikov Vasily	B:P06	Chong Meng Nan	I-1:L07
Bahnemann Detlef	I-2:IL01	Bujoreanu Leandru-G.	B-5:L05	Christensen Johan	E-7:IL05
Bajaj Nikhilesh	D:P15	Bunge Frank	M-7:L04	Cianchetti Matteo	O-9/P-5:IL07
Bakowsky Udo	Q:P14	Burgess Emma	C-1:L08	Clemens Frank	L-4:L09
Balashov Sergey	J-1:IL03	Bussy Cyril	Q-5:IL13	Cohen Bruce	D-5:L03
Bansil Arun	F-2:KL	Butt Hans-Juergen	O-3:IL01	Cohn Daniel	A-7:IL01
Banys Juras	C-5:L04	Buzio Renato	K-1:L05	Colbeau-Justin Christophe	I-2:IL02
Bao Bin	E-7:L03	Calarco Raffaella	K-2:IL02	Coletti Camilla	F-3:L06
Bar Sadan Maya	I-1:L18	Calvert Paul	L-2:IL01	Collins Shamara	I-2:L07
Bar-Cohen Yoseph	H-3:IL07	Camacho-Aguilar Miguel	E-2:L09	Conesa José C.	I:P04
Bar-Cohen Yoseph	O-5:L05	Camps Ivan	D-3:L02	Cook Michelle	L-4:L02
Barr Lauren	E-2:L03	Camy Patrice	D-8:IL04	Coronado Eugenio	F-3:IL04
Barthelemy Agnes	C-7:IL05	Capadona Jeffrey R.	Q-6:IL15	Cowan Alexander	I-3:IL12
Bartkowiak Grazyna	L-1:L10	Caramori Stefano	I-2:IL13	Cui Xinyan Tracy	Q-6:IL03
Baughman Ray	H-1:IL01	Carles Robert	I-1:L14	Cumming David	N-1:IL01
Baur Florian	D-3:L06	Carmona Daniel	O-2:L06	Cuniberti Gianarelio	Q-5:IL04
Baur Jeff	P-1:IL01	Casciati Sara	P-3:IL06	Dai ZhenDong	O-5:IL03
Beeby Steve	N-4:IL01	Casiraghi Cinzia	F-1:IL03	Dalton Alain B.	L-2:IL03
Begin-Colin Sylvie	Q-4:IL10	Castagnola Elisa	Q-6:L16	Danaila Eliza	G-2:L14
Bélanger Daniel	F-3:L12	Castellanos-Gomez Andres	F-2:IL06	Dani Keshav M.	F-2:IL05
Bell Steven	N-1:IL03	Castro Neto Antonio H.	F-1:KL	Danyuo Yiporo	Q-3:L13
Belyaev Sergey	B:P03	Cattabiani Nicola	J-4:L03	Dardano Principia	Q-3:L04
Belyaev Victor	A:P15	Cecchini Raimondo	K-2:L06	D'Auria Marco	A-4:L07
Ben Fraj Boutheina	B:P04	Centrone Andrea	E-6:L03	Dautova Yulia	E:P03
Ben Zineb Tarak	B-5:IL01	Ces Oscar	O-7:IL03	Davino Daniele	P-2:L05

De Araujo Cid B.	D-2:IL01	Faraone Lorenzo	M-3:L04	Graule Thomas	I-3:L10
De Clercq Olivier Q.	D:P42	Faravelli Lucia	P-2:IL02	Graz Ingrid	H-3:IL03
De Faveri Sara	Q-6:P02	Farve Niaja	N-6:L04	Graziani Salvatore	H:P01
de Leon Alfaro Mayra A.	D:P40	Fechner Michael	C-1:IL06	Grbic Anthony	E-2:IL08
de Moura Ana Paula	D:P32	Felder-Flesch Dephine	Q-4:IL05	Green Rylie A.	Q-6:IL05
De Padova Irene Paola	G-2:IL04	Feng Yakai	A-7:IL07	Gribov Igor	B:P11
De Riccardis M. Federica	L:P01	Fernandes Susana	O-2:IL03	Grigoriu Mircea	B-5:L03
De Smet Louis C.P.M.	J-4:IL02	Fernandes de Oliveira C.A.	Q:P06	Grim Joel	D-3:IL13
de Yro Persia Ada	Q:P20	Ferrari Andrea C.	PL2	Gross Karlis	O:P03
Dehghanian Hossein Ali	M-2:L04	Ferrera Marcello	E-4:IL07	Grunlan Melissa	A-7:L05
Dejene Asegidew Ergete	I:P05	Fioravanti Ambra	J-2:L11	Gruverman Alexei	K-3:IL07
Delerue Christophe	G-3:IL01	Fiorentini Vincenzo	C-1:IL05	Guarino Vincenzo	L-3:IL06
Deleruyelle Damien	K-1:IL07	Fiori Gianluca	F-2:IL03	Güemes Alfredo	P-3:IL15
Delmonte Davide	C-3:L07	Fischer Peer	O-5:IL01	Guenneau Sebastien	E-7:IL01
Delogu Lucia G.	Q-5:IL14	Fischlechner Martin	O-7:IL01	Gueorguiev Gueorgui	F-1:L10
DeLuca Anthony	O-10/P-6:L11	Fleck Claudia	O-7:IL02	Guerrero Antonio	I-2:IL14
Denzer Ralf	H-4:L04	Fontcuberta i Morral Anna	G-1:IL13	Guo Xingmin	J-2:IL08
Desbrieres Jacques	Q-3:L09	Fornell Jordina	B-4:IL04	Gutfleisch Oliver	B-3:IL02
Destrac Mathias	N-6:L03	Frascella Francesca	A:P01	Gutierrez-Heredia Gerardo	H-3:L08
Di Carlo Virginia	G-1:L09	Freeman Amihay	Q-4:L12	Habibi Sima	Q:P03
Di Francesco Fabio	Q-5:L09	Fritzen Claus-Peter	P-3:IL08	Hahn Yoon-Bong	G-5:IL01
Di Luccio Tiziana	Q:P11	Frost Miroslav	B-2:L12	Hajj Muhammad R.	P-4:IL05
Diamond Dermot	N-5:IL01	Fu Qiuyun	J:P02	Hakanen Esko	P-4:L03
Dias Anderson	D-7:L02	Fuchiwaki Masaki	H-2:IL02	Hammad Talaat M.	D:P12
Dias Catarina	K-1:L15	Fuggini Clemente	P-7:L01	Han Hyeon	C:P21
Dias Mello Hugo José	H:P03	Fukata Naoki	G-1:IL04	Han Soo Deok	J-2:L15
Dick Thelander Kimberly	G-1:IL08	Funck Carsten	K-1:L19	Han Zhiwu	O-3:IL05
Dickinson Ben	O-10/P-6:IL05	Gadow Rainer	Q-6:L11	Hanein Yael	Q-6:IL02
Dieny Bernard	K-3:IL14	Gajjar Bhargav	O-9/P-5:P01	Hardtdegen Hilde	K-2:L05
Dolynchuk Oleksandr	A:P02	Galassi Carmen	C-3:L10	Hatton Benjamin	Q-1:L06
Dominguez-Crespo M.A.	F:P11	Galdi Vincenzo	E-1:IL01	Hayashi Koya	E:P04
Dorosz Dominik	D-6:IL01	Galizia Pietro	C-3:L06	He Lixin	C-1:IL02
dos Santos Paula Andersan	B-3:L10	Gall Ken	Q-1:L10	He Shanshan	L:P05
Dramicanin Miroslav	D-9:IL03	Ganguli Sabyasachi	A-6:L05	Heczko Oleg	B-1:IL03
Drew Robin	Q-2:L09	Gao Bin	K-4:IL04	Herrera Salazar M.G.del R.	M-2:L03
Drobosyuk Mikhail	B:P07	Gao Mingyuan	Q-4:L07	Hibbins Alastair	E-2:IL02
Dubinskiy Sergey	B-6:L03	Garcia Ducinei	C-3:L11	Hisatomi Takashi	I-3:IL02
Dubois Philippe	A-4:IL04	Garcia Vincent	K-4:IL13	Ho Mui Yen	F-4:L08
Dubrovskii Vladimir	G-1:IL02	Gaskov Alexander	J-2:L17	Hobeck Jared	E-8:L04
Dujardin Christophe	D-4:IL02	Gaudon Manuel	D-6:L06	Hoelscher Hendrik	O-6:L02
Duran Alicia	D-5:IL01	Gawande Atul	D:P20	Holzinger Michael	Q-5:IL05
Dutta Indranath	M-4:L03	Gelinck Gerwin	M-8:IL02	Homenick Christa	G-4:L05
Dutta Prabir	J-2:IL06	Gentile Gennaro	L-1:IL04	Hong Soon Hyung	F-4:IL02
Eiras Jose A.	C-4:IL06	Gerbi Andrea	K:P01	Hong Youn-Woo	D:P27
Elisa Mihail	D:P33	Gervaso Francesca	Q-2:L10	Hoshino Yu	Q-1:IL08
Elliott Alwyn	M-6:L03	Ghetti Antonio	P-7:L03	Hosoda Hideki	B-3:IL11
Emre Baris	B:P10	Ghosh Arindam	F-6:KL	Hosseinabadi Navid	M-2:L05
Endo Hiroshi	O-3:L04	Ghosh Rupita	Q:P10	Hou Yi	Q-4:L14
Endo Kazuhiro	A:P17	Glampedaki Pelagia	L-1:IL12	Houel Julien	D-8:IL02
Enoki Toshiaki	F-1:IL02	Glas Frank	G-1:IL05	Hsieh Shun Yu	A:P25
Entel Peter	B-2:IL01	Glaum Julia	C-6:L03	Hsieh Ying-Hui	C-7:L04
Epifani Mauro	J-2:IL18	Gogotsi Yury	F-4:IL03	Hu Jianxin	O-9/P-5:L04
Eriksson Jens	F-6:L09	Golberg Dmitri	G-2:IL01	Hu Jinlian	H-6:IL01
Espinosa Soria Alba	E-6:L06	Gomez-Yanez Carlos	C-3:IL05	Hu Yunxiang	C:P08
Fabbri Filippo	A-5:L06	Gonzalez Pablo	F-3:L09	Huetten Andreas	B-4:IL03
Fabbrici Simone	B-4:IL09	Gorbachev Roman	F-2:IL01	Iannacci Jacopo	M-1:IL03
Faehler Sebastian	B-4:IL02	Gottlieb Moshe	A-5:IL01	Ichchou Mohamed	P-1:IL07
Fan Runhua	E-2:L04	Gracias David H.	A-3:IL03	elmini Daniele	K-4:IL06
Fan Tongxiang	O-1:L05	Gradecak Silvija	G-1:IL01	Igityan Arsen	K-1:L16
Fang Changqing	H-5:L02	Graf Christina M.	Q-4:IL02	Iniguez Jorge	C-1:IL04
Fang Jian	L-2:IL02	Graham Thomas	E-7:L02	Inman Daniel J.	O-10/P-6:L08
Fantini Paolo	K-2:IL01	Grassmann Carsten	L-4:L08	Ionescu Radu	J-3:IL02

Ippoliti Rodolfo	F-4:IL05	Kim Chulhee	A-5:L03	Lauhon Lincoln	G-2:IL09
Irie Hiroshi	I-1:L05	Kim Do-Heyoung	I:P06	Laurencin Cato	Q-2:L03
Irschik Hans	P-1:IL03	Kim Eun Kyu	F:P10	Laurikenas Andrius	D:P31
Ishihara Kazuhiko	Q-1:IL02	Kim Jeong-Joo	C:P02	Lavrinenko Andrei	E-1:L03
Ishikawa Kunio	Q-2:L04	Kim Jihyun	F:P03	Lavrynenko Olena	Q:P22
Islamov Damir	K-1:L10	Kim Jung-Sik	I:P01	Layani Michael	H-5:L06
Ismail Yahya A.	H-1:L06	Kim Kee-Hoon	C-4:IL03	Lee B.L. (Les)	P-3:IL01
Ismailova Esma	L-2:L11	Kim Kwang Bum	F:P12	Lee Chunghyo	C:P14
Isogai Koji	O-9/P-5:IL11	Kim Philip	F-5:KL	Lee Doo Sung	A-3:IL04
Ivanov Ilia	J-2:L10	Kim Sang-Hoon	E-7:L07	Lee Habeom	G:P03
Jabbari Esmaiel	Q-2:IL06	Kim Yong	L-1:IL13	Lee Haeshin	A-7:IL02
Jackman Richard	Q-6:L07	Kim You-Bi	F:P08	Lee Han-Bo-Ram	L-2:IL07
Jagadish Chennupati	G-5:L02	Kim Youn Soo	A-4:L03	Lee Jae Chun	I:P02
Jahan Kaushar	H-6:L02	Kimura Tsuyoshi	C-4:IL05	Lee Jeon-Kook	F-3:L05
Jaiswal Shailesh	D:P14	Kiremidjian Anne S.	P-3:IL05	Lee Jong-Heun	J-2:IL04
Jakoby Bernhard	M-1:IL01	Kishi Yoichi	B:P15	Leeuwenburgh Sander	A-4:IL01
Janaky Csaba	I-1:IL09	Kishida Akio	Q-2:L11	Lehmhus Dirk	P-3:L16
Jang Gun-Eik	G:P01	Kishimura Akihiro	Q-3:IL07	Lei Ying	P-2:IL03
Jang Ho Won	J-1:IL04	Kleemann Wolfgang	C-7:IL02	Lemartinel Antoine	A:P05
Jankowski Lukasz	P-4:IL06	Kleiman Maya	A-2:L03	Lemme Max	F-2:IL04
Janssen Rolf	E-5:L06	Kloxin Christopher J.	A-2:IL05	Lempa Evelyn	L-4:L04
Jayaraman Sundaresan	L-2:IL06	Knoll Wolfgang	J-1:IL02	Lendlein Andreas	A-2:IL06
Jeong Jae-Woong	N-5:IL02	Ko Hyunhyub	N-1:L04	Leng Jinsong	H:P11
Jeong Se-Young	I-1:L10	Kobayashi Hidetoshi	O:P01	Lentz Levi	F-6:L08
Ji Aihong	O-5:L06	Kohl Manfred	B-4:IL01	Leonhardt Steffen	N-3:IL03
Jiang Xuchuan	J-2:L20	Kolle Mathias	O-6:L03	Levashov Evgeny	Q-1:L09
Jimenez-Jorquera Cecilia	M-2:IL01	Kolobkova Elena	D:P08	Li Fengfeng	H-5:L08
Jin Song	G-2:IL05	Kolobov Alexander V.	K-2:IL09	Li Hui	P-3:IL04
Johnston James	L-3:IL01	Koncar Vladan	L-1:IL08	Li Jensen	E-6:IL02
Joselevich Ernesto	G-1:IL11	Kondo Takahiro	A:P09	Li Jiangyu	H-2:IL01
Joshi-Imre Alexandra	Q-6:L12	Kong Hyun-Joon	A-4:IL05	Li Lei	A:P19
Joy Kunju	D-3:L07	Kongkaew Wanar	H:P06	Li Qingwen	O-7:IL05
Joyce Hannah	G-2:IL08	Koparkar Kishor	D:P13	Li Wenbing	A:P08
Juarez Juliana	Q:P17	Korpe Gajanan	D:P30	Li Xiaogan	J-2:IL12
Juestel Thomas	D-3:IL09	Kovac Mirko	O-10/P-6:IL06	Li Xiuling	G-4:IL01
Jung Jin-Seung	C:P16	Kowalczyk Marek	L-3:IL03	Li Yan	B-3:IL08
Jur Jesse	N-2:L03	Kreisel Jens	C-5:IL03	Liang Wenting	Q:P15
Kaewchingduang R.	A:P23	Krenner Hubert	G-2:IL06	Lieberzeit Peter Alexander	J-4:IL08
Kafesaki Maria	E-2:IL06	Krieg Peter	Q-3:L10	Lin Hsin-Yu	I-1:IL04
Kakanakova Anelia	F:P06	Krijnen Gijs	O-4:IL01	Lin Qiao	M-8:IL01
Kakeshita Tomoyuki	B-3:IL04	Krommer Michael	P-1:IL12	Lin Tong	L-3:L14
Kalantar-Zadeh Kourosh	F-6:IL03	Krooss Philipp	B-3:L13	Ling Michael	L-3:L11
Kammaing Machteld	C-2:L01	Krushynska Anastasia	E-7:L04	Linke Heiner	O-8:IL02
Kan-Dapaah Kwabena	Q:P19	Krutovertsev Sergey	A:P22	Lisenkov Sergey	C-4:L07
Kang Chong-Yun	M:P01	Kubo Momoji	F-1:L06	Litchinitser Natalia M.	E-6:IL05
Kang Hong Seok	F-1:L09	Kudva Jayanth N.	O-10/P-6:IL09	Liu Liwu	H-2:L05
Kang Ki Ju	D:P05	Kukhta Alexander	A-6:L04	Liu Ming	K-1:IL11
Kang Yi	M:P02	Kumar Ashwini	K:P05	Liu Yanju	H-4:IL03
Kapsali Veronika	O-7:L06	Kumar Sunil	C-6:L04	Long John H.	O-9/P-5:IL10
Kar Manoranjan	F-4:L06	Kuponu Oluwafemi	P-3:L17	Longo Massimo	K-2:IL03
Karaksina Ella	D-6:L05	Kurama Semra	A:P13	Lopes Natalia	B:P14
Karimi Mehdi	D:P25	Kurczewska Agnieszka	L-4:L03	Lopez-Oyama A.B.	F:P04
Karlsson Maths	D-8:IL03	Kurilov Alexander	C:P10	Lord Alex	G-2:L12
Kaul Anupama	F-3:IL02	Kuznetsov Arseniy	E-3:IL02	Lorenz Michael	C-3:L09
Kavalenka Maryna	O-3:L06	Lacarbonara Walter	P-1:L06	Lovell Jonathan F.	Q-4:IL03
Kavan Ladislav	I-2:L15	Lacour Stephanie P.	Q-6:IL19	Lu Jennifer	A-1:IL06
Kelkar Deepali	H-1:L10	Landa Michal	B-2:L10	Ludwig Alfred	B-1:IL02
Kenyon Antony	K-1:IL02	Lanza Di Scalea Francesco	P-2:IL04	Lughi Vanni	D:P24
Khan Zafarullah	F-3:L13	Lanzara Giulia	O-2:IL02	Lugstein Alois	G-1:IL12
Khmelevskaya Irina	B-3:L14	Lapine Mikhail	E-4:IL04	Lukyanova Lidia	F:P01
Khomskii Daniel	C-1:IL01	Lappalainen Jyrki	J-2:L19	Luo Chih Wei	F-2:IL02
Kim Chang Su	G:P02	Lau Gih-Keong	H-1:L04	Luzinov Igor	L-1:L05

Lynch Jerome P.	P-3:IL07	Moorthy Babu Sridharan	D:P18	Ozbay Ekmel	E-5:IL02
MacManus-Driscoll Judith	C-3:IL08	Moreira Roberto Luiz	C-2:L04	Ozturk Zafer Ziya	J-3:IL01
Macyk Wojciech	I-3:IL08	Moshkalev Stanislav	J-1:L06	Padilla Willie J.	E-2:IL01
Magdaluyo Jr. Eduardo	A:P21	Mosinger Jiri	Q-2:L13	Pagounis Emmanouel	B-6:IL05
Maggiolini Emma	Q-6:P01	Motta Fabiana V.	D:P28	Palermo Vincenzo	F-4:IL01
Magyari-Köpe Blanka	K-1:IL06	Muellen Klaus	F-4:IL04	Palzer Stefan	J-2:IL07
Maitland Duncan J.	A-1:IL03	Mujasam Batoo Khalid	K-3:L16	Pan Chengtong	H:P12
Malagò Perla	E-1:L04	Mul Guido	I-2:IL12	Pande S.A.	J-4:L05
Malliaras George G.	Q-6:IL22	Murguía-Romero Gabriela	F:P02	Pandini Stefano	H:P10
Manoonpong Poramate	O-5:IL02	Naccache Rafik	D-2:IL03	Pankov Vladimir	Q:P23
Manosa Lluís	B-3:IL01	Nagasaki Yukio	Q-1:IL07	Papadimitriou Costas	P-2:IL06
Marchetto Diego	F-6:L14	Nail Cecile	K-1:L04	Papireddy Vinayaka P.	M:P05
Marchi Juliana	Q:P09	Nakajima Mitsumasa	M-3:IL01	Paradee Nophawan	A:P24
Marcu Aurelian	J-2:L16	Nakashima Seiji	C-3:IL02	Park Hyunwoong	I-3:IL04
Marques Ana Paula	D:P06	Nalbandyan Karen	P-1:L11	Park Jang-Ung	F-6:L15
Marques Hueso Jose	A-4:L02	Nardi Paulo Augusto	D:P39	Park Won	D-5:IL02
Martin Ferran	M-5:IL02	Narisawa Masaki	D-7:L03	Parrino Francesco	I-1:IL13
Martin Lane W.	C-5:IL01	Nascimento Alber Luiz	A:P10	Pastorin Giorgia	Q-5:IL11
Maruyama Atsushi	Q-3:IL01	Nash Landon	A-7:L04	Pawade Vijay	D:P07
Masai Hirokazu	D-7:IL01	Neamtu Iordana	A:P14	Pawlik Tomasz	D:P26
Masala Silvia	M-4:L08	Neamtu Jenica	J:P04	Pedrosa de Miranda Jr. E.J.	E-7:L09
Mascaretti Luca	I-3:L03	Nehru Lajapathi C.	Q:P05	Pedroza-Montero Martin	Q:P21
Masri Sami	P-2:IL01	Nessim Gilbert D.	F-3:L11	Pei Qibing	H-1:IL03
Massi Marcos	J:P01	Nguyen Son Thanh	G-4:L06	Peiner Erwin	M-4:IL02
Mather Patrick T.	Q-1:IL01	Ni Yi Qing	P-3:IL11	Peng Jiegang	O:P05
Mathur Neil D.	C-4:IL01	Nickel Klaus G.	O-2:L04	Perazolli Leinig A.	I-3:L09
Matos Juan	I-1:L11	Niemann Robert	B-4:IL07	Perea-Lopez Nestor	F-6:IL02
Matveyev Yury	K-4:L08	Nien Yung-Tang	D:P17	Pernice Wolfram	M-1:IL02
Maziz Ali	L-1:L09	Nikitin Vladimir	K-3:IL10	Persson Nils-Krister	O-2:L05
McKittrick Joanna M.	D-7:IL07	Nikonorov Nikolay	D-3:L11	Petcharoen Karat	H:P04
Meiron Oren	F:P05	Nishibori Maiko	J-2:IL02	Petit Dorothée	K-3:IL11
Mekasuwandumrong Okorn	I:P08	Nishitani Akira	P-4:IL04	Phasuksom Katesara	J:P05
Melai Bernardo	N:P01	Nishitani Yu	K-4:IL14	Phillips Scott	A-2:IL01
Melnik Roderick	M-1:L04	Nita Loredana E.	A:P07	Piccinini Massimo	D-10:IL04
Menard-Moyon Cecilia	Q-5:IL02	Noh Yeonjeong	Q:P02	Pietralunga Silvia M.	F-5:L02
Mendes Eduardo	A-3:IL02	Noheda Beatriz	C-5:IL02	Pilch Jan	B-4:IL06
Mendonca Pimentel P.	C:P06	Nonkumwong Jeeranan	C:P17	Planes Antoni	B-2:IL05
Meng Nan	A:P18	Nosov Aleksandr	C:P15	Pleskov Yuri	M:P06
Menkara Hisham	D-7:IL06	Notomi Masaya	G-1:IL06	Plesse Cedric	H-3:IL02
Menzel Robert	F-6:L13	Oates William	H-5:L03	Pluduma Liene	Q:P07
Menzel Stephan	K-1:L13	Ogawa Ami	N-6:L05	Plusnin Nikolay	K:P04
Mi Zetian	G-5:IL03	Ogawa Toshio	Q-4:L15	Politi Yael	O-1:IL03
Michalik Daniel	D:P21	Oh Jonghwa	J-1:L07	Ponath Patrick	K-3:L05
Migliaresi Claudio	Q-2:IL02	Ohkubo Masaru	L-4:L05	Pong Way-Faung	F:P09
Mikulics Martin	K:P03	Ohno Hideo	K-3:IL01	Pope Simon A.	E-7:L08
Militky Jiri	L-4:IL01	Ohtani Bunsho	I-1:IL12	Poplawski Blazej	P-3:L18
Miller Derek	J-4:IL06	Ohya Yuichi	Q-1:IL04	Popov Alexander	E-4:L08
Miniaci Marco	E-5:L04	Okada Go	D:P22	Potdevin Audrey	D-3:L05
Minko Sergiy	L-1:IL03	Okuzaki Hidenori	H-3:IL01	Poulin Philippe	A-6:IL01
Miranda Leila Figueiredo	A:P12	Oliveira Cristine	D-3:L04	Pozo Francesc	P-3:L09
Mita Akira	P-3:IL02	Oliveira Joao Pedro	B-3:L12	Prestes Salem Raphael E.	Q:P04
Mitchell-Thomas Rhiannon	C, E-2:L05	Ollis David	I-2:L08	Prete Paola	G-2:IL07
Mitcheson Paul	M-6:IL02	Omanwar Shreeniwas	D-8:L05	Preumont André	P-3:IL14
Miyako Eijiro	Q-5:IL10	Ong Shyue Ping	D-1:IL03	Prinz Christelle	Q-6:IL01
Miyamoto Akira	M-4:L04	Opris Dorina Maria	H-1:L09	Prokoshkin Sergey	B:P05
Miyazaki Shuichi	B-3:IL07	Orlovskii Yurii	D-8:L01	Prudeniano Francesco	D-1:IL01
Mohalle Nelcy	C:P03	Oskam Gerko	I-2:IL09	Pshenova Alisa	M:P03
Mohite Aditya	F-3:IL08	Osofsky Michael	F-1:L04	Puglisi Donatella	J-2:L03
Mohseni Kamran	O-9/P-5:IL09	Ostachowicz Wieslaw	P-4:IL01	Pujar G.H.	D:P01
Mokwa Wilfried	N-3:IL02	Ostropiko Eugeny	B:P16	Pum Dietmar	O-3:L02
Molle Alessandro	F-6:IL06	Otsuji Taiichi	F-1:IL07	Qiao Ruirui	Q-4:L13
Montes Albino Gina	C-3:L03	Oulton Rupert	G-5:IL04	Quandt Eckhard	B-3:IL05

Raab Nicolas	K-1:L03	Sauerwald Tilman	J-2:IL01	Sokovnin Sergey	D:P16
Raikwar Vaishali	D:P10	Sawa Akihito	K-3:IL06	Song Sung-Hyuk	B-5:L04
Rajeshwar Krishnan	I-3:IL07	Schauer Senta	O-7:L07	Sorba Lucia	G-1:IL07
Ramesh Ramamoorthy	C:KL	Scheblykin Ivan	D-1:IL04	Sorrell Chris	I-2:IL11
Ramesh S.	O:P02	Schenk Franziska	O-1:IL01	Sorrentino Roberto	M-5:IL01
Ramos-Barrado José R.	I:P09	Schlaad Helmut	A-3:IL07	Soukoulis Costas M.	E-4:IL01
Randriamahazaka H.	H-2:L04	Schmid Silvan	M-2:IL02	Sousa Veronique	K-2:L07
Rath Amrita	A-2:L04	Schmidt Heidemarie	K-4:L10	Sozinov Oleksii	B-1:IL04
Ravelosona Dafinè	K-3:IL12	Schmidt-Grund Rudiger	G-2:IL10	Spirito Davide	F-6:L07
Rawat Meera	C:P19	Schmitt Rafael	K-1:IL14	Sridhar Srinavas	Q-4:IL06
Raybould Timothy	E-5:IL03	Schroeder Uwe	K-3:IL02	Srinivasan Gopalan	C-3:IL01
Razov Alexander	B-3:L09	Schulz Burkhard	A-5:IL05	Srisombat Laongnuan	C:P13
Re Marilena	A-6:L02	Schwartz Jeffrey	Q-6:L18	Srivastava Vijay Kumar	F-5:L03
Ree Moonhor	K-1:IL20	Schwarz Philipp G.	L-4:IL06	Starschich Sergej	K-3:L03
Ren Xiaobing	B-1:IL01	Sebastian Abu	K-4:IL12	Staude Isabelle	E-3:IL03
Resnina Natalia	B-2:L08	Secoli Riccardo	O-5:IL04	Steiner Mathias	Q-5:IL07
Rhodes Daniel	F-1:L01	Sedlak Petr	B-2:L07	Steudel Franziska	D-3:L08
Ricci Francesco	O-4:IL02	Seetharaman Sathya Sai	E-2:L10	Stevanato Elena	G-1:L15
Richard Cyrille	D-10:IL02	Seiner Hanus	B-2:L06	Strachan John Paul	K-1:IL17
Ricinski Dan	C-1:IL07	Selhuber-Unkel Christine	O-3:L03	Stucchi Marta	I-1:L17
Riechert Henning	G-1:IL03	Selli Elena	I-1:IL01	Stylios George K.	L-3:IL08
Riedel Ralf	J-4:IL01	Sementa Luca	K-1:L09	Subramanian Ravi	I-2:IL03
Riehle Mathis	Q-6:IL21	Serpini Elisabetta	F-6:L12	Sugii Toshihiro	K-3:L15
Rigamonti Daniela	B:P01	Sgibnev Yevgeniy	D-3:L10	Suh Dongseok	L-2:IL04
Righi Lara	B-2:IL03	Shabatina Tatyana	M-4:L06	Sultanov Fail	F:P13
Rigoni Federica	D-6:L07	Shadrivov Ilya	E-4:IL06	Sun Huiyu	H-5:IL05
Rios Ocampo Carlos A.	K-2:L10	Sharabi Mirit	Q-2:L12	Sun Shulin	E-8:IL02
Rivera Teodoro	D:P41	Sharma Poorva	K:P06	Sun Young	C-2:IL03
Rizzo Piervincenzo	P-3:IL03	Shea Herbert	H-3:IL06	Sung Hak-Joon	A-1:IL04
Rockstuhl Carsten	E-4:IL03	Shembel Elena	A:P04	Suwannarat Kwanjira	C:P18
Rodellar Benede José	P-3:IL12	Shimano Kengo	J-2:IL14	Swamy Varghese	Q-4:L08
Rodrigues Patricia	B:P13	Shimizu Yasuhiro	J-4:IL07	Tahara Masaki	B-1:L05
Rodriguez Hernandez G.	K-2:L11	Shirshnev Pavel	C:P04	Tajabadi Mohammad T.	F-6:L16
Rondinelli James	C-1:IL03	Shiryayev Vladimir	D:P34	Takai Madoka	M-7:IL02
Rothschild Avner	I-1:IL08	Shishkovsky Igor	A-1:L10	Takeda Mitsuo	E:P02
Ruediger Andreas	C-3:IL04	Shkrebtii Anatoli	F-1:L08	Takeuchi Ichiro	C-7:IL01
Rumyantseva Marina	J-4:L04	Shon Yoon	K:P08	Talapatra Saikat	F-5:IL01
Ryklina Elena P.	B:P17	Shoureshi Rahmat	O-9/P-5:IL01	Talbot Jan	D-9:IL01
Ryu Jeong Ho	D:P11	Shtansky Dmitry	Q-3:L05	Tallarida Graziella	Q-6:L08
Rzchowski Mark	M-4:IL01	Shter Gennady	G-4:L03	Tamura Rui	C-4:L08
Sabate Neus	M-6:IL01	Shuang Shaomin	Q-3:L11	Tamura Sakaya	D-5:L04
Sabolsky Edward M.	J-2:L21	Shvedova Anna	Q-5:IL15	Tamura Toshiyo	N-6:IL01
Sabolsky Kathy	O:P04	Shvets Gennady	E-8:IL01	Tanaka Hiroto	O-10/P-6:L04
Sachan Abhishek	A-4:L06	Siahmakoun Azad	E:P01	Tangkitthanachoke P.	H:P05
Saddow Stephen E.	Q-6:IL23	Sibirev Aleksey	B:P09	Tao Xiao-ming	L-1:IL01
Safranski David	A-1:L11	Sibirev Nickolay	G-3:L04	Tartare Guillaume	N-6:L02
Saito Akira	O-6:IL05	Siddique Radwanul H.	O-6:L04	Tate Eldon	I-3:L14
Saito Haruki	A:P20	Sigov Alexander	K-3:L08	Terrones Mauricio	F-3:KL
Saladino Maria Luisa	D-7:L09	Sikavitsas Vassilios I.	Q-4:IL01	Teshima Katsuya	I:P07
Salame Paresh	C:P20	Sinitskii Alexander	J-1:IL05	Tetzlaff Ronald	K-4:IL01
Salinga Martin	K-4:IL11	Siores Elias	L-2:IL05	Thompson Jamie	I-3:L13
Samitier Josep	M-7:IL01	Sirivisoot Sirinrath	Q-5:IL12	Thummarungsan Natlita	H:P09
Samori Paolo	F-3:IL03	Sitt Amit	O-7:L04	Tiemann Michael	J-2:L09
San Juan Jose	B-4:IL08	Sittner Petr	B-5:IL02	Tirelli Nicola	A-2:IL02
Sandhage Kenneth	O-2:IL01	Skulski Ryszard	C:P05	Tlotleng Monnamme	Q-6:L09
Sant Shilpa	Q-2:IL01	Stejko Emanuele A.	D-7:L05	Tognetti Alessandro	N-2:IL02
Santoro Francesca	Q-6:L17	Smith Thomas	Q-3:L08	Tokutake Hiroshi	O-10/P-6:IL10
Santos Leandro	B-3:L06	Smolyaninova Vera	E-8:L05	Tomita Koji	D-7:IL04
Saponjic Zoran	L-3:IL07	Sodano Henry	O-10/P-6:L07	Tondu Bertrand	H:P07
Saravanos Dimitris	O-10/P-6:IL02	Soga Kohei	D-10:IL03	Toomey Anne	L-1:L06
Sasani Nasrin	Q:P08	Sohn Hoon	P-3:IL13	Torah Russel	N-2:IL01
Sato Keisuke	D-2:L05	Sokolowski Witold	H-5:IL04	Torchilin Vladimir P.	Q-3:IL06

Torra Vicenc	P-1:IL04	Vuellers Felix	O-8:L03	Yanagida Takayuki	D-4:IL03
Torres Samuel	Q-3:L12	Vullev Valentine I.	I-2:IL05	Yang Guang-Zhong	N-4:IL03
Touati Amina	M:P04	Vysanska Monika	L-1:L07	Yang Hyun Kyoung	D:P35
Travas-Sejdic Jadranka	Q-1:L11	Wagner Sigurd	L-2:L09	Yang In-Sang	F-1:L05
Troczynski Tom	Q-2:L05	Wahnon Perla	I-2:L04	Yang Jianhua Joshua	K-1:IL12
Trusova Ekaterina	D-4:L04	Waitz Thomas	B-4:L05	Yap Yoke Khin	G-2:IL11
Trusova Elena	F-4:L07	Wallace Gordon G.	H-4:IL01	Yeshchenko Oleg	D:P03
Tsuchitani Shigeki	H-3:IL04	Wallentin Jesper	G-2:IL03	Yin Liang-Jun	D-3:L01
Tsukruk Vladimir	O-4:IL03	Wang Hongxia	L-3:IL05	Yin Shu	A-5:L07
Tsymbal Evgeny Y.	C-4:IL02	Wang Junling	C-6:IL01	Ying Jackie	Q-1:IL03
Tudor John	L:P04	Wang Zhanhua	A-5:L02	Yonet-Tanyeri Nihan	A-5:L04
Uehara Masato	D:P19	Wang Zhihong	C-6:L02	Yoo Jung Whan	D:P38
Ullakko Kari	B-6:IL06	Wang Zhi-Hong	K:P09	Yoon Jong-Hwan	K:P10
Umetsu Rie	B-2:IL02	Wang Zhong Lin	PL1	Yoshida Ryo	A-3:IL05
Urban Marek W.	A:KL	Ward Gareth	E-7:L06	Yoshimura Masahiro	D-1:IL02
Valentine Jason	E-3:IL01	Ware Taylor	A-1:L08	Yoshimura Masahiro	F-3:IL07
Valero Conzuelo Laura L.	H-2:L06	Wark Michael	I-2:IL10	Younis Mohammad I.	P-1:IL13
Valev Ventsislav K.	E-4:IL02	Waske Anja	B-2:IL11	Yu J.	D-7:L08
Valov Ilia	K-1:IL01	Watanabe Masayoshi	A-6:IL03	Yuan Baohong	Q-4:IL09
Van Den Beucken Jeroen	Q-3:IL02	Watkins James	A-4:IL09	Yuan Huiyu	F-3:L15
Vancso Julius G.	A-3:IL06	Watson David	O-3:L07	Yui Nobuhiko	Q-2:IL07
Vanderzande Dirk	L-2:IL08	Webster Thomas J.	Q-4:IL04	Zak Alla	G-1:L14
Vasiliev Alexey	J-2:IL13	Wegener Michael	H-1:L05	Zamarayeva Alla	L-3:L09
Vayssieres Lionel	I-3:L06	Wei Yang	L-1:L11	Zapf Vivien	C-2:IL02
Vazquez Ester	Q-5:IL03	Weiss Robert A.	A-1:IL02	Zardo Ilaria	G-2:IL02
Vece Michele	P-7:L04	Wenger Christian	K-1:L08	Zarek Matt	A-1:L05
Vedda Anna	D-6:IL02	West John	L-3:L12	Zenkevich Andrei	K-3:L04
Vekas Ladislau	A-4:L08	Wiemer Claudia	M-3:L03	Zhang Di	O-6:IL07
Vellekoop Michael J.	M-3:IL02	Willner Itamar	A-3:IL01	Zhang Fenghua	A-1:L09
Vercik Andres	A:P11	Wilson Thomas	A-1:IL01	Zhang Hehe	K:P02
Verhagen Ewold	E-5:IL01	Wilts Bodo	O-1:IL02	Zhang Wang	O-6:IL01
Vermaas David	I-3:IL01	Witzigmann Bernd	G-3:IL02	Zhang X.X.	B-3:L03
Vernaya Olga	Q:P01	Wlodarski Wojtek	J-1:IL01	Zhang Xiangwu	L-1:IL02
Vidal Frédéric	H-3:IL05	Workie Amogne	J-1:L08	Zhang Xiaoqing	H:P08
Viehland Dwight	C-4:IL04	Wrigglesworth Emma	L-3:L10	Zhao Jianwen	H-2:IL03
Vignolini Silvia	O-6:IL06	Wu Jeffrey Chi-Sheng	I-3:IL11	Zhao Xuanhe	Q-6:IL10
Villa Elena	B-6:L02	Wu Nianqiang (Nick)	I-1:IL02	Zhao Yingjun	P-1:L09
Visone Ciro	P-1:L10	Wu Ping-Chun	C:P01	Zhao ZhenKai	O-9/P-5:L05
Vittoria Carmine	M-4:IL07	Wu Wenjan	O-9/P-5:IL08	Zheng Yongmei	O-3:L08
Vittuari Luca	P-7:L02	Xiao Dong	D-3:L14	Zheng Zhiping	J:P03
Voit Walter	M-4:L05	Xiao Qing	O-9/P-5:L06	Zhou Dongxiang	C:P09
Voliani Valerio	G-4:L04	Xie Fang	H-5:L07	Zhou Lei	I-1:L20
Volkov Alexander	P-1:IL08	Yadav Rashmi	C:P12	Zhukova Yulia	B-1:L06
Vomero Maria	Q-6:L06	Yakacki Christopher	A-1:L07	Ziani Salima	Q:P16
Voncina Bojana	L-3:IL13	Yalon Eilam	K-1:IL18	Ziegler Martin	K-4:L09
Vopson Melvin M.	C-7:IL07	Yamaguchi Takashi	B-3:L15	Zivieri Roberto	E-1:L02
Vorotilov Konstantin	K:P07	Yamamoto Ikuo	O-9/P-5:IL02	Zukalova Marketa	F-6:L11
Vozzi Giovanni	N-5:IL03	Yamaoka Tetsuji	Q-2:IL08	Zurutuza Amaia	Q-5:IL01

SCIENTIFIC PROGRAMME

CIMTEC 2016

OPENING SESSION

WELCOME ADDRESSES

Plenary Lectures

PL1 Nanogenerators for Self-powered Sensors and Piezotronics for Smart Systems

ZHONG LIN WANG, School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, USA

PL2 Graphene Future Emerging Technology

A.C. FERRARI, Cambridge Graphene Centre, University of Cambridge, Cambridge, UK

5th International Conference

SMART AND MULTIFUNCTIONAL MATERIALS, STRUCTURES & SYSTEMS

SYMPOSIUM A

STIMULI RESPONSIVE AND MULTIFUNCTIONAL POLYMERS: PROGRESS IN MATERIALS AND APPLICATIONS

Oral Presentations

A:KL From Stimuli-responsive Polymers to Self-repairable Materials
M.W. URBAN, Dept. of Materials Science and Engineering, Center for Optical Materials Science and Engineering (COMSET), Clemson University, Clemson, SC, USA

Session A-1

Shape-memory Polymers and Shape-changing Polymers

A-1:IL01 3D Printed Shape-memory Polymer Foams for Biomedical Applications
T.S. WILSON, J.N. RODRIGUEZ, E.B. DUOSS, J.P. LEWICKI, Lawrence Livermore National Laboratory, Livermore, CA, USA; M.K. HEARON, MIT, Cambridge, MA, USA; D.J. MAITLAND, Texas A&M University, College Station, TX, USA

A-1:IL02 Shape Memory of Micro- and Nano-scale Imprinted Patterns on a Supramolecular Polymer Compound
Z. ZHAO, Y.S. CHEN, A. KARIM, **R.A. WEISS**, Dept. of Polymer Engineering, University of Akron, Akron, OH, USA

A-1:IL03 Embolic Applications of Shape Memory Polymer Foams
D.J. MAITLAND, Texas A&M University, College Station, TX, USA

A-1:IL04 An External Shape Memory Support to Prevent Vein Failure
T.C. BOIRE¹, C. GUTH², C. BROPHY², **HAK-JOON SUNG**¹, ¹Department of Biomedical Engineering, ²Division of Vascular Surgery, Vanderbilt University, Nashville, TN, USA

A-1:IL05 3D Printed Shape Memory Polymer Biomedical Devices
M. ZAREK, D. COHN, Casali Center of Applied Chemistry, Institute of Chemistry, Hebrew University of Jerusalem, Jerusalem, Israel

A-1:IL06 Near Infrared Driven Polymer Actuators

JENNIFER LU, XINYUAN SHEN, YUZE ZENG, Materials Science and Engineering, University of California at Merced, Merced, CA, USA

A-1:L07 A Thiol-acrylate Main-chain Liquid-crystalline Elastomer Platform for Multifunctional Applications

C.M. YAKACKI, M.O. SAED, A.H. TORBATI, R.H. VOLPE, M.S. BOLLINGER, University of Colorado Denver, Denver, CO, USA; C.P. FRICK, D.R. MERKEL, University of Wyoming, Laramie, WY, USA

A-1:L08 Programmed Anisotropy and Heterogeneity of Porous Liquid Crystal Elastomers

T. WARE, Department of Bioengineering, The University of Texas at Dallas, Richardson, TX, USA

A-1:L09 Shape Memory Polymers and Stimuli-responsive Methods

YANJU LIU¹, JINSONG LENG², **FENGHUA ZHANG**², ¹Department of Astronautical Science and Mechanics, Harbin Institute of Technology (HIT), Harbin, P.R. China; ²Centre for Composite Materials and Structures, Harbin Institute of Technology (HIT), Harbin, P.R. China

A-1:L10 Laser Assisted 3D Bioprinting of the Magnetic Polymer Nanocomposites Based on Nanoparticles Fe₃O₄ and SrFe₁₂O₁₈ for Medical Applications

I. SHISHKOVSKY^{1,2}, V. SCHERBAKOV¹, Y. MOROZOV², ¹Lebedev Physical Institute (LPI) of Russian Academy of Sciences, Samara branch, Samara, Russia; ²Institute of Structural Macrokinetics and Materials Science (ISMMS), RAS, Chernogolovka, Russia

A-1:L11 Characterization of Processing-Microstructure-Property Relationships of a Melt-Blown Shape-Memory Polyurethane Nonwoven using Microcomputed Tomography

D.L. SAFRANSKI, K.M. DUPONT, J.C. GRIFFIS, MedShape, Inc., A.S. LIN, R.E. GULDBERG, Georgia Institute of Technology, USA

Session A-2

Degradable, Stimuli-sensitive Polymers

A-2:IL01 Converting Local Signals into Global Responses in Polymeric Materials

S.T. PHILLIPS, Pennsylvania State University, University Park, PA, USA

A-2:IL02 Effects of Macromolecular Architecture on the Response of Oxidation-responsive Polymers

R. D'ARCY, **N. TIRELLI**, University of Manchester, Manchester, UK

A-2:IL03 Adaptable Microstructures

M. KLEIMAN, K. BRUBAKER, A.P. ESSER-KAHN, Department of Chemistry, University of California, Irvine, Irvine, CA, USA

A-2:IL04 Mechanical Characterization of Self-folding Chitosan Film

A. RATH, S. MATHESAN, P. GHOSH, Indian Institute of Technology Madras, Chennai, India

A-2:IL05 Dynamic Covalent Crosslinking in Polymer Networks for Materials-healing

M.B. GORDON, **C.J. KLOXIN**, Dept. of Materials Science and Engineering, Dept. of Chemical and Biomolecular Engineering, University of Delaware, Newark, DE, USA

A-2:IL06 Biobased Polymer Systems with Multifunctionality

A. LENDLEIN, Institute of Biomaterial Science and Berlin-Brandenburg Centre for Regenerative Therapies (BCRT), Helmholtz-Zentrum Geesthacht, Teltow, Germany, and University of Potsdam, Potsdam, Germany

Session A-3

Stimuli-sensitive Gels

A-3:IL01 Stimuli-responsive DNA Hydrogels: Switchable Materials and Interfaces and their Applications

I. WILLNER, Institute of Chemistry, The Hebrew University of Jerusalem, Jerusalem, Israel

A-3:IL02 Large Cilia Arrays of Multi-responsive Gels: Bulk Properties and Limits to Miniaturization

E. MENDES, P. GLAZER, Dept. of Chemical Engineering, Delft University of Technology, Delft, The Netherlands; **H. AN**, Eastman, Kingsport, TN, USA

A-3:IL03 Design and Applications of Self-folding Hydrogel Microstructures

D. GRACIAS, Johns Hopkins University, Baltimore, MD, USA

A-3:IL04 Injectable and Stimuli-responsive Block Copolymer Hydrogels

DOO SUNG LEE, Theranostic Macromolecules Research Center, School of Chemical Engineering, Sungkyunkwan University, Suwon, Gyeonggi-do, South Korea

A-3:IL05 Evolution of Self-oscillating Polymer Gels: Functional Control from Nanosize to Bulk Range

R. YOSHIDA, The University of Tokyo, Tokyo, Japan

A-3:IL06 Redox Responsive Organometallic Hydrogels as Metal Nanoparticle Foundry

G.J. VANCISO, XUELING FENG, JING SONG*, XIAOFENG SUI, BRAM ZOETEBIER, MARK A. HEMPENIUS, Department of Materials Science and Technology of Polymers, MESA+ Institute for Nanotechnology, University of Twente, Enschede, The Netherlands; *Institute for Materials Research and Engineering, A*STAR, Singapore

A-3:IL07 Stimuli-sensitive (Glyco-) Polypeptide Based Polymers and Gels

H. SCHLAAD, University of Potsdam, Institute of Chemistry, Potsdam, Germany; **K.-S. KRANNIG**, C.D. VACOGNE, Max Planck Institute of Colloids and Interfaces, Colloid Chemistry, Potsdam, Germany

Session A-4

Multifunctional (Nano)composites and Multi-material Systems

A-4:IL01 Bio-inspired Design of Organic-inorganic Nanocomposites for Applications in Regenerative Medicine

R. NEJADNIK, **H. WANG**, **M. DIBA**, **S.C.G. LEEUWENBURGH**, Radboud University Medical Center, Department of Biomaterials, Nijmegen, The Netherlands

A-4:IL02 Light and Heat Induced Patterning of Silver Nanoparticle/ Polymer Nanocomposites

J. MARQUES-HUESO, D.E. WATSON, M.PY. DESMULLIEZ, Heriot-Watt University, School of Engineering & Physical Sciences (EPS), Institute of Signals, Sensors and Systems, Microsystems Engineering Centre (MISEC), Edinburgh, Scotland, UK

A-4:IL03 Spatiotemporal Control of Self-oscillating Gel by Uniformly Aligned Inorganic Nano Sheets

YOUN SOO KIM¹, **Y. ISHIDA**², **Y. EBINA**³, **T. SASAKI**³, **R. YOSHIDA**¹, **T. AIDA**¹, ¹School of Engineering, The University of Tokyo, Tokyo, Japan; ²RIKEN Center for Emergent Matter Science, Saitama, Japan; ³National Institute for Materials Science, International Center for Materials Nanoarchitectonics, Tsukuba, Ibaraki, Japan

A-4:IL04 New Developments in Advanced Polybenzoxazine Thermosets and Related Nanocomposites

L. DUMAS, **L. BONNAUD**, **M. POORTEMAN**, **M. OLIVIER**, **Ph. DUBOIS**, Materia Nova Research Center & University of Mons UMONS, Mons, Belgium

A-4:IL05 Nanobiomaterials Enabling Low Dose Bioimaging Diagnosis and Stem Cell Therapies of Vascular Disease

HYUNJOON KONG, Chemical & Biomolecular Engineering/Bioengineering, University of Illinois at Urbana-Champaign, Urbana, IL, USA

A-4:IL06 Green Source Based Carbon Nano Rods for Developing the Quantum Resistive Vapor Sensors to Detect Cancer Biomarkers

A. SACHAN, **K.M. TRIPATHI**, **M. CASTRO**, **J.F. FELLER**, Smart Plastics Group, European University of Brittany (UEB), LIMATB-UBS, Lorient, France; **V. CHOUDHARY**, Centre for Polymer Science & Engineering, Indian Institute of Technology, Delhi, India

A-4:IL07 The Effects of External Magnetic Field on Polymeric Foam-ferromagnet Composites

M. D'AURIA^{1,2}, **V. VOLPE**³, **D. DAVINO**², **R. PANTANI**³, **L. SORRENTINO**¹, ¹Istituto per i Polimeri, Compositi e Biomateriali, Consiglio Nazionale delle Ricerche, Portici (NA), Italy; ²Dipartimento di Ingegneria, Università degli Studi del Sannio, Benevento, Italy; ³Dipartimento di Ingegneria Industriale, Università di Salerno, Fisciano (SA), Italy

A-4:IL08 Ferrofluids and Magnetic Nanocomposites: Tailoring the Properties for Applications

R. TURCU¹, **C. VASILESCU**², **I. CRACIUNESCU**¹, **D. SUSAN-RESIGA**², **T.BORBATH**³, **I. BORBATH**³, **V. SOCOLIUC**², **V. HARAMUS**⁴, **L. VEKAS**², ¹National Institute for Research and Development of Isotopic and Molecular Technologies, Cluj-Napoca, Romania; ²Romanian Academy-Timisoara Branch, Center for Fundamental and Advanced Technical Research, Lab. Magnetic Fluids, Timisoara, Romania; ³S.C. ROSEAL S.A., Odorheiu Secuiesc, Romania; ⁴Helmholtz-Zentrum Geesthacht, Zentrum für Material- und Küstenforschung GmbH, Geesthacht, Germany

A-4:IL09 3-D Templates for Hierarchical Device Structures

J.J. WATKINS, University of Massachusetts, Amherst, MA USA

Session A-5

Multifunctional Surfaces

A-5:IL01 Block Copolymers at Interfaces – Statics, Kinetics and Rheology

L. LAUFER, **M. ARMON**, **M. GOTTLIEB**, Chemical Engineering Department, Ben Gurion University, Beer Sheva, Israel

A-5:IL02 Self-healing Fluoropolymer Brushes as Anti-fouling Coatings

ZHANHUA WANG, H. ZUILHOF, Wageningen University, Wageningen, The Netherlands

A-5:IL03 Self-assembled Nanotubes and Nanoparticles with Multifunctional Stimuli-responsive Surfaces

JEONGHUN LEE, **CHULHEE KIM**, Polymer Science and Engineering, Inha University, Incheon, Korea

A-5:IL04 Smart Surfaces for Directing Nanoparticle Formation

N. YONET-TANYERI, Department of Biomedical Engineering, Istanbul Medipol University, Istanbul, Turkey; **P.V. BRAUN**, Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, USA

A-5:IL05 Interplay of Morphology and Degradation in Two-dimensional Polymer Films at the Air-water Interface

B. SCHULZ, **A.-C. SCHOENE**, **A. LENDLEIN**, University of Potsdam, Institute of Chemistry, Potsdam, Germany; and Institute Biomaterial Science and Berlin-Brandenburg Centre for Regenerative Therapies (BCRT), Teltow, Germany

A-5:IL06 Optically Tunable Mechanical and Functional Properties of Azo-polymer Thin Films

F. FABBRI¹, **L. SORELLI**², **D.-V. AHN**³, **J. FRECH-BARONET**², **M. FAFARD**², **Y. LASSAILLY**³, **K. LAHIL**³, **L. MARTINELLI**³, **T. GACOIN**³, **J. PERETTI**³, ¹Institut d'Electronique Fondamentale, Université Paris-Sud/CNRS, Orsay, France; ²Département de Génie Civil, Université Laval, Québec, Canada; ³Laboratoire de Physique de la Matière Condensée, Ecole Polytechnique/CNRS, Palaiseau, France

A-5:IL07 Synthesis of Transparent Thin Films for UV/IR Shielding

SHU YIN, MIKIHICO KOBAYASHI, XIAOYONG WU, TSUGIO SATO, IMRAM, Tohoku University, Sendai, Miyagi, Japan

Session A-6

Multifunctional Polymer Systems for Energy Storage and Flexible Electronics

A-6:IL01 Carbon Nanotube Fibre Microelectrodes

P. POULIN, Centre de Recherche Paul Pascal - CNRS Université de Bordeaux, Pessac, France

A-6:L02 Multilayer Hybrid Nanocomposites for Supercapacitor Electrodes

M. RE, M.F. DE RICCARDIS, D. CARBONE, L. CAPODIECI, Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Dept. SSPT, Div. PROMAS, Lab. MATAS, Brindisi, Italy

A-6:IL03 Soft Matter Containing Ionic Liquid as Solvent

MASAYOSHI WATANABE, Yokohama National University Yokohama, Japan

A-6:L04 Electroactive Polymer Based Conducting, Magnetic, and Luminescent Triple Composites

A.V. KUKHTA, A.G. PADDUBSKAYA, P.P. KUZHIR, S.A. MAKSIMENKO, Research Institute for Nuclear Problems, Belarusian State University, Minsk, Belarus; S.A. VOROBYOVA, Research Institute for Physical and Chemical Problems, Belarusian State University, Minsk, Belarus; S. BELLUCCI, National Institute of Nuclear Physics, Frascati National Laboratory, Frascati, Italy; P.K. KHANNA, Defense Institute of Advanced Technology, Deemed University, Pune, India

A-6:L05 Conductive Polymer Nanocomposites for Impact Resilient Electronics

S. GANGULI, A.K. ROY, J. FOLEY, C. CHEN, Airforce Research Laboratory, Materials and Manufacturing Directorate, WPAFB, Dayton, OH, USA

Session A-7

Pharmaceutical and Medical Applications of Smart Polymers

A-7:IL01 Nano and Macro-sized "Smart" Biomedical Structures: Design and Performance

D. COHN, Casali Center of Applied Chemistry, Institute of Chemistry The Hebrew University of Jerusalem, Jerusalem, Israel

A-7:IL02 Medical Applications of Nature-inspired Adhesive Polymers

HAESHIN LEE, Department of Chemistry, Korea Advanced Institute of Science & Technology, South Korea

A-7:IL03 Engineering Citrate-based Macromolecules to Regenerate Tissue Function

G. AMEER, Northwestern University, Evanston, IL, USA

A-7:L04 Cold Plasma Reticulation of Shape Memory Polymer Embolic Tissue Scaffolds

L.D. NASH, N.C. RIVERA, K.P. EZELL, J.K. CARROW, S.M. HASAN, A.K. GAHARWAR, D.J. MAITLAND, Texas A&M University, College Station, TX, USA

A-7:L05 A Bioactive "Self-fitting" Shape Memory Polymer (SMP) Scaffold to Treat Craniomaxillofacial (CMF) Bone Defects

M.A. GRUNLAN^{1,2}, DAWEI ZHANG¹, M.S. HAHN³, J.E. MARINO³, ¹Texas A&M University, Department of Biomedical Engineering, ²Texas A&M University, Department of Materials Science and Engineering, ³Rensselaer Polytechnic Institute, Department of Biomedical Engineering, College Station, TX, USA

A-7:L06 Shape-memory Mediated Self-healing Polymers

G. BAGHDACHI, M. GARAY, K. MARTENIS, O. ALIYEV, Coatings Research Institute, Eastern Michigan University, Ypsilanti, MI, USA

A-7:IL07 Multifunctional Polycationic Gene Carriers for Endothelialization

YAKAI FENG, JING YANG, QIAN LI, XUEFANG HAO, School of Chemical Engineering and Technology, Tianjin University, Tianjin, P.R. China

Poster Presentations

A:P01 Surface-relief Formation in Azo-polyelectrolyte Layers with a Protective Polymer Coating

F. FRASCELLA, A. ANGELINI, S. RICCIARDI, F. PIRANI, F. PIRRI, E. DESCROVI, Department of Applied Science and Technology, Politecnico di Torino, Torino, Italy

A:P02 The Reversible Shape-memory Behavior of Crosslinked Poly(ϵ -caprolactone) under Stress and Stress-free Conditions

O. DOLYNCHUK, Leibniz-Institut für Polymerforschung Dresden e.V., Dresden, Germany; I. KOLESOV, Martin Luther University Halle-Wittenberg, Center of Engineering Sciences, Hale (Saale), Germany, Polymer Service GmbH Merseburg, Merseburg, Germany; D. JEHNICHEN, Leibniz-Institut für Polymerforschung Dresden e.V., Dresden, Germany; H.-J. RADUSCH, Polymer Service GmbH Merseburg, Merseburg, Germany

A:P03 Production Methods and the Materials Ratio Effect on the Mechanical Properties of Bamboo-plastic Waste Hybrid Composites for Structural Applications

D.R. AKWADA, E.T. AKINLABI, Department of Mechanical Engineering Science, University of Johannesburg, South Africa

A:P04 Nanostructure Provides a Major Breakthrough in Properties of Transparent Polymer, and Solar Cells, which are Encapsulated by Nanopolymer

E. SHEMBEL, V. REDKO, N. KLYUI, L. YASHCHENKO, N. YAROVA, Enerize Corporation, FL, USA

A:P05 Nanocomposites Spray Quantum Resisive Sensors (sQRS) for Structural Health Monitoring of Composite Wind Blades

A. LEMARTINEL, M. CASTRO, J.F. FELLER, Smart Plastics Group, Université Européenne de Bretagne (UEB), LIMATB-UBS, Lorient, France; J. DE LUCA, Institut de Recherche Technologique Jules Verne, Bouguenais, France

A:P06 Poly(N,N-dimethylacrylamide-co-3,9-Divinyl-2,4,8,10-tetraoxaspiro[5.5] undecane) Network with Pendant Spiroacetal Moieties and pH and Temperature Sensitivity

A.P. CHIRIAC, V. BALAN, M. ASANDULESA, E. BUTNARU, N. TUDORACHI, E. STOLERU, L.E. NITA, I. NEAMTU, A. DIACONU, "Petru Poni" Institute of Macromolecular Chemistry, Iasi, Romania

A:P07 Interpenetrated System Between Poly(aspartic acid) and Pluronic F127 by Self-assembling Process

L.E. NITA, A.P. CHIRIAC, M.T. NISTOR, M. BERCEA, "Petru Poni" Institute of Macromolecular Chemistry, Iasi, Romania

A:P08 Controllable Shape Memory Behavior Actuated by Selective Stimuli

WENBING LI, JINSONG LENG, Centre for Composite Materials and Structures, Harbin Institute of Technology (HIT), Harbin, PR China; YANJU LIU, Department of Astronautical Science and Mechanics, Harbin Institute of Technology (HIT), Harbin, PR China

A:P09 Flexible Strain Sensors with Stretchable Electrodes

TAKAHIRO KONDO, M. SATO, H. OKUZAKI, University of Yamanashi, Kofu, Yamanashi, Japan

A:P10 Nanocomposites of Aged Pseudoboehmite with Nylon 6,12

A.L. NASCIMENTO, A.H. MUNHOZ JR., C. DENUZZO, G.C. GOMES, L.F. MIRANDA, M.V. ROSSI, University Presbyterian Mackenzie, São Paulo, SP, Brazil

A:P11 Study of the Piezoresistive Effect of Nanocomposites for e-skin

A. VERCICK, University of Sao Paulo, FZEA/ZAB Pirassununga - SP, Brazil

A:P12 Influence of Concentration of the Nanofiller Pseudoboehmite in Thermal and Mechanical Properties in Polystyrene Compounds

L.F. DE MIRANDA, A.H. MUNHOZ Jr., T.J. MASSON, M.V. ROSSI, Universidade Presbiteriana Mackenzie, Sao Paulo, Brazil

A:P13 Effect of Al₂O₃ Nano Filler on Conductivity and Optical Properties of PEI-Based Composite Polymer Electrolytes for Electrochromic Windows

O. SAKARYA¹, **S. KURAMA**², G. GUNKAYA³, ¹Anadolu University, Faculty of Engineering, Dept. of Materials Science and Engineering, Eskisehir, Turkey; ²Anadolu University, Faculty of Aeronautics and Astronautics, Eskisehir, Turkey; ³Anadolu University, Faculty of Fine Arts, Dept. of Ceramic and Glass, Eskisehir, Turkey

A:P14 Preparation and Characterization of Poly(maleic anhydride-co-3,9-divinyl-2,4,8,10-tetraoxaspiro [5.5] undecane)-Coated Magnetite Nanoparticles as a Potential Magnetic Responsive Biomaterial

I. NEAMTU, A.P. CHIRIAC, L.E. NITA, V. BALAN, A. DIACONU, L. TARTAU, "Petru Poni" Institute of Macromolecular Chemistry, Iasi, ROMANIA

A:P15 Simulation of Optical Properties of Multimaterial Systems with Optically Anisotropic Materials

V.V. BELYAEV, A.S. SOLOMATIN, Moscow Region State University, Moscow, Russian Federation

A:P16 Liquid Crystals Sensor Applications Based on their Dielectric Properties

D.N. CHAUSOV¹, V.V. BELYAEV¹, A.D. KURILOV¹, A.S. SOLOMATIN¹, D.O. RYBAKOV¹, A.A. MURAVSKI², A.A. MURAVSKY², ¹Moscow Region State University, Russian Federation; ²Institute of Chemistry of New Materials NAS Belarus, Belarus

A:P17 Bonding Enhancement by Plasma Irradiation in Laminated Foil Structures of Polymer-polymer, Polymer-metal or Polymer-carbon Fibers

K. ENDO, Kanazawa Inst. Tech., Hakusan, Ishikawa, Japan; **M. YOKURA**, APC Co., Otsu, Shiga, Japan; **P. BADICA**, National Inst. Mater. Phys., Magurele, Romania

A:P18 Oriented Extrusion Processed Ferroelectric Poly (vinylidene fluoride)/ Poly (vinylidene fluoride -trifluoroethylene) Blended Films with Strong Interactions

NAN MENG, XIAOJING ZHU, R.M. WILSON, M.J. REECE, E. BILOTTI, Queen Mary, University of London, London, UK

A:P19 Site-specific Photo-rewritable Surfaces

LEI LI, X. DU, W.Q. FENG, P.A. LEVKIN, Institute of Toxicology and Genetics, Karlsruhe Institute of Technology, Karlsruhe, Germany

A:P20 All-organic Supercapacitors Using PEDOT/PSS Flexible Electrodes

HARUKI SAITO, H. TAKEZAWA, H. OKUZAKI, University of Yamanashi, Kofu, Yamanashi, Japan

A:P21 Fabrication of Cellulose and Silica Nanoparticle-reinforced Polyvinyl Alcohol Hydrogels

C.A.M. CARATING, R.N.M. ROSALES, **E.R. MAGDALUYO Jr.**, Department of Mining, Metallurgical and Materials Engineering, College of Engineering, University of the Philippines, Quezon City, Philippines

A:P22 Novel Polymeric Azaporphines for Oxidative Stress Detection

S.A. KRUTOVERTSEV, O.M. IVANOVA, L.S. KRUTOVERTSEVA, A.E. TARASOVA, JSC "Ecological sensors and systems", Zelenograd, Moscow, Russia; E.F. OLEINIK, A.I. SHERLE, Institute of Chemical Physics of RAS, Moscow, Russia

A:P23 Fabrication and Properties of Naproxen Transdermal Patches Using Deproteinized Natural Rubber for Electric Field Controlled Drug Delivery

R. KAEWCHINGDUANG, A. SIRIVAT, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

A:P24 Fabrication of Nanostructure Conducting Polymer-alginate Hydrogel Composites for Iontophoresis Transdermal Drug Delivery

N. PARADEE, A. SIRIVAT, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

A:P25 Shape Memory Polymer Stent with Photosensitivity and pH Responsive Hybrid Nanoparticles for Colorectal Cancer Therapy

SHUN YU HSIEH¹, H.C. WU², W.H. HU³, C.C. HUANG⁴, T.W. WANG¹, ¹Dept. of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan; ²Dept. of Material Engineering, Tatung University, Taipei, Taiwan; ³Dept. of Internal Medicine, National Taiwan University Hospital-Hsinchu Branch, Hsinchu, Taiwan; ⁴Dept. of Surgery, National Taiwan University Hospital-Hsinchu Branch, Hsinchu, Taiwan

B-1:IL02 High temperature SMA

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B-1:IL03 Hierarchical Twin Microstructure and Consequence for High Mobility of Twin Boundaries

O. HECZKO, Institute of Physics, Academy of Science of the Czech Republic, Prague, Czech Republic; **H. SEINER**, Institute of Thermomechanics, Academy of Sciences of Czech Republic, Prague, Czech Republic; **S. FAEHLER**, IFW Dresden, Dresden, Germany

B-1:IL04 Magnetic Shape Memory Effect in Non-Modulated Ni-Mn-Ga-based Martensite

A. SOZINOV, N. LANSKA, K. ULLAKKO, Lappeenranta University of Technology, Material Physics Laboratory, Savonlinna, Finland

B-1:IL05 Role of Interstitial Oxygen Atom on Martensitic Transformation of Ti-Nb Alloy

M. TAHARA, T. INAMURA, H. HOSODA, Tokyo Institute of Technology, Yokohama, Kanagawa, Japan; **H.Y. KIM**, S. MIYAZAKI, University of Tsukuba, Tsukuba, Ibaraki, Japan

B-1:IL06 Bulk and Surface Properties of Ti-Nb-based Superelastic Implant Materials

Yu. ZHUKOVA, S. DUBINSKIY, V. SHEREMETEV, YU. PUSTOV, M. FILONOV, M. PETRZHUK, S. PROKOSHKIN, National University of Science and Technology "MISIS", Moscow, Russia; **V. BRAILOVSKI**, Ecole de technologie supérieure, Montreal, Canada

Session B-2

Basic Phenomena and Theory

B-2:IL01 First-principles and Monte Carlo Studies of Magnetocaloric Effects

P. ENTEL, University of Duisburg-Essen, Faculty of Physics and CENIDE, Duisburg, Germany

B-2:IL02 Phase Diagrams and Physical Properties of Ferromagnetic Shape Memory Heusler Alloys

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B-2:IL03 Magnetic Shape Memory Materials: Martensitic Structures and Transformation Behaviour

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B-2:IL04 Magnetic Shape Memory Alloys: Lattice and Volume Instabilities

VA. CHERNENKO, BCMaterials & University of Basque Country (UPV/EHU), Bilbao, Spain; and Ikerbasque, Basque Foundation for Science, Bilbao, Spain

B-2:IL05 Avalanche Criticality in Martensitic Transformations: An Acoustic Emission Study

A. PLANES, Departament d'Estructura i Constituents de la Matèria, Facultat de Física, Universitat de Barcelona, Barcelona, Catalonia, Spain

B-2:IL06 High Mobility of Twin Interfaces in Ni-Mn-Ga at Ultrasonic Frequencies

H. SEINER, P. SEDLAK, M. LANDA, Institute of Thermomechanics, Czech Academy of Sciences, Prague, Czech Republic; **V. KOPECKÝ**, O. HECZKO, Institute of Physics, Czech Academy of Sciences, Prague, Czech Republic

B-2:IL07 Elastic Anisotropy of Polycrystalline Martensite of NiTi-based Alloys

P. SEDLAK, M. THOMASOVA, H. SEINER, M. FROST, M. SEVCIK, M. LANDA, Institute of Thermomechanics of the CAS, Prague, Czech Republic

B-2:IL08 Isothermal B2 - B19' Martensitic Transformation in TiNi-based Shape Memory Alloy

N. RESNINA, S. BELYAEV, Saint Petersburg State University, Saint Petersburg, Russia; **A. SHELYAKOV**, National Research Nuclear University "MEPhI" (Moscow Engineering Physics Institute), Moscow, Russia

B-2:IL10 Elasticity of Fe-Pd Single Crystals Under Unidirectional Prestress

M. LANDA, P. STOKLASOVÁ, H. SEINER, P. SEDLÁK, M. JANOVSKÁ, Institute of Thermomechanics, Czech Academy of Sciences, Prague, Czech Republic; **T. FUKUDA**, T. YAMAGUCHI, T. KAKESHITA, Dept. of Materials Science and Engineering, Graduate School of Eng., Osaka University, Suita, Osaka, Japan

SYMPOSIUM B

STATE-OF-THE-ART RESEARCH AND APPLICATIONS OF SHAPE MEMORY ALLOYS

Oral Presentations

Session B-1

Materials and Materials Design

B-1:IL01 Strain Glass as A New Class of Smart Materials

XIAOBING REN, Ferrocic Physics Group, National Institute for Materials Science, Tsukuba, Japan; and Multi-disciplinary Materials Research Center, Frontier Institute of Science and Technology, Xi'an Jiaotong University, Xi'an, China

B-2:IL11 The Magnetovolume Transition of LaFe_{11.8}Si_{1.2} as a Model System to Understand the Influence of Volume Expansion on Hysteresis During First Order Phase Transitions

A. WASKE¹, A. FUNK¹, B. WEISE¹, A. RACK², S. FÄHLER¹, ¹IFW Dresden, Germany, ²ESRF Grenoble, France

B-2:L12 Localization of Phase Transformation in NiTi Shape Memory Alloy Studied by the Finite Element Method Employing a Nonlocal Averaging Technique

M. FROST, P. SEDLAK, Institute of Thermomechanics, CAS, Prague, Czech Republic; P. SEDMAK, L. HELLER, P. SITTNER, Institute of Physics, CAS, Prague, Czech Republic

Session B-3

Functional Properties

B-3:IL01 Caloric and Multicaloric Effects in Ferroic and Multiferroic Materials

L. MANOSA, Dept. ECM, Facultat de Física, Universitat de Barcelona, Barcelona, Spain

B-3:IL02 Heusler Alloys for Solid State Refrigeration

O. GUTFLEISCH, T. GOTTSCHALL, S. ENER, K. SKOKOV, TU Darmstadt, Materialwissenschaft, Darmstadt, Germany

B-3:L03 Magnetostructural Coupling and Magnetocaloric Effect in Ni-Mn-Ga-Cu Microwires

X.X. ZHANG, M.F. QIAN, H.H. ZHANG, L. GENG, J.F. SUN, School of Materials Science and Engineering, Harbin Institute of Technology, Harbin, China

B-3:IL04 Elastocaloric Effect in an Iron-Palladium Shape Memory Alloy

TOMOYUKI KAKESHITA, FEI XIAO, TAKASHI FUKUDA, Osaka University, Suita, Osaka, Japan

B-3:IL05 Functional Fatigue of Elastocaloric NiTiCu-based Thin Films

C. CHLUBA¹, WENWEI GE², R. LIMA DE MIRANDA¹, J. STROBEL¹, L. KIENLE¹, M. WUTTIG², **E. QUANDT**¹, ¹Institute for Materials Science, Faculty of Engineering, University of Kiel, Germany; ²Department of Materials Science and Engineering, University of Maryland, USA

B-3:L06 Effects of Pseudoelastic Cycling under Different Temperatures on Physical and Mechanical Properties of a NiTi Alloy

M.C.M. RODRIGUES, G.C. SOARES, V.T.L. BUONO, **L.A. SANTOS**, Department of Metallurgical and Materials Engineering, Universidade Federal de Minas Gerais, Belo Horizonte-MG, Brazil

B-3:IL07 Mechanical Behaviour, Shape Memory Effect and Microstructures of Ti-based Shape Memory Alloys

SHUICHI MIYAZAKI, HEE YOUNG KIM, Division of Materials Science, University of Tsukuba, Tsukuba, Ibaraki, Japan

B-3:IL08 Surface Modification of NiTi Shape Memory Alloy by Hafnium Ion Implantation

YAN LI, T.T. ZHAO, School of Materials Science and Engineering, Beihang University, Beijing, China

B-3:L09 Thermo-mechanical Properties of NiTi Alloy after High Strain Rate Tension and Compression

V. GRIGORIEVA, E. OSTROPIKO, **A. RAZOV**, Saint-Petersburg State University, Saint-Petersburg, Russia; A. MOTORIN, Saint-Petersburg National Research University of Information Technologies, Mechanics and Optics, Saint-Petersburg, Russia

B-3:L10 Structural Modifications Promoted by Training Treatment on Superelastic NiTi Orthodontic Wires

A. MOTTA STREVA, **A. DOS SANTOS PAULA**^{1,2}, P. FREITAS RODRIGUES³, S. BAPTISTA RIBEIRO⁴, S. BRINCO DINIZ¹, F.M. BRAZ FERNANDES³, L.F. DA CRUZ¹, C. NELSON ELIAS¹, ¹Departamento de Engenharia Mecânica e de Materiais (SE/4), Instituto Militar de Engenharia (IME), Rio de Janeiro, RJ, Brazil; ²Programa de Pós-graduação em Engenharia Metalúrgica (PPGEM), Universidade Federal Fluminense (UFF), Volta Redonda, RJ, Brazil; ³Centro de Investigação de Materiais (Cenimat/I3N), Faculdade de Ciência e Tecnologia (FCT), Universidade Nova de Lisboa (UNL), Caparica, Portugal; ⁴Centro Universitário de Volta Redonda (UniFOA), Volta Redonda, RJ, Brazil

B-3:IL11 Microstructural Evaluation of NiMnGa Ferromagnetic Shape Memory Alloy Particles Embedded in Polymer Using X-ray Computed Tomography

H. HOSODA, H. KAWABE, P. SRATONGON, T. INAMURA, Precision and Intelligence Laboratory, Tokyo Institute of Technology, Yokohama, Japan; V.A. CHERNENKO, BCMaterials & Dpto de Electricidad y Electronica, Universidad del País Vasco UPV/EHU, Bilbao, Spain, Ikerbasque, Basque Foundation for Science, Bilbao, Spain

B-3:L12 Superelasticity and Shape Memory Effect in Laser Welded NiTi Shape Memory Alloys

J.P. OLIVEIRA, F.M. BRAZ FERNANDES, CENIMAT/I3N, Faculdade de Ciência e Tecnologias, Universidade Nova de Lisboa, Portugal; R.M. MIRANDA, UNIDEMI, Faculdade de Ciência e Tecnologias, Universidade Nova de Lisboa, Portugal

B-3:L13 Functional Degradation in Novel Shape Memory Alloys: On the Role of Dislocation Formation and Diffusion During Thermomechanical Cycling

P. KROOSS¹, M. VOLLMER¹, P.M. KADLETZ², C. SOMSEN³, Y.I. CHUMLYAKOV⁴, H.J. MAIER⁵, T. NIENDORF⁶, ¹Institut für Werkstofftechnik, TU Bergakademie Freiberg, Freiberg, Germany; ²Applied Crystallography, Dept. of Earth and Environmental Sciences, Ludwig Maximilians Universität, Munich, Germany; ³Institut für Werkstoffe, Ruhr-Universität Bochum, Bochum, Germany; ⁴Tomsk State University, Siberian Physical Technical Institute, Tomsk, Russia; ⁵Institut für Werkstoffkunde, Leibniz Universität Hannover, Garbsen, Germany; ⁶Institut für Werkstofftechnik, Metallische Werkstoffe, Universität Kassel, Kassel, Germany

B-3:L14 Functional Properties and Structure of Ti-Ni SMA After Multi-Axial Isothermal Quasi-continuous Deformation

I.Yu. KHMELEVSKAYA¹, V.S. KOMAROV¹, R. KAWALLA², S.D. PROKOSHKIN¹, G. KORPALA², ¹NUST "MISIS", Moscow, Russia; ²Freiberg University of Technology and Mining, Germany

B-3:L15 A Large Elastic Deformation of a Partly Ordered Iron-Platinum Shape Memory Alloy

T. YAMAGUCHI, T. FUKUDA, T. KAKESHITA, Osaka University, Suita, Osaka, Japan

Session B-4

Thin Films and Micro Nano-systems

B-4:IL01 Elastocaloric Microcooling: From Basic Effects to Miniature Cooling Devices

M. KOHL¹, H. OSSMER¹, C. CHLUBA², E. QUANDT², ¹Karlsruhe Institute of Technology, IMT, Karlsruhe, Germany; ²University of Kiel, IMS, Kiel, Germany

B-4:IL02 Multicaloric Effects in Mn-Ga-Co Films on Ferroelectric Substrates

B. SCHLEICHER^{1,2}, R. NIEMANN^{1,2}, S. SCHWABE¹, A. DIESTEL¹, A. WASKE¹, R. HÜHNE¹, P. WALTER^{3,4}, L. SCHULTZ^{1,2}, **S. FÄHLER**^{1,2}, ¹IFW Dresden, Dresden, Germany; ²TU Dresden, Institute for Solid State Physics, Dresden, Germany; ³Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany; ⁴2nd Institute of Physics B and JARA-FIT, RWTH Aachen University, Aachen, Germany

B-4:IL03 Giant Inverse Magnetocaloric Effect of NiCoMnAl Films

N. TEICHERT, L. HELMICH, **A. HÜTTEN**, Department of Physics, Bielefeld University, Bielefeld, Germany

B-4:IL04 Size Effects and Orientation Dependence in Superelastic Cu-Zn-Al Micro/Nano-pillars

J. FORNELL, Department of Materials Science and Engineering, MIT, Cambridge, MA, USA and Departament de Física, Facultat de Ciències, Universitat Autònoma de Barcelona, Bellaterra, Spain, N.TUNCER, C.A. SCHUH, Department of Materials Science and Engineering, MIT, Cambridge, MA, USA

B-4:L05 High Temperature Ti-Ni-Pd Shape Memory Alloys Subjected to High Pressure Torsion

S. TULIĆ, M. KERBER, A. PANIGRAHI, **T. WAITZ**, University of Vienna, Faculty of Physics, Physics of Nanostructured Materials, Vienna, Austria; MITSUHIRO MATSUDA, Kumamoto University, Department of Materials Science and Engineering, Kumamoto, Japan

B-4:IL06 Microstructure – Functional Property Relationships of NiTi Filaments

J. PILCH, O. TYC, P. SITTNER, L. KADERAVEK, L. HELLER, Institute of Physics of the Czech Academy of Sciences, Prague, Czech Republic; J.E. SCHAFFER, Fort Wayne Metals Research Products Corp, Fort Wayne, IN, USA; J. STRASKA, K. HORVATH, Faculty of Mathematics and Physics, Charles University in Prague, Czech Republic; P. BUBLIKOVA, Research Centre Rez, Husinec-Rez, Czech Republic; P. STRUNZ, V. RYUKHTIN, Nuclear Physics Institute, Husinec-Rez, Czech Republic; B. MALARD, CIRIMAT, Toulouse, France; R. DELVILLE, SCK•CEN, Mol, Belgium

B-4:IL07 Nucleation and Growth of Martensite by In-situ Experiments
R. NIEMANN^{1,2}, A. DIESTEL¹, B. SCHLEICHER^{1,2}, S. KAUFFMANN-WEISS¹, C. BEHLER^{1,2}, A. BACKEN¹, U.K. RÖSSLER¹, H. SEINER³, O. HECZKO⁴, S. HAHN⁵, M.F.-X. WAGNER⁵, L. SCHULTZ^{1,2}, S. FÄHLER^{1,2},
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B-4:IL08 Shape Memory and Superelasticity in SMA at Micro and Nano scale
J. SAN JUAN¹, J.F. GÓMEZ-CORTÉS¹, G.A. LÓPEZ², M.L. NÓ², ¹Universidad del País Vasco, Dpt. Física Materia Condensada, Facultad de Ciencia y Tecnología, Bilbao, Spain; ²Universidad del País Vasco, Dpt. Física Aplicada II, Facultad de Ciencia y Tecnología, Bilbao, Spain

B-4:IL09 Recent Advances in Magnetic Shape Memory Thin Films
S. FABBRICI, P. RANZIERI, M. CAMPANINI, L. NASI, F. CASOLI, E. BUFFAGNI, R. CABASSI, V. GRILLO, F. ALBERTINI, IMEM-CNR, Parma, Italy; C. MAGÉN, Instituto de Nanociencia de Aragón, Zaragoza, Spain; F. CELEGATO, G. BARRERA, P. TIBERTO, INRIM, Torino, Italy

Session B-5 Engineering

B-5:IL01 Design of Multifunctional SMA Devices Using Finite Element Simulation Methods
T. BEN ZINEB, LEMTA Université de Lorraine CNRS, Vandoeuvre les Nancy, France

B-5:IL02 Environmentally Assisted Fatigue of NiTi
P. SITTNER, J. RACEK, B. MARESOVA, L. KADERAVEK, L. HELLER, Institute of Physics of the ASCR, Prague, Czech Republic

B-5:L03 A Method for Upscaling Microscale Features to Macroscale Properties
M. GRIGORIU, Department of Civil and Environmental Engineering, Cornell University, Ithaca, New York, USA

B-5:L04 High Speed Smart Soft Composite (SSC) Structure Actuator with Large Deformation
SUNG-HYUK SONG, J.Y. LEE, H. RODRIGUE, S.H. AHN, Department of Mechanical & Aerospace Engineering, Seoul National University, Seoul, Korea

B-5:L05 Structural Effects of Thermomechanical Processing on the Static and Dynamic Responses of Powder Metallurgy Fe-Mn-Si Based Shape Memory Alloys
 E. MIHALACHE, B. PRICOP, R.I. COMANECI, M.G. SURU, N.M. LOHAN, M. MOCANU, **L.G. BUJOREANU**, "Gheorghe Asachi" Technical University of Iasi, Romania; B. ÖZKAL, Istanbul Technical University, Istanbul, Turkey

Session B-6 Applications

B-6:L01 Shape Memory Alloy Rods with Variable Flexural Stiffness for Spine Correction: Manufacturing, Modeling and Biomechanical Evaluation
V. BRAILOVSKI, Y. FACCHINELLO, M. BRUMMUND, Y. PETIT, Ecole de Technologie Supérieure, Montreal, Quebec, Canada; J.-M. MAC-THIONG, Department of Surgery, Faculty of Medicine, University of Montreal, Montreal, Quebec, Canada

B-6:L02 A New Design of a Nitinol Ring-like Wire for Suturing in Deep Surgical Field
 A. NESPOLI¹, V. DALLOLIO², **E. VILLA**¹, F. PASSARETTI¹, ¹Consiglio Nazionale delle Ricerche, Istituto per l'Energetica e le Interfasi (CNR-IENI), Lecco, Italy; ²ProMev, Lecco, Italy

B-6:L03 Manufacturing and Processing of New Ni-free SMA for Biomedical Implants
S. DUBINSKIY¹, V. BRAILOVSKI², S. PROKOSHKIN¹, K. INAEKYAN², YU. ZHUKOVA¹, V. SHEREMETEV¹, A. KONOPATSKIY¹, ¹National University of Science and Technology "MISIS", Moscow, Russia; ²Ecole de Technologie Supérieure, Montreal, Quebec, Canada

B-6:L04 Heat Treatment of Endodontic Files
F.M. BRAZ FERNANDES¹, J.P. OLIVEIRA¹, A.R. ALVES¹, N. SCHELL², ¹CENIMAT/3N, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Caparica, Portugal; ²Institute of Materials Research, Helmholtz-Zentrum Geesthacht, Geesthacht, Germany

B-6:IL05 Advances in Single Crystal Technology of Magnetic Shape Memory Materials
E. PAGOUNIS, ETO MAGNETIC GmbH, Stockach, Germany

B-6:IL06 A Magnetic Shape Memory Micropump and Other Applications
K. ULLAKKO, A. SAREN, D. MUSIENKO, A. SOZINOV, J. TELLINEN, Lappeenranta University of Technology, Material Physics Laboratory, Savonlinna, Finland

Poster Presentations

B:P01 Experimental Study and Modeling of Pseudoelastic Systems for the Design of a Complex Passive Damper
 A. NESPOLI¹, **D. RIGAMONTI**², M. RIVA³, E. VILLA¹, F. PASSARETTI¹, ¹Consiglio Nazionale delle Ricerche - Istituto per l'Energetica e le Interfasi (CNR-IENI) Unità di Lecco, Lecco, Italy; ²Politecnico di Milano, Italy; ³INAF, Osservatorio di Merate, Lecco, Italy

B:P02 Mechanical and Superelastic Properties of Au-51Ti-18Co Biomedical Shape Memory Alloy Heat-treated at 1173K to 1373K
T. BUASRI, H. SHIM, M. TAHARA, T. INAMURA, K. GOTO, H. HOSODA, Tokyo Institute of Technology, Yokohama, Kanagawa, Japan; H. KANETAKA, Tohoku University, Sendai, Miyagi, Japan; Y. YAMABE-MITARAI, National Institute for Materials Science, Tsukuba, Ibaraki, Japan

B:P03 Influence of Intermediate Layer Formation on Properties of Bimetallic Shape Memory Alloy Composites Produced by Explosion Welding
S. BELYAEV, N. RESNINA, E. DEMIDOVA, I. LOMAKIN, O. MEDVEDEV, Saint Petersburg State University, Saint Petersburg Russia; V. RUBANIK, V. RUBANIK Jr., Institute of Technical Acoustics NAS of Belarus, Vitebsk, Belarus Vitebsk State Technological University, Vitebsk, Belarus

B:P04 The Influence of the Heat Treatment Temperature on Thermal Properties of Ni-rich NiTi Shape Memory Alloy
B. BEN FRAJ, Z. TOURKI, Mechanical Laboratory of Sousse, National Engineering School of Sousse, Sousse, Tunisia

B:P05 On the Nanostructures Gradation in Thermomechanically Treated Ti-Ni SMA
S. PROKOSHKIN¹, V. BRAILOVSKI², S. DUBINSKIY¹, K. INAEKYAN², A. KREITCBERG², ¹National University of Science and Technology "MISIS", Moscow, Russia; ²Ecole de Technologie Supérieure, Montreal, Quebec, Canada

B:P06 The Magnetic States of Co and Cr Ni-Co-Mn-In(Sn) Heusler Alloys
V. BUCHELNIKOV¹, V.V. SOKOLOVSKIY¹, P. ENTEL², ¹Chelyabinsk State University, Chelyabinsk, Russia; ²University of Duisburg-Essen, Duisburg, Germany

B:P07 Magnetic and Magnetocaloric Properties of Ni-Co-Mn-Sn Heusler Alloys
M. DROBOSYUK, V.D. BUCHELNIKOV, R.R. FAYZULLIN, S.V. TASKAEV, Chelyabinsk State University, Chelyabinsk, Russian Federation

B:P08 Contributions to Transformation Entropy Change in Magnetic Shape Memory Alloys
 C. SEGUI, **E. CESARI**, Dept. de Física, Universitat de les Illes Balears, Palma de Mallorca, Spain

B:P09 Influence of Softening on Martensitic Transformation During Ti50Ni50 Alloy Thermal Cycling
A. SIBIREV, S. BELYAEV, N. RESNINA, Saint-Petersburg State University, Saint-Petersburg, Russia

B:P10 Calorimetric Study of Hysteresis Effects on the Magnetocaloric Effect in Ni-Co-Mn-Sn Alloys
B. EMRE¹, E. STERN-TAULATS², S. YUCE³, N. BRUNO⁴, A. PLANES⁵, L. MAÑOSA², I. KARAMAN^{4,5}, ¹Ankara University, Faculty of Eng., Dept. of Eng. Phys., Ankara, Turkey; ²Dept. ECM. Ftat. Física. Universitat de Barcelona, Barcelona, Catalonia; ³Ondokuz Mayıs University, Faculty of Arts&Science, Dept. Phys., Samsun, Turkey; ⁴Dept. of Mechanical Engineering, Texas A&M University, College Station, TX, USA; ⁵Dept. of Materials Science and Engineering, Texas A&M University, College Station, TX, USA

B:P11 Properties of Ni₂MnGa-based Thin Films Obtained by Magnetron Sputtering

I.V. GRIBOV, A.P. NOSOV, V.I. OSOTOV, M.N. Miheev Institute of Metal Physics of Ural Branch of Russian Academy of Sciences, Ekaterinburg, Russia; B.A. LOGINOV, National Research University of Electronic Technology (MIET), Zelenograd, Moscow, Russia

B:P12 Design and Experimental Testing of a NiTi-based, High Frequency, Centripetal Multiple Actuator

E. BORLANDELLI, D. SCARSELLI, **P. BETTINI**, G. SALA, M. QUADRO, Politecnico di Milano, Milano, Italy; A. NESPOLI, D. RIGAMONTI, E. VILLA, CNR IENI, Lecco, Italy

B:P13 Recovery and Structural Evolution during Annealing of Forged NiTi Alloy Bar

S. RIBEIRO¹, **P. RODRIGUES**², E. TEIXEIRA¹, S. DINIZ³, L. ANDRADEUFF, G. SILVA⁴, A. PAULA³, F. BRAZ FERNANDES², J. OTUBO⁴, ¹Centro Universitário de Volta Redonda (UniFOA), Volta Redonda, RJ, Brazil.; ²Universidade Nova de Lisboa, CENIMAT–iN3, Caparica, Portugal; ³Instituto Militar de Engenharia (IME), Mechanical Engineering and Materials Dept, Rio de Janeiro, RJ, Brazil.; ⁴Instituto Tecnológico da Aeronáutica, Mechanical Engineering and Aeronautic Dept., São José dos Campos, SP, Brazil

B:P14 Mechanical Properties of Nanoceramic Zirconia Coatings on Superelastic NiTi Strips

N.I.A. LOPES, V.T.L. BUONO, UFMG, Belo Horizonte, MG, Brazil

B:P15 Application of TiNi Alloy Coils as a Filtration Rating Controller for Three Dimensional Filter Made of a Stainless Steel Wire

YOICHI KISHI, Z. YAJIMA, Advanced Materials Systems Research and Development Center, Kanazawa Institute of Technology, Hakusan, Ishikawa, Japan; C. SHIOMI, T. MATSUMOTO, T. OHIGASHI, Y.NISHIMOTO, Fuji Filter Manufacturing Co. Ltd., Tokyo, Japan

B:P16 Conical Shape Memory Actuator

E. OSTROPIKO, I.A. RAZOV, Saint-Petersburg State University, Saint-Petersburg, Russia

B:P17 Intelligent Shape Memory Device for Clipping Vessels

E.P. RYKLINA, A.V. KOROTITSKIY, I.YU. KHMELEVSKAYA, S.D. PROKOSHKIN, National University of Science and Technology "MISIS", Moscow, Russia; M.V. SOUTORINE, A.N. CHERNOV, Globetek 2000 PTY LTD, Brighton, Victoria, Australia

C-1:L05 Metallo-ferroelectricity, Multiferroicity and Magnetoelectricity in Layered Perovskites

V. FIORENTINI, A. FILIPPETTI, J. INIGUEZ*, F. RICCI, P. DELUGAS, M. SCARROZZA, M.B. MACCIONI, Dipartimento di Fisica, Università di Cagliari, and CNR-IOM, Cagliari, Italy ; *LIST, Esch-sur-Alzette, Luxembourg

C-1:L06 Magnetoelectric Multipoles in Multiferroics and Complex Oxides

M. FECHNER, ETH Zürich, Switzerland

C-1:L07 Impact of Magnetic Configuration and Local Electric Dipoles on Electronic Properties of BiFeO₃ with Spatial Bond Length Modulation

D. RICINSKI, Tokyo Institute of Technology, Yokohama, Japan

C-1:L08 Composites for Novel Magnetic Properties

E.A. BURGESS, A.P. HIBBINS, J.R. SAMBLES, S. HORSLEY, C. GALLAGHER, C. MCKEEVER, EPSRC Centre for Doctoral Training in Metamaterials (XM2), Dept. of Physics and Astronomy / Dept. of Engineering, University of Exeter, UK

Session C-2

Non-oxide, Organic-inorganic and 5-d Oxide Multiferroics

C-2:L01 Multiferroic Properties of Organic-inorganic Hybrid Compounds
T.M. PALSTRA, **M. KAMMINGA**, Zernike Institute for Advanced Materials, University of Groningen, The Netherlands

C-2:L02 Multiferroic Behavior Triggered by a Spin-state Transition

V. ZAPF, S. CHIKARA, S. LIN, B. SCOTT, C. BATISTA, N. SMYTHE, Los Alamos National Lab., Los Alamos, NM, USA

C-2:L03 Multiferroics and Magnetoelectric Effects in Metal-organic Frameworks

YOUNG SUN, YING TIAN, WEI WANG, LIQIN YAN, YISHENG CHAI, Institute of Physics, Chinese Academy of Sciences, Beijing, China

C-2:L04 Infrared Phonon Modes and Intrinsic Dielectric Response of Magnetodielectric La₂CoMnO₆

R.L. MOREIRA, R. PANIAGO, R.M. ALMEIDA, Belo Horizonte, MG, Brazil; R.X. SILVA, C.W.A. PASCHOAL, São Luís, MA, Brazil

C-2:L05 Synthesis and Characterization of Lead Iron Niobate for Electronic Applications

S. BAHREL, MAALI PURI, S. BINDRA NARANG, Department of Electronics Technology, Guru Nanak Dev University, Amritsar, India

Session C-3

Advances in Materials Synthesis and Processing

C-3:L01 DNA-assisted Self-assembly of Multiferroic Nanocomposites and Studies on Magneto-electric Interactions

G. SRINIVASAN¹, G. SREENIVASULU¹, M. PANDA², F.A. CHAVEZ², ¹Department of Physics, Oakland University, Rochester, MI, USA; ²Department of Chemistry, Oakland University, Rochester, MI, USA

C-3:L02 Epitaxial Growth of BiFeO₃ Thin Films by RF and Dual Ion Beam Sputtering

SEIJI NAKASHIMA, M. SHIMIZU, H. FUJISAWA, University of Hyogo, Himeji, Hyogo, Japan

C-3:L03 Structural Study on Pure and Ca Doped Bismuth Ferrite Films

G. MONTES ALBINO, O. PERALES, B. FERRER, B. RENTERIA, H. CHINCHAY, University of Puerto Rico Mayaguez, Mayaguez, Puerto Rico

C-3:L04 Signatures of B-Site Cationic Ordering in Double Perovskites

A. RUEDIGER, R. NECHACHE, M. NICKLAUS, A. PIGNOLET, F. ROSEI, INRS-EMT, Varennes, Qc, Canada

C-3:L05 Spray Pyrolysis to Process Thin Films of Multiferroic Materials

A.E. LÓPEZ-LÓPEZ, L. ROLDÁN, J. ORTIZ-LANDEROS, **C. GÓMEZ-YANEZ**, Department of Metallurgical and Materials Eng., ESIIQIE, National Polytechnic Institute, Zacatenco, Mexico city, Mexico

C-3:L06 Laminated Ceramic Composites Based on PZTN-CFO Compounds

P. GALIZIA, I.V. CIUCHI, D. GARDINI, C. GALASSI, CNR-ISTEC, Faenza, Italy

C-3:L07 High Pressure High Temperature (HP / HT) Growth of Multifunctional Perovskites. How Chemical Substitutions can be used to Switch from a Magnetoresistive to a Dielectric (Polar) Magnet

D. DELMONTE, E. GILIOLI, R. CABASSI, F. BOLZONI, IMEM CNR, Parma, Italy; F. MEZZADRI, F. ORLANDI, G. CALESTANI, Chemistry Dept. University of Parma, Parma, Italy; M. SOLZI, Physics and Earth Science, Dept. University of Parma, Parma, Italy

SYMPOSIUM C

RECENT ADVANCES IN MULTIFERROIC AND MAGNETOELECTRIC MATERIALS AND APPLICATIONS

Oral Presentations

C:KL Coupling Magnetism to Electricity In Multiferroic Heterostructures

R. RAMESH, Department of Physics and Department of Materials Science and Engineering, University of California, Berkeley, CA, USA

Session C-1

Theory and Modeling of Single Phase and Composite Multiferroics

C-1:IL01 Coupled Electricity and Magnetism in Solids: Some Novel Effects

D.I. KHOMSKII, II Physikalisches Institut, Universitaet zu Koeln, Koeln, Germany

C-1:IL02 The Origin of Hyper-ferroelectricity in LiBO₃ (B=V, Nb, Ta, Os)

PENGFEI LI, XINGUO REN, G-C GUO, **LIXIN HE**, Key Laboratory of Quantum Information, University of Science and Technology of China, Hefei, Anhui, China

C-1:IL03 New Multiferroics at Interfaces of Conducting Oxides

J.M. RONDINELLI, Northwestern University, Evanston, Illinois, USA

C-1:IL04 The Path Matters: The Key to Magnetization Reversal by Electric Field

J. INIGUEZ, Luxembourg Institute of Science and Technology, Esch-sur-Alzette, Luxembourg

C-3:IL08 **Self-assembled Magnetolectric Nanocomposites**

J.L. MACMANUS-DRISCOLL, Department of Materials Science, University of Cambridge, Cambridge, UK

C-3:IL09 **Correlation of Magnetolectric Coupling in Multiferroic BaTiO₃-BiFeO₃ Superlattices and Composite Thin Films with Ordering of Oxygen-related Defects**

M. LORENZ¹, V. LAZENKA², G. WAGNER³, P. SCHWINKENDORF¹, M.J. VAN BEAL⁴, A. VANTOMME², K. TEMST², O. OECKLER³, M. GRUNDMANN¹, ¹Institut für Experimentelle Physik II, Universität Leipzig, Leipzig, Germany; ²Instituut voor Kern- en Stralingsfysica, KU Leuven, Leuven, Belgium; ³Institut für Mineralogie, Kristallographie und Materialwissenschaft, Universität Leipzig, Leipzig, Germany; ⁴Laboratorium voor Vaste-Stoffysica en Magnetisme, KU Leuven, Leuven, Belgium

C-3:IL10 **Heterostructured Ceramic Materials Based on PZTN-CFO Compounds**

P. GALIZIA, C. CAPIANI, **C. GALASSI**, CNR-ISTEC, Faenza, Italy

C-3:IL11 **Microstructural, Dielectric and Magnetic Properties of h-BaTiO₃ and CoFe₂O₄ Composites Prepared by LHPG Technique**

D. GARCIA, F.P. MILTON, D.S.F. VIANA, F.L. ZABOTTO, V.P. GASTALDO, A.J. GUALDI, P.C. CAMARGO, A.J.A. DE OLIVEIRA, Physics Department, Federal University of Sao Carlos, SP, Brazil; M.R.B. ANDREETA, Materials Engineering Department, Federal University of Sao Carlos, SP, Brazil

Session C-4

Magnetolectric Characterization and Electric Field Control of Magnetization

C-4:IL01 **Voltage Control of Magnetic Vortex States in Ni Discs Using Ferroelectric Substrates**

M. GHIDINI^{1,2}, R. MANSELL³, X. MOYA¹, B. NAIR¹, S. FAROKHIPOOR¹, D. PESQUERA¹, F. MACCHEROZZI⁴, C.H.W. BARNES³, R.P. COWBURN³, S.S. DHESI⁴, **N.D. MATHUR¹**, ¹Department of Materials Science, University of Cambridge, Cambridge, UK; ²DiFeST, University of Parma, Parma, Italy; ³Cavendish Laboratory, University of Cambridge, Cambridge, UK; ⁴Diamond Light Source, Chilton, Didcot, Oxfordshire, UK

C-4:IL02 **Spintronics with Ferroelectrics**

E.Y. TSYMBAL, Department of Physics and Astronomy, University of Nebraska, Lincoln, Nebraska, USA

C-4:IL03 **Electrical Control of Large Magnetization Reversal in a Helimagnet**

KEE HOON KIM, CeNSCMR, Department of Physics and Astronomy, Seoul National University, Seoul, Korea

C-4:IL04 **Mesoscale Interfacial Dynamics in Magnetolectric Nanocomposites**

D. VIEHLAND, J.F. LI, Dept. Materials Science and Engineering, Virginia Tech, Blacksburg, VA, USA

C-4:IL05 **Observation and Control of Spin Chirality in Room-temperature Magnetolectric Hexaferrites**

TSUYOSHI KIMURA¹, H. UEDA¹, H. NAKAJIMA¹, T. USUI¹, Y. HIRAOKA¹, Y. WAKABAYASHI¹, Y. TANAKA², ¹Osaka University, Toyonaka, Osaka, Japan; ²RIKEN SPring-8 Center, Japan

C-4:IL06 **Room Temperature Magnetolectric Effect in Novel Oxides**

J.A. EIRAS, Federal University of São Carlos, São Carlos, SP, Brazil

C-4:IL07 **Enhanced Magnetolectric Coupling in Multiferroics from First-principles**

S. LISENKOV, University of South Florida, Tampa, FL, USA

C-4:IL08 **Observation of Magnetolectric Effect in Organic Ferromagnetic and Ferroelectric Liquid Crystals**

RUI TAMURA, K. SUZUKI, Kyoto University, Kyoto, Japan; Y. UCHIDA, Osaka University, Osaka, Japan

C-4:IL09 **Anomalous Magnetoresistivity in Co-doped ZnO with Varying Bottom Gate Voltage**

MIYEON CHEON¹, YONG CHAN CHO², CHUL-HONG PARK³, SE YOUNG JEONG^{4,5}, ¹Crystal Bank Research Institute, Pusan National University, Miryang, Korea; ²Korea Research Institute of Standards and Science, Daejeon, Korea; ³Dept. of Physics Education, Pusan National University, Busan, Korea; ⁴Dept. of Cogno-Mechatronics Engineering, Pusan National University, Miryang, Korea; ⁵Dept. of Optics and Mechatronics Engineering, Pusan National University, Miryang, Korea

Session C-5

Domain Walls and Dynamics of Multiferroics

C-5:IL01 **Domain Walls and Magnetism in BiFeO₃ – Redux**

L.W. MARTIN, Department of Materials Science and Engineering, University of California, Berkeley and Material Science Division, Lawrence Berkeley National Laboratory, Berkeley, CA, USA

C-5:IL02 **Spiral Magnets in Thin Film Form**

B. NOHEDA, J.A. HEUVER, Zernike Institute for Advanced Materials, University of Groningen, Groningen, The Netherlands; S. FAROKHIPOOR, Device Materials group, University of Cambridge, Cambridge, UK; C.J.M. DAUMONT, University of Tours, Tours cedex, France

C-5:IL03 **Scrutinizing Electronic Excitations of Multiferroics by Resonant Raman Scattering**

M.C. WEBER, M. GUENNOU, **J. KREISEL**, Luxembourg Institute of Science and Technology (LIST), Department Materials Research and Technology, Belvaux, Luxembourg

C-5:IL04 **Broadband Dielectric Studies of Cobalt Ferrite and Nb-doped Lead Zirconium Titanate Multiferroic Composites**

R. GRIGALAITIS¹, A. SAKANAS¹, **J. BANYS¹**, C.E. CIOMAGA², L. MITOSERIU², ¹Department of Radiophysics, Faculty of Physics, Vilnius University, Vilnius, Lithuania; ²Faculty of Physics, University "Al. I. Cuza" Iasi, Romania

Session C-6

New Effects

C-6:IL01 **Room-temperature Ferroelectricity in Atomically Thin 2D CuInP₂S₆**

LU YOU¹, FUCAI LIU¹, KYLE L. SEYLER², XIAODONG XU², ZHENG LIU¹, **JUNLING WANG¹**, ¹School of Materials Science and Engineering, Nanyang Technological University, Singapore, Singapore; ²Department of Physics, University of Washington, Seattle, Washington, USA

C-6:IL02 **Electric-field-induced Phase Transition and Related Giant Strain in Ultrathin Epitaxial BiFeO₃ Films**

ZHIHONG WANG, Advanced Nanofabrication Core Lab, W.J. HU, T. WU, Physical Science and Engineering Division, L. CHEN, Imaging and Characterization Core Lab, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia

C-6:IL03 **Temperature Dependent Polarization Reversal Mechanism in (Bi_{1/2}Na_{1/2})TiO₃-based Relaxor Ceramics**

J. GLAUM, J. DANIELS, M. HOFFMAN, School of Materials Science and Engineering, UNSW Australia, NSW, Australia; H. SIMONS, Department of Physics, Technical University of Denmark, Kgs. Lyngby, Denmark; M. ACOSTA, Institute of Materials Science, Ceramics Group, Technische Universität Darmstadt, Germany

C-6:IL04 **Impedance Spectroscopy Studies on Li and Cr Substituted NiO**

SUNIL KUMAR, S. SUPRIYA, M. KAR, Department of Physics, Indian Institute of Technology Patna, Patna, India

Session C-7

Devices and Applications

C-7:IL01 **Applications of Heterostructured Multiferroic MEMS Cantilevers**

ICHIRO TAKEUCHI, University of Maryland, Department of Materials Science and Engineering, College Park, MD, USA

C-7:IL02 **Multiferroic and Magnetolectric Nanocomposites for Data Processing**

W. KLEEMANN, H. WENDE, Universität Duisburg-Essen, Duisburg, Germany; P. BORISOV, West Virginia University, Morgantown, USA; C. SCHMITZ-ANTONIAK, FZ Jülich, Germany; L. HENRICH, University of Leeds, UK

C-7:IL04 **Permanent Ferroelectric Retention in BiFeO₃ Mesocrystal**

YING-HUI HSIEH¹, FEI XUE², TIANNAN YANG², YEN-CHIN HUANG³, YI-CHUN CHEN³, CHUN-GANG DUAN⁴, LONG-QING CHEN², QING HE⁵, YING-HAO CHU^{1,6}, ¹Department of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan; ²Department of Materials and Engineering, Pennsylvania State University, University Park, PA, USA; ³Department of Physics, National Cheng Kung University, Tainan, Taiwan; ⁴Key Lab of Polar Materials and Devices, Ministry of Education, East China Normal University, Shanghai, China; ⁵Department of Physics, Durham University, Durham, UK; ⁶Institute of Physics, Academia Sinica, Taipei, Taiwan

C-7:IL05 Electric-field Control of Magnetic Order just above Room Temperature

V. IVANOVSKAYA¹, R.O. CHERIFI¹, L.C. PHILLIPS¹, A. ZOBELLI², I.C. INFANTE³, E. JACQUET¹, V. GARCIA¹, S. FUSIL¹, P.R. BRIDDON⁴, N. GUIBLIN³, A. MOUGIN², S. VALENCIA⁵, A.A. ÜNAL, F. KRONAST⁵, B. DKHIL³, M. BIBES¹, **A. BARTHELEMY¹**, ¹Unité Mixte de Physique CNRS / Thales, Palaiseau & Université Paris-Sud, Orsay, France; ²Laboratoire de Physique des Solides, Université Paris-Sud, CNRS UMR 8502, Orsay, France; ³Laboratoire SPMS, UMR 8580, Ecole Centrale Paris-CNRS, Châtenay-Malabry, France; ⁴School of Electrical, Electronic and Computer Engineering, University of Newcastle, Newcastle upon Tyne, UK; ⁵Helmholtz Zentrum Berlin für Materialien und Energie, Berlin, Germany

C-7:IL06 Voltage-controlled Exchange Bias in Lithographically Patterned Heterostructures

C. BINEK, W. ECHTENKAMP, X. HE, M. STREET, A. MAHMOOD, J. WANG, K. BELASHCHENKO, P. DOWBEN, Department of Physics & Astronomy and Nebraska Center for Materials and Nanoscience, University of Nebraska-Lincoln, USA

C-7:IL07 Multiferroic Technology for Advanced Magnetic Data Storage

M.M. VOPSON, University of Portsmouth, Faculty of Science, SEES, Portsmouth, UK; S. LEPADATU, T. MERCER, University of Central Lancashire, School of Computing, Engineering and Physical Sciences, Preston, UK; M. SPREITZER, Institute Jožef Stefan, Ljubljana, Slovenia

Poster Presentations**C:P01 Epitaxy Fe₃O₄ Thin Films on Flexible Substrates Via MBE**

PING-CHUN WU, Department of Material Science and Engineering, National Chiao Tung University, Taiwan

C:P02 Multiferroelectric Properties of Terfenol-D/PMN-PT Thin Film Composite

JEONG-JOO KIM¹, JAI-YEOUL LEE², HEE YOUNG LEE², ¹School of Materials Science and Engineering, Kyungpook National University, Daegu, Korea; ²School of Materials Science and Engineering, Yeungnam University, Gyeongsan, Korea

C:P03 Synthesis and Characterization of Barium Titanate/Cobalt Ferrite Nanocomposite

N.D.S. MOHALLE, J.B. DA SILVA, Federal University of Minas Gerais, Belo Horizonte, Brazil; CDTN/CNEN, Belo Horizonte, Brazil

C:P04 Optical Properties of a Potassium-alumina-borate Glasses Doped with Nanocrystals of MnFe₂O₄ and Fe₂O₃

P.S. SHIRSHNEV, N.V. NIKONOROV, D.J. PANOV, D.I. SOBOLEV, S.A. STEPANOV, ITMO University, Saint-Petersburg, Russian Federation

C:P05 Technology and Properties of PMN-PT-ferrite Multiferroic Composite Materials

R. SKULSKI, D. BOCHENEK, P. NIEMIEC, A. CHROBAK, University of Silesia, Faculty of Computer Science and Materials Science, Institute of Technology and Mechatronics, Sosnowiec, Poland

C:P06 Multiferroic Perovskites Synthesized by Gelatin Method

P. MENDONCA PIMENTEL, J.L.S. DUTRA, G.C.B. DANTAS, Universidade Federal Rural do Semi-Árido, Campus Angicos, Angicos- RN, Brasil; A.C. LIMA, J.H. ARAÚJO, Universidade Federal do Rio Grande do Norte, Natal-RN, Brasil; O.R. BAGNATO, CNPEM, Campinas-SP, Brazil

C:P07 Effect of Ba/Ti Ratio on Dielectric Properties of Nanogold Modified Barium Titanate Ceramics

S. ANANTA, J. NONKUMWONG, L. SRISOMBAT, Department of Physics and Materials Science, and Department of Chemistry, Faculty of Science, Chiang Mai University, Chiang Mai, Thailand

C:P08 Ferromagnetic and Ferroelectric Properties of Bi_{0.95}La_{0.05}Fe_{0.99}Ti_{0.01}O₃ Nano Ceramics Sintered by the Two-step Method

Y.H. TIAN, Q.Y. FU, D.X. ZHOU, Z.P. ZHENG, W. LUO, **YUNXIANG HU**, School of optical and electronic information, Huazhong University of Science and Technology, Wuhan, China

C:P09 A Two-step Method Preparation of Core-shell CoFe₂O₄@BaTiO₃ Multiferroic Composites

L. ZHOU, **DONGXIANG ZHOU**, Q.Y. FU, YX. HU, Z.P. ZHENG, School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, PR China

C:P10 Ultrasonic Attenuation of the Transformer Oil-based Ferrofluid A.D. KURILOV, D.N. CHAUSOV, Moscow State Regional University, Moscow, Russian Federation**C:P11 The Basic Properties of the Ferroelectromagnetic Composites Based on the Ferrite and PZT-type Powders**

D. BOCHENEK, P. NIEMIEC, R. SKULSKI, University of Silesia, Faculty of Computer Science and Material Science, Institute of Technology and Mechatronics, Sosnowiec, Poland

C:P12 Synthesis and Multifunctional Properties of La₂CoMnO₆ Double Perovskite Compound

T. YADAV, V. SHELKE, Novel Materials Research Laboratory, Department of Physics, Barkatullah University, Bhopal, India

C:P13 Effect of Complexing Agent Content on the Formation of Magnetism Ferrite Nanoparticles via Wet Chemical Method

L. SRISOMBAT, J. NONKUMWONG, S. ANANTA, Department of Chemistry, and Department of Physics and Materials Science, Faculty of Science, Chiang Mai University, Chiang Mai, Thailand

C:P14 Synthesis and Characterization of Soft Magnetic Nanocomposite in Fe₂O₃-Al System by Solid State Reaction

CHUNGHYO LEE, Mokpo National University, Muan, South Korea

C:P15 Magnetolectric Effect in Laminates with Functionally Graded Ferromagnetic Amorphous Alloys

A.P. NOSOV, I.V. GRIBOV, V.I. OSOTOV, M.N. Miheev Institute of Metal Physics of Ural Branch of Russian Academy of Sciences, Ekaterinburg, Russia; G. SREENIVASULU, G. SRINIVASAN, Physics Department, Oakland University, Rochester, Michigan, USA; B.A. LOGINOV, National Research University of Electronic Technology (MIET), Zelenograd, Moscow, Russia

C:P16 Electromagnetic Interference Shielding Response and Photocatalytic Activity of Polyaniline Coated Fe₃O₄@TiO₂ Core-shell Particles

SO-YONG PARK, **JIN-SEUNG JUNG**, Department of Chemistry, Gangneung-Wonju National University, Gangneung, South Korea

C:P17 Influence of Mg:Fe Ratio on Chemical Composition of MgFe₂O₄ Nanoparticles Synthesized by Hydrothermal Method

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C:P18 Effects of Surface Modification on Phase Formation, Microstructure and Multiferroic Properties of Barium Titanate Ceramics Doped with Gold Nanoparticles

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C:P19 Electrical, Magnetic and Magnetolectric Properties in BT-NZFO Composites

M. RAWAT, Department of Physics, H.N.B. Garhwal (A Central) University, Srinagar Garhwal, Uttarakhand, India

C:P20 Magnetodielectric Response of Nano-crystalline Pr₂CuO₄ Ceramics

P.H. SALAME, Dept. of Applied Physics, Laxminarayan Institute of Technology, RTM Nagpur University, Nagpur, India

C:P21 Enhanced Photon Absorption and Photocurrent Generation by Implementing a Hexagonal LuMnO₃-LuFeO₃ Multiferroic Bi-layer Structure

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SYMPOSIUM D
ADVANCES IN INORGANIC
LUMINESCENT MATERIALS AND
APPLICATIONS

Oral Presentations

Session D-1

Physics and Modelling of Luminescent Materials

D-1:IL01 Modelling of Luminescent Confined Structures

F. PRUDENZANO, Politecnico di Bari, Bari, Italy

D-1:IL02 Valence Stability of Rare Earth Ions by Madelung Lattice Site Potential in Various Oxide Lattices

M. YOSHIMURA, National Cheng Kung University, Promotion Center for Global Materials Research, Tainan, Taiwan, Formerly, Tokyo Institute of Technology, Japan

D-1:IL03 Discovery of Novel Narrow-band Red Phosphors using High-throughput First Principles Descriptors

ZHENBIN WANG, SHYUE PING ONG, Department of NanoEngineering, University of California San Diego, La Jolla, CA, USA

D-1:IL04 Luminescence of Organo-metal-halide Perovskites Probed at Micro- and Nanoscales

I.G. SCHEBLYKIN, Chemical Physics, Lund University, Lund, Sweden

Session D-2

Photonic and Biophotonic Structures; Plasmonic
Metamaterials; Photovoltaics; Non-linear Optical
Materials and Processes

D-2:IL01 Nonlinear Photonic Processes in Condensed Matter

C.B. DE ARAUJO, Departamento de Física, Universidade Federal de Pernambuco, Recife, PE, Brazil

D-2:IL02 Non-linear Optical Properties of Meta-surface

S.M. CHEN, S.Y. CHIN, KOK WAI CHEAH, Department of Physics and Institute of Advanced Materials, Hong Kong Baptist University, Kowloon Tong, Hong Kong SAR, China; **G.X. LI, SHUANG ZHANG**, School of Physics & Astronomy, University of Birmingham, Birmingham, UK; **T. ZENTGRAF**, Department of Physics, University of Paderborn, Paderborn, Germany; **XIANZHONG CHEN, SUPA**, Institute of Photonics and Quantum Sciences, School of Engineering and Physical Sciences, Heriot-Watt University, Edinburgh, UK

D-2:IL03 Contact-free Terahertz Thermometry in Solid, Liquid and Biological Model Systems

R. NACCACHE, Dept. of Chemistry and Biochemistry, Concordia University, Montréal, Canada; **A. MAZHOROVA, A. MARKOV, L. RAZZARI, F. VETRONI, R. MORANDOTTI**, Institut National de la Recherche Scientifique – Énergie, Matériaux et Télécommunications, Université du Québec, Varennes, QC, Canada; **M. CLERICI**, School of Engineering, University of Glasgow, Glasgow, UK; **L.K. KHORASHAD, A.O. GOVOROV**, Dept. of Physics and Astronomy, Clippinger Research Labs, Ohio University, OH, USA

D-2:IL04 Glass-derived Photonic Crystals structures

A. CHIAPPINI¹, C. ARMELLINI¹, A. PIOTROWSKA^{1,2}, A. CARPENTIERO¹, S. VARAS¹, M. MAZZOLA¹, L. PASQUARDINI³, L. LUNELLI^{3,4}, A. VACCARI⁵, S. PELLI^{6,7}, A. LUKOWIAK⁸, A. QUANDT⁹, C. PEDERZOLLI³, D. ZONTA^{1,2}, G.C. RIGHINI^{6,7}, R. RAMPONI¹⁰, M. FERRARI^{11,7}, ¹CNR-IFN CSMFO Lab., Povo, Trento, Italy, ²Dep. of Civil, Environmental and Mechanical Engineering, Univ. of Trento, Trento, Italy, ³FBK-LabSSAH, Povo Trento, Italy, ⁴CNR-Institute of Biophysics, Unit at Trento, Povo Trento, Italy, ⁵ARES unit at FBK-CMM, Povo, Trento, Italy, ⁶IFAC-CNR, MiPLab., Sesto Fiorentino, Italy, ⁷Enrico Fermi Centre, Roma, Italy, ⁸Institute of Low Temperature and Structure Research, PAS, Wroclaw, Poland, ⁹MERG Group, University of Witwatersrand, Johannesburg, South Africa, ¹⁰IFN-CNR and Politecnico di Milano, Dip. di Fisica, Milano, Italy

D-2:IL05 Cell Performances of Inorganic-organic Hybrid Solar Cells using Fluorosilicate/Phosphorus Oxide Composite Microparticles

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Session D-3

Phosphors, Quantum Dots and Low Dimensional
Materials for Lighting and Displays

D-3:L01 Direct Observation of Eu or Mn Ions in Aluminum Nitride Phosphors

LIANG-JUN YIN¹, JUN-TAO DONG¹, J.R. VAN OMMEN², H.T. (BERT) HINTZEN³, ¹School of Energy Science and Engineering, University of Electronic Science and Technology of China, Chengdu, P.R. China; ²Department of Chemical Engineering, Faculty of Applied Sciences, Delft University of Technology, Delft, The Netherlands; ³Luminescent Materials Research Group, Faculty of Applied Sciences, Delft University of Technology, Delft, The Netherlands

D-3:L02 Tunable Performance of Nanostructured Eu-doped Oxide and Oxynitride Thin Films

I. CAMPS, A. MARISCAL, R. SERNA, Laser Processing Group, Institute of Optics - CSIC, Madrid, Spain

D-3:L03 Phosphor in Glass Based on High Refractive Index Glasses for LEDs

V. ASEEV, Y. TUZOVA, Y. NEKRASOVA, N. NIKONOROV, E. KOLOBKOVA, Y. FEDOROV, ITMO University, St. Petersburg, Russia

D-3:L04 Ln(III)-Doped ZrO₂ Nanoparticles through Hierarchical Multilayer Growth Strategy for White Light Emission Applications

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D-3:L05 Enhancement of Thermal Behavior of BaMgAl₁₀O₁₇:Eu²⁺ Blue Phosphors Using a Microwave Assisted Combustion Synthesis Process

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D-3:L06 The Dependence of Luminous Efficacies (LE) and Color Rendering Indices (CRI) of Simulated Warm-white pLEDs on the Applied Red Emitting Phosphor

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D-3:L07 Optical Properties of Nanocrystalline ZrO₂:Mn Thin Films Prepared by the Sol-gel Dip Coating Methods

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D-3:L08 Luminescent Glasses and Glass Ceramics for White Light Emitting Diodes

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D-3:L09 From Red Band to Red Line Emitting Materials for Solid State Light Sources

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D-3:L10 High Efficient Phosphor Based on Ion-exchanged Sodium-zinc-aluminosilicate Glasses

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D-3:L11 Luminescent Properties of Silver Molecular Clusters and Nanoparticles in Fluorine, Chlorine and Bromine Photo-thermorefractive Glasses

N. NIKONOROV, V. DUBROVIN, A. IGNATIEV, D. IGNATIEV, D. KLUKIN, A. SIDOROV, ITMO University, St. Petersburg, Russia

D-3:L12 In Situ Formation and Photo Patterning of Emissive Quantum Dots

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D-3:IL13 Ultrafast Emission Processes in 2D Colloidal Nanosheets
J.Q. GRIM, Nanocrystal Photonics Lab., Istituto Italiano di Tecnologia, Genova, Italy

D-3:L14 Plasmonic Enhanced Rare Earth Doping Quantum Cutting Phosphor for Si Solar Cells
DONG XIAO, TALIB HUSSAIN, HUIQI YE, LIANG TANG, Nanjing Institute of Astronomical Optics & Technology, Nanjing, Jiangsu, P.R. China

Session D-4

Advances in Scintillator Development

D-4:IL01 Advances in Scintillation Physics Toward Development of New and Improved Scintillators
G. BIZARRI, Lawrence Berkeley National Laboratory, Berkeley, CA, USA

D-4:IL02 Modelling Energy Deposition in Nanoscintillators to Predict the Efficiency of the X-ray-Induced Photodynamic Effect
 A.-L. BULIN¹, A. VASIL'EV², A. BELSKY¹, D. AMANS¹, G. LEDOUX¹, **C. DUJARDIN**¹, ¹Institut Lumière Matière, UMR5306, Université Claude Bernard Lyon1-CNRS, France; ²Skobel'syn Institute of Nuclear Physics, Lomonosov Moscow State University, Moscow

D-4:IL03 Recent Progress of Transparent Ceramic Scintillators
TAKAYUKI YANAGIDA, Nara Institute of Science and Technology, Takayama, Ikoma, Nara, Japan

D-4:L04 Influence of Raw Materials on Luminescent Properties of SiO₂:Ce Glasses
E. TRUSOVA¹, A. VEDDA², M. FASOLI², M. KORJIK³, E. TRETAK⁴, ¹Belarusian State Technological University, Minsk, Belarus; ²Department of Materials Science, University of Milano-Bicocca, Milano, Italy; ³Research Institution of Nuclear Problems of the Belarusian State University, Minsk, Belarus; ⁴Research Institute for Physical Chemical Problems of the Belarusian State University, Minsk, Belarus

Session D-5

Upconversion Materials

D-5:IL01 Transparent Glass-ceramics Produced by Melting and Sol-gel Crystallisation Mechanisms and Optical and Photonic Activity
 G. GORNI¹, J.J. VELÁZQUEZ¹, R. BALDA², J. FERNÁNDEZ², Y. CASTRO¹, M.J. PASCUAL¹, **A. DURAN**¹, ¹Instituto de Cerámica y Vidrio (CSIC), Madrid, Spain; ²Dep. Física Aplicada I, Escuela Superior de Ingenieros, Bilbao, Spain

D-5:IL02 Plasmon Enhanced Luminescence Upconversion
WON PARK, University of Colorado Boulder, Boulder, CO, USA

D-5:L03 Counterintuitive Optimization of Upconverting Nanocrystals for Single Particle Imaging
B.E. COHEN, E. CHAN, D. GARGAS, P.J. SCHUCK, The Molecular Foundry, Lawrence Berkeley National Laboratory, Berkeley, CA, USA

D-5:L04 Synthesis and Characterization of Bright Up-conversion Phosphor YTa₇O₁₉
SAKAYA TAMURA, K. TOMITA, Tokai University, Kanagawa, Japan; K. KATAGIRI, Hiroshima University, Hiroshima, Japan; M. KOBAYASHI, M. KAKIHANA, Tohoku University, Miyagi, Japan

Session D-6

Optical Fibers; Sensing and Imaging

D-6:IL01 Luminescent Optical Fibers
D. DOROSZ, J. ZMOJDA, M. KOCHNOWICZ, P. MILUSKI, Białystok University of Technology, Białystok, Poland; J. PISARSKA, W. PISARSKI, University of Silesia, Katowice, Poland; M. FERRARI, IFN-CNR CSMFO Lab. & FBK CMM, Povo, Trento, Italy; G.C. RIGHINI, IFAC-CNR, Sesto Fiorentino, Italy

D-6:IL02 Performances and Applications of Rare-earth Doped Silica-based Scintillating Fibers
A. VEDDA, Department of Materials Science, University of Milano-Bicocca, Milano Italy

D-6:IL03 Versatile Lithium Fluoride Luminescent Detectors for High Resolution Imaging Applications from Extreme-ultraviolet to Soft and Hard X-rays
F. BONFIGLI, R.M. MONTEREALI, M.A. VINCENTI, ENEA C.R. Frascati, Photonic Micro and Nanostructures Laboratory, FSN-TECFIS-MNF, Frascati (Rome), Italy; E. NICHELATTI, ENEA C.R. Casaccia, Photonic Micro and Nanostructures Laboratory, FSN-TECFIS-MNF, S. Maria di Galeria (Rome), Italy

D-6:L05 Preparation and Investigation of Pr(3+)-doped Ge-As-Se-Ga(In) Glass Fibers with Broadband Mid-infrared Emission
E.V. KARAKSINA, V.S. SHIRYAEV, M.F. CHURBANOV, G.E. SNOBATIN, T.V. KOTEREVA, Institute of Chemistry of High-Purity Substances of RAS, Nizhny Novgorod, Russia

D-6:L06 Phosphors with Irreversible Phase Transitions for Thermal Sensor Applications
 G. SALEK, A. DEMOURGUES, A. GARCIA, V. JUBERA, **M. GAUDON**, ICMCB-CNRS 9048, Pessac, France

D-6:L07 Gas Effects on the Electrical and Photoluminescence Properties of Individual ZnO Nanowire
F. RIGONI, C. BARATTO, M. DONARELLI, A. PONZONI, E. COMINI, G. SBERVEGLIERI, G. FAGLIA, Sensor Lab, Department of Information Engineering, University of Brescia & CNR-INO, Brescia, Italy

Session D-7

New Synthesis and Processing Methods

D-7:IL01 Activator-doped Amorphous Materials for Luminescent Application
HIROKAZU MASAI, Institute for Chemical Research, Kyoto University, Uji, Kyoto, Japan

D-7:L02 Microwave Synthesis and Structural Investigation of Nano-Interlanthanide Oxides
 J.C. SOARES¹, K.P. FÉLIX SIQUEIRA¹, R.L. MOREIRA², **A. DIAS**¹, ¹Department of Chemistry, Universidade Federal de Ouro Preto, ICEB, Ouro Preto-MG, Brazil; ²Department of Physics, Universidade Federal de Minas Gerais, Belo Horizonte-MG, Brazil

D-7:L03 Silicon Oxycarbides with Transparency and Photoluminescence
MASAKI NARISAWA, H. INOUE, Graduate School of Engineering, Osaka Prefecture University, Sakai, Japan; F. FUNABIKI, Material Research Center of Elemental Strategy, Tokyo Institute of Technology, Yokohama, Japan; T. KAWAI, Graduate School of Science, Osaka Prefecture University, Sakai, Japan; H. HOSONO, Materials and Structure Laboratory, Tokyo Institute of Technology, Yokohama, Japan

D-7:IL04 Three Primary Color Emission Up-conversion Phosphors for 3D Volume Display
KOJI TOMITA, S. TAMURA, M. TANAKA, Tokai University, Kanagawa, Japan; Y. SATO, Okayama University of Science, Okayama, Japan; M. KOBAYASHI, M. KAKIHANA, Tohoku University, Miyagi, Japan

D-7:L05 Growth Kinetics of Colloidal CdSe Nanocrystals: Size and Size Distribution Control
E.A. SLEJKO, V. LUGHI, University of Trieste, Department of Engineering and Architecture, Trieste, Italy

D-7:IL06 Large-area Luminescent Phosphor Sheets for Lighting and Display Applications
H. MENKARA, PhosphorTech, Kennesaw, GA, USA

D-7:IL07 Review of Phosphor Identification and Synthesis Methods
J. MCKITTRICK¹, JUNGMIN HA², ZHENBIN WANG³, G.A. HIRATA⁴, O.A. GRAEVE¹, SHYUE PING ONG³, ¹Dept. of Mechanical and Aerospace Engineering and Materials Science and Engineering Program, University of California, La Jolla, CA, USA; ²Materials Science and Engineering Program, University of California, La Jolla, CA, USA; ³Dept. Of Nanoengineering and Materials Science and Engineering Program, University of California, La Jolla, CA, USA; ⁴Center for Nanoscience and Nanotechnology, Ensenada, B.C. México

D-7:L08 Fabricating Glasses with High Refractive Index and Strong Upconversion Luminescence using Containerless Processing
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D-7:L09 Synthesis of Ce:YAG Nanoparticles via the Formation of Urea Complexes
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Session D-8

Advances in Characterization Techniques; Light Management for Active Applications

D-8:IL01 Energy Transfer Probing of Nd³⁺ Doped Fluorescent Nanoparticles as an Agent for Near IR Bioimaging

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D-8:IL02 Autocorrelation Analysis for the Unbiased Determination of Power-Law Exponents in Single-Quantum-Dot Blinking

J. HOUEL, G. LEDOUX, D. AMANS, A. AUBRET, C. DUJARDIN, F. KULZER, Institut Lumière-Matière, CNRS UMR5306, Université Lyon 1, Université de Lyon, Villeurbanne CEDEX, France; Q.T. DOAN, T. CAJFINGER, A. DOMINJON, S. FERRIOL, R. BARBIER, Institut de Physique Nucléaire de Lyon, CNRS UMR5822, Université Lyon 1, Université de Lyon, Villeurbanne Cedex, France; M. NASIŁOWSKI, E. LHUILLIER, B. DUBERTRET, ESPCI ParisTech, PSL Research University, CNRS, Sorbonnes Université, UPMC Paris VI, Paris, France

D-8:IL03 Simultaneous Vibrational and Optical Spectroscopy for the Study of the Local Structure and Optical Properties of Luminescent Ions in Phosphors

M. KARLSSON, Chalmers University of Technology, Goteborg, Sweden

D-8:IL04 Photon Management with Luminescence Structures

S. NORMANI, M. SALHI, A. BRAUD, J.L. DOUALAN, R. MONCORGÉ, G. BRASSE, P. CAMY, CIMAP, Caen, France

D-8:IL05 Synthesis and Luminescence Properties of Ce doped LiCaPO₄ Phosphor for Radiation Dosimetry

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Session D-9

Methods to Integrate Luminescent Materials in a Device

D-9:IL01 Electrophoretic Deposition of Phosphors for Solid-state Lighting

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D-9:IL03 Temperature Sensing via Downconversion Luminescence of Lanthanide Doped Metal Oxides

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Session D-10

Medical Applications and Bioimaging

D-10:IL02 Design, Functionalization and Use of Persistent Luminescence Nanocrystals

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D-10:IL03 Inorganic Fluorescent Materials for Biophotonics in the Second Biological Window

KOHEI SOGA, Department of Materials Science and Technology, Tokyo University of Science, Tokyo, Japan Imaging Frontier Center, Tokyo University of Science, Tokyo, Japan

D-10:IL04 Photoluminescent Color Center-based Lithium Fluoride Radiation Detectors for Proton Beam Diagnostics

M. PICCININI, A. AMPOLLINI, L. PICARDI, C. RONSIVALLE, M. VADRUCCI, F. BONFIGLI, S. LIBERA, E. NICHELATTI, M.A. VINCENTI, R.M. MONTEREALI, ENEA, C.R. Frascati, FSN-TECFIS, Frascati (RM), Italy

Poster Presentations

D:P01 FRET between Inorganic Luminescent Quantum Dots and New Novel Organic Fluorescent Derivative

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D:P02 Application of Trimethoxypropylsilane-modified Silicon Nanophosphors as a Spectral Converter on Silicon Solar Cells

JOON-SUH PARK, IL KI HAN, YOUNG I. JHON, YOUNG MIN JHON, **WOON JO CHO**, Korea Institute of Science and Technology, Seoul, Republic of Korea; SOO JIN LEE, Department of Nuclear Medicine, National Cancer Center, Goyang-si Gyeonggi-do, Republic of Korea

D:P03 Luminescent Probing of the Temperature Influence on Plasmonic Field of Metal Nanoparticles in Layered C60/Au System

O.A. YESHCHENKO, I.S. BONDARCHUK, V.V. KOZACHENKO, M.YU. LOSYTSKYI, Physics Department, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

D:P04 Optically Transparent Ceramics and Phase Relations in the La₂O₃-Y₂O₃-Ln₂O₃ Systems

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D:P05 Surface Modification of Synthesized Zirconia by Attachment of Silane Coupling Agent for making Transparency Films with High Refractive Index

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D:P06 Effect of Process Parameters on Luminescent Properties of Eu, Tb, Tm Codoped CaMoO₄ Thin Films

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D:P07 Study of Optical Band Gap and Fluorescence Decay Time in BaMg₂Al₆Si₉O₃₀ : Ce³⁺ / Dy³⁺ Nanophosphor

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D:P08 Luminescent Fluorine Phosphate Glasses Doped with CdS CdSe, PbSe and PbS Molecular Clusters and Quantum Dots for Lighting and Solar Cells Converters

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D:P09 Luminescence Properties of Red Emitting Phosphor Ba₂ZnS₃:xMn²⁺ Prepared with Novel Modified Wet-chemical Synthesis Method

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D:P10 Morphological and Luminescent Studies on Novel Lead Calcium Diborate Doped with Tb³⁺

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D:P11 Synthesis of CexLu_{3-x}MgAl₃SiO₁₂ Yellow Phosphors and their Optical Properties

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D:P12 Influence of Pluronic P123 in modifying the Morphological and Optical Properties of PbS Nanoparticles

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D:P13 Photoluminescence Study of LaPO₄:Ce³⁺ and LaPO₄:Ce³⁺, RE (RE = Nd³⁺ & Yb³⁺) Phosphors

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D:P14 Combinatorial Search of Y(P, V, Nb)O₄:Bi³⁺, Dy³⁺ for White-light Lamp Phosphor

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D:P15 Preparation and Photoluminescence Property of Eu Doped YVO₄ Nanofibers by Electrospinning

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D:P16 Spectral Characteristics of the Nanophosphors Derived on Sr₂Gd₈(SiO₄)₆O₂: Eu Polycrystals

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D:P17 Crystallinity and Photoluminescence Improvement of YAG:Ce Phosphor Ceramics by Solid State Reaction with Silica

YUNG-TANG NIEN, National Formosa University, Yunlin County, Taiwan

D:P18 White Light Generation in Single-phase Tungstate Based Phosphors

S. MOORTHY BABU, D. BALAJI, K. KAVI RASU, Crystal Growth Centre, Anna University, Chennai, India

D:P19 Study in Optical Property Evaluation of Individual Multi-shell Quantum Dots by TEM-EELS

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D:P20 Influence of Sr²⁺ Content on Luminescence Characteristics of Pb²⁺ in (BaSr)₂Mg(BO₃)₂

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D:P21 Crystal Orientation and Grains Morphology in Polycrystalline YAP Ceramics

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D:P22 SiO₂:Eu Prepared by Spark Plasma Sintering for Radiation Measurements

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D:P24 Quantum Dot/Matrix Nanostructures for Upconversion Layers: A Fully Colloidal Synthesis

L. COZZARINI, E.A. SLEJKO, **V. LUGHI**, University of Trieste, Department of Engineering and Architecture, Trieste, Italy

D:P25 A click-derived Dual Organic-inorganic Hybrid Optical Sensor Based on SBA-15 for Selectively Recognition of Zn²⁺ and CN⁻ in Water

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D:P26 Solid State Synthesis of SrSi₂O₂N₂:Eu²⁺ Powder in Flowing Nitrogen

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D:P27 Spark Plasma Sintering and Optical Properties of ZnS Nanoparticles Prepared by Hydrothermal Synthesis

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D:P28 Photoluminescent and Photocatalytic Properties of CaIn₂O₄:Eu Nanocrystals

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D:P29 Encapsulation of Oxynitride Phosphors into Sintered Na₂O-ZnO-B₂O₃-P₂O₅ Glass Body

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D:P30 Combustion Synthesis and VUV Investigation of MAI₂O₁₉: Eu (M = Ca, Sr, Ba) Phosphors

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D:P31 Synthesis and Characterization of Lanthanide Metal-organic Frameworks with Perfluorinated Linkers

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D:P32 Synthesis and Photoluminescent Properties of TiO₂ and TiO₂:Ag Nanoparticles

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D:P33 Synthesis and Characterization of PLD Glass Phosphate Films doped with CdS Powder

M. ELISA, I.C. VASILIU, I.D. FERARU, R. IORDANESCU, National Institute of R&D for Optoelectronics INOE 2000, Magurele, Jud. Ilfov, Romania; G. EPURESU, M. FILIPESCU, National Institute for Laser, Plasma and Radiation Physics, Magurele, Jud. Ilfov, Romania; C. PLAPCIANU, C. BARTHA, M. ENCULESCU, National Institute of Materials Physics, Magurele, Jud. Ilfov, Romania; S. PERETZ, Institute of Physical Chemistry "I. Murgulescu", Romanian Academy, Bucharest, Romania

D:P34 Development of Technology for Production of High Purity Rare Earth-ion Doped Chalcogenide Glasses for Active Fiber Optics

V.S. SHIRYAEV, E.V. KARAKSINA, I.V. SKRIPACHEV, A.P. VELMUZHOV, Institute of Chemistry of High-Purity Substances of RAS, Nizhny Novgorod, Russia

D:P35 Fabrication of Y₃Al₅O₁₂:Ce³⁺ Phosphor in Glass for High-power Remote Phosphor LED

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D:P37 Synthesis and Photoluminescence Characteristics of the Gd³⁺ doped SrB₄O₇ Phosphor

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D:P38 Study on Thermal Performance of Cool Paints mixed with Modified Mica

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D:P39 An Automated Approach to Identify Semiconductor Properties

P.A. NARDI, Universidade Tecnológica Federal do Paraná, Departamento Acadêmico de Computação (DACOM), Cornélio Procopio, PR, Brazil; F.A. AOUADA, Universidade Estadual Paulista, Departamento de Físico-Química (DFQ), Ilha Solteira, SP, Brazil

D:P40 Thermoluminescence of LaAlO₃: Pr³⁺ Beta Irradiated

M.A. DE LEON, S. DEL SOL, R. GARCÍA, T. RIVERA, CICATA-Legaria del IPN, México, D.F. México; A. MORALES, A. BARRERA, J. ZARATE, IIMM-UMSNH, Morelia, Mich., México; E. YUKIHARA, Oklahoma State University, Stillwater, OK, USA

D:P41 Synthesis and Photoluminescence of LaAlO₃:Dy³⁺ Polycrystalline

T. RIVERA, M.A. DE LEÓN, R. ALVAREZ, CICATA-Legaria del IPN, México, D.F. México; A. MORALES, A. BARRERA, J. ZARATE, IIMM-UMSNH, Morelia, Mich., México; C. FALCONY, CINVESTAV-IPN, México D.F., México

D:P42 YAGG:Cr³⁺ as NIR Persistent Phosphor for In Vivo Imaging

O.Q. DE CLERCQ, J.H. BOUMAN, P.F. SMET, D. POELMAN, Lumilab, Ghent University, Ghent, Belgium; K. BRAECKMANS, Bio-Photonic Imaging Group, Ghent University, Ghent, Belgium

SYMPOSIUM E
PROGRESS IN METAMATERIALS
RESEARCH

Oral Presentations

Session E-1

Physics and Modelling of Metamaterials Systems

E-1:IL01 Some Perspectives in Non-Hermitian Metamaterials

V. GALDI, University of Sannio, Benevento, Italy

E-1:IL02 Metamaterial Properties of Magnetic Nanostructures

R. ZIVIERI, Department of Physics and Earth Sciences, University of Ferrara, Ferrara, Italy

E-1:IL03 Validity of Effective Medium Approximation in Deeply Subwavelength All-dielectric Multilayers

A.V. LAVRINENKO, S.V. ZHUKOVSKY, A. ANDRYIEUSKI, O. TAKAYAMA, E. SHKONDIN, R. MALUREANU, F. JENSEN, Technical University of Denmark, Kgs. Lyngby, Denmark

E-1:IL04 Metamaterial Properties of a 2D Magnonic Crystal

P. MALAGO, Dipartimento di Fisica e Scienze della Terra, Università di Ferrara, Ferrara, Italy

Session E-2

Microwave and THz Metamaterials

E-2:IL01 Digital Metamaterials for Terahertz Single Pixel Imaging

W.J. PADILLA, Duke University, Department of Electrical and Computer Engineering, Durham, NC, USA

E-2:IL03 Enhanced Chirality in the Near-field of Electromagnetic Metamaterials

L.E. BARR, A.P. HIBBINS, E. HENDRY, XM2 Centre for Doctoral Training in Metamaterials, University of Exeter, Exeter, Devon, UK

E-2:IL04 RF Plasmonic State and Negative Permittivity Properties of Random Percolative Composites

RUNHUA FAN, College of Ocean Science and Engineering, Shanghai Maritime University, Shanghai, P.R.China; and School of Material Science and Engineering, Shandong University, Jinan, P.R. China

E-2:IL05 Mode Index Tunable Moiré Pattern Metasurfaces

R.C. MITCHELL-THOMAS, J.R. SAMBLES, A.P. HIBBINS, Electromagnetic and Acoustic Materials Group, Department of Physics and Astronomy, University of Exeter, Stocker Road, Exeter, UK

E-2:IL06 THz and Far-IR Control with Chiral and Bianisotropic Metamaterials

M. KAFESAKI, A. XOMALIS, E.N. ECONOMOU, Foundation for Research and Technology Hellas (FORTH) and University of Crete, Heraklion, Greece; G. KENANAKIS, M. FARSARI, G. KONSTANTINIDIS, FORTH, Heraklion, Greece; C. M. SOUKOULIS, FORTH, Greece, and Iowa State University, Iowa, USA

E-2:IL08 Metasurfaces with Electric, Magnetic and Magneto-electric Properties

A. GRBIC, B. TIERNEY, C. PFEIFFER, Dept. of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI, USA

E-2:IL09 Resonant Transmission through Thin Metal Layers using Two Dimensional Arrays

M. CAMACHO-AGUILAR, A.P. HIBBINS, J.R. SAMBLES, University of Exeter, Exeter, UK

E-2:IL10 Exploring the Interactions in Systems of Densely Packed Split Ring Resonators

S. SEETHARAMAN, I.R. HOOPER, W.L. BARNES, College of Engineering, Mathematics and Physical Sciences, University of Exeter, Exeter, Devon, UK

Session E-3

All-dielectric Metamaterials and Metasurfaces

E-3:IL01 High Quality Factor Silicon-based Metasurfaces

J. VALENTINE, YUANMU YANG, Vanderbilt University, Nashville, TN, USA; A. BOULESBAA, I.I. KRAVCHENKO, D.P. BRIGGS, A. PURETZKY, D. GEOHEGAN, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN, USA

E-3:IL02 Dielectric Nanoantennas and Metasurfaces based on Si Nanoparticles

A.I. KUZNETSOV, Data Storage Institute, A*STAR, Innovis, Singapore

E-3:IL03 Resonant Dielectric Huygens' Metasurfaces

I. STAUDE, Institute of Applied Physics, Abbe Center of Photonics, Friedrich-Schiller-University Jena, Jena, Germany; K.E. CHONG, M. DECKER, D.N. NESHEV, Nonlinear Physics Centre, Research School of Physics and Engineering, Australian National University, Canberra, ACT, Australia; I. BRENER, Center for Integrated Nanotechnologies, Sandia National Laboratories, Albuquerque, NM, USA; YU. S. KIVSHAR, Nonlinear Physics Centre, Research School of Physics and Engineering, Australian National University, Canberra, ACT, Australia

Session E-4

Nonlinear, Tunable and Active Metamaterials

E-4:IL01 Broadband Terahertz Generation from Metamaterials and Optical Metamaterials Resonances with High Quality Factor

C.M. SOUKOULIS, Ames Laboratory, and Dept. of Physics, Iowa State University, Ames, Iowa, USA Institute of Electronic Structure and Laser, FORTH, Heraklion, Crete, Greece

E-4:IL02 Optimizing the Second Harmonic Chiroptical Effects in Plasmonic Nanostructures

V.K. VALEV, Department of Physics, University of Bath, Bath, UK

E-4:IL03 Thermally Tunable Self-assembled Metamaterials

C. ROCKSTUHL, Institute of Theoretical Solid State Physics, Institute of Nanotechnology, Karlsruhe Institute of Technology, Karlsruhe, Germany; M. FRUHNERT, Institute of Theoretical Solid State Physics, Karlsruhe Institute of Technology, Karlsruhe, Germany; W. LEWANDOWSKI, J. MIECZKOWSKI, E. GÓRECKA, Faculty of Chemistry, University of Warsaw, Warsaw, Poland

E-4:IL04 Tunable Metamaterials: Conceptual Overview and Recent Highlights

M. LAPINE, University of Technology Sydney, NSW, Australia

E-4:IL05 Enhanced Optical Nonlinearities from Metasurfaces Coupled to Semiconductors

I. BRENER, Sandia National Labs and Center for Integrated Nanotechnologies, Albuquerque, NM, USA

E-4:IL06 Nonlinear and Tunable Metamaterials

MINGKAI LIU¹, KEBIN FAN², W. PADILLA², D.A. POWELL¹, XIN ZHANG³, I.V. SHADRIVOV¹, ¹Nonlinear Physics Centre, Research School of Physics and Engineering, Australian National University, Canberra ACT, Australia; ²Duke University Department of Electrical & Computer Engineering, Durham NC, USA; ³Department of Mechanical Engineering, Boston University, Boston, MA, USA

E-4:IL07 Alternative Materials and Solutions for Next Generation Plasmonic Technology

M. FERRERA, School of Electrical and Computer Engineering and Birk Nanotechnology Center, Purdue University, West Lafayette, IN, USA, & School of Engineering and Physical Sciences, Heriot-Watt University, Edinburgh, Scotland, UK

E-4:IL08 Tree-wave Mixing Metamirror: Extraordinary Transients

VV. SLABKO, V.A. TKACHENKO, Siberian Federal University, Krasnoyarsk, Russia; S.A. MYSLIVETS, Institute of Physics of Siberian Branch of the Russian Academy of Sciences, Krasnoyarsk, Russia; **A.K. POPOV**, Birk Nanotechnology Center, Purdue University, IN, USA

Session E-5

Applications of Metamaterials and Metadevices

E-5:IL01 Optomechanical Metamaterials

E. VERHAGEN, FOM Institute AMOLF, Amsterdam, The Netherlands

E-5:IL02 Metamaterial based Nanobiosensors and Nanophotodetectors

E. OZBAY, Nanotechnology Research Center, Bilkent University, Bilkent, Ankara, Turkey

E-5:IL03 Metamaterials as a Platform to study Localised and Propagating Toroidal Excitations

N.I. ZHELUDEV, V.A. FEDOTOV, N. PAPASIMAKIS, V. SAVINOV, T.A. RAYBOULD, University of Southampton, Southampton, UK

E-5:IL04 A Novel Metamaterial-based Sensor for Nonlinear Elastic Detection and Localization

M. MINIACI, A. KRUSHYNSKA, F. BOSIA, Department of Physics, University of Torino, Torino, Italy; A. GLIOZZI, M. SCALERANDI, Department of Applied Science and Technology, Politecnico di Torino, Torino, Italy; B. MORVAN, LOMC UMR CNRS 6294, Université du Havre, Le Havre, France; N.M. PUGNO, Laboratory of Bio-Inspired & Graphene Nanomechanics, Department of Civil, Environmental and Mechanical Engineering - University of Trento, Trento, Italy

E-5:IL06 High Temperature Stability of Oxide Photonic Structures

R. JANSSEN¹, R. PASQUARELLI¹, P.N. DYACHENKO², A. PETROV², M. EICH², ¹Institute of Advanced Ceramics and ²Institute of Optical and Electronic Materials, Technische Universität Hamburg-Harburg, Germany

Session E-6

Antenna, Nanoantenna and Waveguide Applications, Transformation Optics, Superlenses

E-6:IL01 Plasmonic Waveguides: Challenges and Perspectives

S. BOZHEVOLNYI, Department of Technology and Innovation, University of Southern Denmark, Odense M, Denmark

E-6:IL02 Transformation Optical Applications with Pseudo-magnetic Field

JENSEN LI, University of Birmingham, School of Physics and Astronomy, Birmingham, UK

E-6:IL03 Imaging and Spectroscopy of Plasmonic and Phonon Polariton Modes with the Photothermal Induced Resonance (PTIR) Technique

A. CENTRONE, National Institute of Standard and Technology, Gaithersburg, MD, USA

E-6:IL04 Optical Antennas

M. AGIO, Laboratory of Nano-Optics, University of Siegen, Siegen, Germany

E-6:IL05 Integrated Hyperlens in the Visible Spectral Range

N.M. LITCHINITSER, JINGBO SUN, M.I. SHALAEV, University at Buffalo, The State University of New York, Buffalo, NY, USA

E-6:IL06 Nanoantenna-based Stokes Polarimeter on a Silicon Chip

A. ESPINOSA-SORIA, Nanophotonics Technology Center, Universitat Politècnica de València, Valencia, Spain; F.J. RODRÍGUEZ-FORTUÑO, King's College London, London, UK; A. GRIOL, A. MARTÍNEZ, Nanophotonics Technology Center, Universitat Politècnica de València, Valencia, Spain

Session E-7

Acoustic and Mechanical Metamaterials

E-7:IL01 Acoustic and Elastic Metamaterials for Earthquake Cloaking

A. DIATTA, Y. ACHAOUÏ, B. UNGUREANU, S. BRULE, S. ENOCH, S. GUENNEAU, Aix-Marseille Université, CNRS, Centrale Marseille, Institut Fresnel, Marseille, France

E-7:IL02 Direct Observation of Ultrasonic Cut-off Frequency for Holes with Pressure-release Walls

T. GRAHAM, Department of Physics and Astronomy, University of Exeter, Exeter, UK

E-7:IL03 Nonlinear Vibration Damping in Mechanical/Electrical Periodic Structures Featuring Switched Piezoelectric Elements

BIN BAO, M. LALLART, D. GUYOMAR, Laboratoire de Génie Électrique et Ferroélectricité, INSA de Lyon, Villeurbanne Cedex, France

E-7:IL04 Mechanical Metamaterials with Hierarchical Structure

A. KRUSHYNSKA, M. MINIACI, F. BOSIA, Department of Physics, University of Torino, Torino, Italy; B. MORVAN, LOMC UMR CNRS 6294, Université du Havre, Le Havre, France; N.M. PUGNO, Laboratory of Bio-Inspired & Graphene Nanomechanics, Department of Civil, Environmental and Mechanical Engineering - University of Trento, Trento, Italy

E-7:IL05 Parity-time Synthetic Phononic Media

J. CHRISTENSEN, M. WILLATZEN, DTU, Kgs. Lyngby, Denmark

E-7:IL06 Boundary Layer Effects on Acoustic Transmission Through Narrow Slit-cavities

G.P. WARD, R.K. LOVELOCK, A.R.J. MURRAY, A.P. HIBBINS, J.R. SAMBLES, J.D. SMITH, Exeter University, Exeter, Devon, UK

E-7:L07 Removable Tsunami Wall made of Meta-lens Arrays

SANG-HOON KIM, Division of Marine Engineering, Mokpo National Maritime University, Rep. of Korea

E-7:L08 Effective Parameter Identification and Controller Design for an Active Mechanical Metamaterial

S.A. POPE, Department of Automatic Control and Systems Engineering, The University of Sheffield, Sheffield, UK

E-7:L09 Out-of-plane and In-plane Wave Band Gaps in a Metamaterial Rectangular Plate

E.J.P. MIRANDA Jr., J.M.C. SANTOS, University of Campinas (Unicamp), Campinas, SP, Brazil

Session E-8

Novel Concepts and Applications of Metasurfaces and Metadevices

E-8:IL01 Photonic Topological Insulators: Guiding Electromagnetic Waves Around Sharp Corners

TZUHSUAN MA, KUEIFU LAI, G. SHVETS, University of Texas at Austin, Austin, TX, USA

E-8:IL02 Photonic Spin Hall Effect with nearly 100% Efficiency based on Gradient Metasurface

SHULIN SUN¹, WEIJIE LUO², SHIYI XIAO², QIONG HE^{2,3}, LEI ZHOU^{2,3}, ¹Shanghai Engineering Research Center of Ultra-Precision Optical Manufacturing, Green Photonics and Department of Optical Science and Engineering, Fudan University, Shanghai, China; ²State Key Lab. of Surface Physics and Key Laboratory of Micro and Nano Photonic Structures (Ministry of Education), Fudan University, Shanghai, China; ³Collaborative Innovation Center of Advanced Microstructures, Fudan University, Shanghai, China

E-8:IL03 Topological Notions and Pseudo-spin in Electromagnetic Waves

W.-J. CHEN¹, M. XIAO¹, Z.-Q. ZHANG¹, J.-W. DONG², C.T. CHAN¹, ¹Department of Physics and the Institute for Advanced Study, The Hong Kong University of Science and Technology, Hong Kong, China; ²State Key Laboratory of Optoelectronic Materials and Technologies and School of Physics and Engineering, Sun Yat-Sen University, Guangzhou, China

E-8:L04 Metastructures for Passive Broadband Vibration Suppression and Energy Harvesting

J.D. HOBECK, D.J. INMAN, University of Michigan, Department of Aerospace Engineering, Ann Arbor, MI, USA

E-8:L05 Application of Metamaterial Nanoengineering for Increase of Superconducting Critical Temperature

V.N. SMOLYANINOVA¹, K. ZANDER¹, T. GRESOCK¹, C. JENSEN¹, J.C. PRESTIGIACOMO², M.S. OSOFSKY², I.I. SMOLYANINOV³, ¹Department of Physics Astronomy and Geosciences, Towson University, Towson, MD, USA; ²Naval Research Laboratory, Washington, DC, USA; ³Department of Electrical and Computer Engineering, University of Maryland, College Park, MD, USA

Poster Presentations

E:P01 A New Method to Fabricate Metamaterial Structures by Uniform Deposition of Metal or Alloy Nanofilms

HEESOO PARK, B. HALL, A. SIAHMAKOUN, Dept. of Physics & Optical Engineering, Rose-Hulman Institute of Technology, Terre Haute, IN, USA

E:P02 Group Velocity Anomaly Modes in Hybrid Bands in Photonic Crystals made of Ferroelectrics

M.W. TAKEDA¹, M. ARIKAWA¹, R. ARAKI¹, Y. NAKATA¹, F. MIYAMARU^{1,2}, ¹Department of Physics, Faculty of Science, Shinshu University, Matsumoto, Japan; ²Center for Energy and Environmental Science, Shinshu University, Nagano, Japan

E:P03 Microwave Surface Waves on Graphene-like Metasurfaces

Y.N. DAUTOVA, A.P. HIBBINS, J.R. SAMBLES, Department of Physics and Astronomy, University of Exeter, Stocker Road, Exeter, Devon, UK

E:P04 Running Metal Soap

KOYA HAYASHI, SUGURU MIYAHARA, GENTA SAKANE, Department of Chemistry Okayama University of Science, Okayama, Japan

SYMPOSIUM F

**GRAPHENE AND OTHER EMERGING
2D-LAYERED NANOMATERIALS:
SYNTHESIS, PROPERTIES AND
POTENTIAL APPLICATIONS**

Oral Presentations

Session F-1

General Physical and Chemical Properties

F-1:KL 2D Materials: Standards, Science, and Technology

A.H. CASTRO NETO, National University of Singapore, Singapore

F-1:L01 Optoelectronic Properties of Transition Metal Dichalcogenides

L. BALICAS, D. RHODES, National High Magnetic Field Lab, Florida State University, Tallahassee, FL, USA

F-1:IL02 Role of Edge Geometry and Chemistry in Electronic and Magnetic Structures of Nanographenes

TOSHIAKI ENOKI, Tokyo Institute of Technology, Tokyo, Japan

F-1:IL03 Raman Spectroscopy of Graphene-related Materials

C. CASIRAGHI, School of Chemistry, University of Manchester, UK

F-1:L04 Determining the Nature of the Gap in Semiconducting Graphene

M.S. OSOFSKY¹, **J. PRESTIGIACOMO^{1*}**, **A. NATH²**, **S.C. HERNANDEZ¹**, **V.D. WHEELER¹**, **S. WALTON¹**, **D.K. GASKILL¹**, ¹Naval Research Laboratory, Washington, DC, USA; ²George Mason University *NRC Postdoctoral Fellow

F-1:L05 Understanding the Structural Evolution of Graphene Heated with Electrical Current in Air

IN-SANG YANG, MINKYUNG CHOI, Ewha University, Korea; JANGYUP SON, JONGIN CHA, JONGILL HONG, Yonsei University, Korea; HEECHAE CHOI, SEUNGCHUL KIM, KWANG-RYEOL LEE, KIST, Korea; SANG JIN KIM, BYUNG HEE HONG, Seoul National University, Korea; SANPON VANTASIN, ICHIRO TANABE, YUKIHIRO OZAKI, Kwansai Gakuin University, Japan

F-1:L06 Super-low Friction Property of Si-doped Diamond-like Carbon by the Generation of Graphene Structure: Quantum Chemical Molecular Dynamics Simulations

M. KUBO, **S. BAI**, **M. NAKAMURA**, **Y. HIGUCHI**, **N. OZAWA**, Institute for Materials Research, Tohoku University, Sendai, Japan

F-1:IL07 Emission and Detection of THz Radiation in Double-graphene-layered van der Waals Heterostructures via Photon-assisted Plasmonic Resonant Tunneling

TAIICHI OTSUJI, Research Institute of Electrical Communication, Tohoku University, Sendai, Japan

F-1:L08 Graphene-boron Nitride 2D Heterosystems Functionalized with Hydrogen: Structure, Vibrations, Optical Response and Electron Band Engineering and Bonding

A.I. SHKREBTII, **B. WILK**, **Z.A. IBRAHIM**, **R. MINNINGS**, University of Ontario, Institute of Technology, Oshawa, ON, Canada; **I.M. KUPCHAK**, Institute of Semiconductor Physics, Academy of Sciences, Kiev, Ukraine; **R. ZAPATA-PENÁ**, **S.M. ANDERSON**, **B.S. MENDOZA**, Centro de Investigaciones en Óptica, León, Guanajuato, México

F-1:L09 Electronic Structures of Two-dimensional Materials: Inorganic to Organometallic Materials Recently Synthesized

FAZEL SHOJAEI, Department of Chemistry and Bioactive Material Sciences and Research Institute of Physics and Chemistry, Jeonbuk National University, South Korea; **HONG SEOK KANG**, Department of Nano and Advanced Materials, College of Engineering, Jeonju University, South Korea

F-1:L10 Expanding the Range of Applications of AlN through its Scalability at the 2D Limit

R.B. DOS SANTOS, **R. RIVELINO**, **F. DE BRITO MOTA**, Instituto de Física, Universidade Federal da Bahia, Salvador, Bahia, Brazil; **A. KAKANAKOVA-GEORGIEVA**, **G.K. GUEORGUIEV**, IFM, Linköping University, Linköping, Sweden

Session F-2

Novel Properties

F-2:KL Charge and Spin in Layered Materials and Topological Insulators

A. BANSIL, Physics Department, Northeastern University, Boston, MA, USA

F-2:IL01 New Materials for Van der Waals Heterostructures

R. GORBACHEV, School of Physics and Astronomy, University of Manchester, Manchester, UK

F-2:IL02 Ultrafast Dynamics of Spin-valley Coupled Polarization in Monolayer MoS₂

CHIH-WEI LUO, Department of Electrophysics, National Chiao Tung University, Hsinchu, Taiwan

F-2:IL03 Lateral Heterostructure Field Effect Transistors

G. FIORI, **G. IANNACCONE**, Dipartimento Ingegneria dell'Informazione, University of Pisa, Pisa, Italy

F-2:IL04 Spectral Response of 2D Materials based Photodiodes

M. LEMME, Graphene-based Nanotechnology, University of Siegen, Siegen, Germany

F-2:IL05 Ultrafast and Nonlinear Dynamics in 2D Materials and their Heterostructures

K.M. DANI, Femtosecond Spectroscopy Unit, Okinawa Institute of Science and Technology Graduate University, Onna-son, Okinawa, Japan

F-2:IL06 Quantum Confinement in Black Phosphorus through Strain-engineered Rippling

J. QUEREDA¹, **V. PARENTE²**, **P. SAN-JOSÉ³**, **N. AGRAÏT^{1,2,4}**, **G. RUBIO-BOLLINGER^{1,4}**, **F. GUINEA²**, **R. ROLDÁN^{2,3}**, **A. CASTELLANOS-GOMEZ²**, ¹Dpto. de Física de la Materia Condensada, Universidad Autónoma de Madrid, Madrid, Spain; ²Instituto Madrileño de Estudios Avanzados en Nanociencia (IMDEA-nanociencia), Campus de Cantoblanco, Madrid, Spain; ³Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain; ⁴Condensed Matter Physics Center (IFIMAC), Universidad Autónoma de Madrid, Madrid, Spain

F-2:L07 Dynamics and Morphology of Folds and Wrinkles in Graphene, h-BN and 2D Talc

H. CHACHAM, **A.B. ALENCAR**, **A.P.M. BARBOZA**, **C.K. OLIVEIRA**, **A.L. LIMA**, **R.J.C. BATISTA**, **A. BARROS DE OLIVEIRA**, **B.R.A. NEVES**, Department of Physics, Federal University of Minas Gerais, Belo Horizonte, MG, Brazil

Session F-3

Synthesis, Processing and Integration of Graphene and other 2D Layered Compounds

F-3:KL Defect Engineering in 2-Dimensional Materials: From Theory to Applications

M. TERRONES, Department of Physics, Department of Chemistry, Department of Materials Science and Engineering and Center for 2-Dimensional & Layered Materials, The Pennsylvania State University, University Park, PA, USA & Institute of Carbon Science and Technology, Shinshu University, Japan

F-3:IL02 Black-phosphorus, Graphene and 2D Binary Transition Metal Dichalcogenides for Device Applications

A. KAUL, University of Texas, El Paso, TX, USA

F-3:IL03 Taming Functional Complexity in Graphene based Materials Mastering the Supramolecular Approach

P. SAMORI, ISIS, Université de Strasbourg & CNRS, Strasbourg, France

F-3:IL04 2D Magnetic Materials based on Coordination Chemistry

S. MAÑAS-VALERO, **M. CLEMENTE-LEÓN**, **E. CORONADO**, ICMol, University of Valencia, Spain

F-3:L05 Epitaxial Growth of Large Area MoS₂ Few Layers by Sputtering Process

TAEKYUNG OH, **HYUNGSEOB MIN**, **HYUNSU JU**, **JEON-KOOK LEE**, Center of Opto-Electronic Materials and Devices, Korea Institute of Science and Technology, Seoul, Korea

F-3:L06 Rapid and Catalyst-free van der Waals Epitaxy of Graphene on Hexagonal Boron Nitride

N. MISHRA¹, **V. MISEIKIS¹**, **D. CONVERTINO¹**, **M. GEMMI¹**, **V. PIAZZA¹**, **C. COLETTI^{1,2}**, ¹Center for Nanotechnology Innovation @ NEST, Istituto Italiano di Tecnologia, Pisa, Italy; ²Graphene Labs, Istituto Italiano di Tecnologia, Genova, Italy

F-3:IL07 Direct Fabrication of Functionalized Graphenes and their Hybrids Inks via Submerged Liquid Plasma [SLP] and Electrochemical Exfoliation [ECE] under Ambient Conditions

M. YOSHIMURA, J. SENTHILNATHAN, K. SANJEEVARAO, Promotion Centre for Global Materials Research (PCGMR), Dept. of Material Science and Engineering, National Cheng Kung University, Tainan, Taiwan

F-3:IL08 Phase Engineering of Transition Metal Dichalcogenides for Optoelectronic Applications

A.D. MOHITE, Los Alamos National Laboratory, Los Alamos, NM, USA

F-3:IL09 How the Nanostructure of Layered Titanates Influences the Mechanical Properties

P. GONZALEZ², W. LETTE³, D.J. SCHIPPER³, J.E. TEN ELSHOF², ¹Materials innovation institute (M2i), Delft, the Netherlands; ²Inorganic Materials Science Group, MESA+ Institute for Nanotechnology, University of Twente, Enschede, The Netherlands; ³Faculty of Engineering Technology, University of Twente, Enschede, The Netherlands

F-3:L11 Lessons learned from Carbon Nanotube Growth can be applied to Graphene: 100% Reproducibility and Improved Graphene Quality by Preheating Precursor Gases using Thermal Chemical Vapor Deposition

G.D. NESSIM, Bar Ilan University, Department of Chemistry and Center for Nanotechnology and Advanced Materials, Ramat Gan, Israel

F-3:L12 One-pot Electrochemical Exfoliation and Functionalization of Graphene Sheets

D.B. OSSONON, **D. BELANGER**, Université du Québec à Montréal, Département de Chimie, Montréal, Canada

F-3:L13 Synthesis of Graphene Membranes: Effect of Substrate Surface Properties on Monolayer Graphene Transfer

F.M. KAFIAH, **Z. KHAN**, A. IBRAHIM, T. LAOUI, Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia; M. ATIEH, Qatar Environment and Energy Research Institute, HBKU, Qatar Foundation, Doha, Qatar

F-3:L14 Selective Modification of as-grown CVD Graphene on Cu by Oxygen Plasma for Flexible Electronics Applications

A.M. ALEXEEV, M.D. BARNES, V.K. NAGAREDDY, M.F. CRACIUN, C.D. WRIGHT, College of Engineering, Mathematics and Physical Sciences, University of Exeter, Exeter, UK

F-3:L15 Langmuir-Blodgett Films of 2D Oxide Nanosheets for Oriented and Epitaxial Growth of Functional Oxide Thin Films

J.E. TEN ELSHOF, **HUIYU YUAN**, M. NIJLAND, M. NGUYEN, G. RIJNDERS, G. KOSTER, MESA+ Institute for Nanotechnology, University of Twente, Enschede, the Netherlands

Session F-4

Synthesis and Processing of Composites

F-4:IL01 Graphene and New Monoatomic Materials: Using 2-dimensional Nanosheets in a 3-dimensional World

V. PALERMO, National Research Council of Italy, CNR-ISOF, Bologna, Italy

F-4:IL02 Fabrication Processes and Properties of Multi-functional Graphene and Carbon Nanotube Nanocomposites

SOON HYUNG HONG, Department of Materials Science and Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea

F-4:IL03 MXenes and MXene-based Composites for Energy Storage

M.R. LUKATSKAYA^{1,2}, MENGQIANG ZHAO, CHANG E. REN^{1,2}, M. GHIDIU, O. MASHTALIR^{1,2}, Y. DALL'AGNESE^{1,2,3,4}, P. SIMON^{3,4}, M.W. BARSOUM¹, **Y. GOGOTSI**^{1,2}, ¹Department of Materials Science and Engineering, Drexel University, Philadelphia, PA, USA; ²A.J. Drexel Nanotechnology Institute, Drexel University, Philadelphia, PA, USA; ³Université Paul Sabatier, CIRIMAT UMR CNRS 5085, Toulouse, France; ⁴Réseau sur le Stockage Electrochimique de l'Energie (RS2E), FR CNRS 3459, France

F-4:IL04 A Polymer Chemistry of Graphenes: Synthesis, Processing, Applications

K. MUELLEN, Max Planck Institute for Polymer Research, Mainz, Germany

F-4:IL05 Graphene Oxide Composite 3D Materials obtained by Self-assembly Process using Biological Macromolecules

R. IPPOLITI, M. ARDINI, L. OTTAVIANO, S. SANTUCCI, F. PERROZZI, G. FIORAVANTI, G. PANELLA, A.CIMINI, E. BENEDETTI, F. ANGELUCCI, University of L'Aquila, Italy; G. FABRIZI, University of Rome La Sapienza, Rome, Italy; V. MORANDI, L. ORTOLANI, M. CHRISTIAN, V. PALERMO, CNR, Bologna, Italy; L. PALOMBI, University of Salerno, Salerno, Italy

F-4:L06 Grain and Grain Boundaries Effects on Electrical Transport Properties of Cobalt Ferrite/Graphene Nanocomposites

S. SUPRIYA, S. KUMAR, **M. KAR**, Indian Institute of Technology Patna, Bihta, Patna, Bihar, India

F-4:L07 Synthesis of Graphene Sheets and Composite Nanoparticles based on them in Oil-in-aqua Emulsion

E.A. TRUSOVA¹, K.V. KOTSAREVA¹, A.N. KIRICHENKO², I.A. PEREZHOGIN², ¹Baikov Institute of Metallurgy and Materials Science, RAS, Moscow, Russia; ²Technological Institute for Superhard and Novel Carbon Materials, Troitsk, Moscow, Russia

F-4:L08 Facile Synthesis of MoO₃-graphene Composites for Supercapacitor Applications

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Session F-5

Novel Characterizations

F-5:KL Electronic and Optoelectronic Physics in the van der Waals Heterojunctions

PHILIP KIM, Department of Physics, Harvard University, Cambridge, MA, USA

F-5:IL01 Photoconductivity in 2D Layers of Transition Metal Dichalcogenides

S. TALAPATRA, Department of Physics, Southern Illinois University, Carbondale, IL, USA

F-5:L02 Quantitative Evaluation of Graphene and Graphene Oxide Thickness with Sub-monolayer Accuracy by Scanning Auger Microspectroscopy

M.J. VAHID DASTJERDI¹, **S.M. PIETRALUNGA**^{2,3}, G.M. VANACORE¹, L. POLLONI⁴, L.G. RIZZI⁴, R. SORDAN⁴, V. RUSSO⁵, M. ZANI¹, A. TAGLIAFERRI^{1,3}, ¹Politecnico di Milano, Dip. Fisica, Milan, Italy; ²CNR, Istituto di Fotonica e nanotecnologie, Milan, Italy; ³Center for Nano Science and Technology @Polimi, Istituto Italiano di Tecnologia, Milan, Italy; ⁴L-NESS, Department of Physics, Politecnico di Milano, Como, Italy; ⁵Politecnico di Milano, Dip. Energia, Milan, Italy

F-5:L03 Behaviour of Elastic Modulus of Nano Filled Polymer Composite under Dynamic Mechanical and Nano-hardness Analysis

V.K. SRIVASTAVA, Department of Mechanical Engineering, Indian Institute of Technology (BHU), Varanasi, India

Session F-6

Application of Graphene and other 2D Layered Materials and Composites

F-6:KL Origin and Impact of Noise in Multifunctional 2D Electronics

A. GHOSH, Department of Physics, Indian Institute of Science, Bangalore, India

F-6:IL01 Strong Light-matter Interactions at Graphene-heterostructures for Photonics and Photovoltaics

CHUN-WEI CHEN¹, CHIA-CHUN CHEN², PO-HSUN HO¹, ¹Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan; ²Department of Chemistry, National Taiwan Normal University, Taipei, Taiwan

F-6:IL02 Photo Sensor Devices Based on Few-layered WS₂ and WSe₂ Films and Heterostructures

N. PEREA LOPEZ¹, ZHONG LIN¹, A.L. ELÍAS¹, V. CAROZO¹, S. FENG¹, S. TALAPATRA², H. TERRONES³, M. TERRONES^{1,4}, ¹Department of Physics and Center for 2-Dimensional and Layered Materials, The Pennsylvania State University, University Park, PA, USA; ²Department of Physics, Southern Illinois University Carbondale, IL, USA; ³Department of Physics, Applied Physics and Astronomy, Rensselaer Polytechnic Institute, USA; ⁴Department of Materials Science and Engineering and Materials Research Institute, The Pennsylvania State University, University Park, PA, USA

F-6:IL03 A New Paradigm for Selective NO₂ Gas Sensing with Physisorption based Two Dimensional SnS₂

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F-6:IL04 Graphene, 2D Crystals and Hybrid Heterostructures: The Road to Applications

F. BONACCORSO, Istituto Italiano di Tecnologia, Graphene Labs, Genova, Italy

F-7:IL05 Highly Efficient Photocatalytic CO₂ Conversion to Selective Hydrocarbons using Graphene Oxides and Related 2D Hybrids

LI-CHYONG CHEN, Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan; **KUEI-HSIEN CHEN**, Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan

F-6:IL06 The Route to the Silicene Field Effect Transistor

A. MOLLE¹, **E. CINQUANTA¹**, **C. GRAZIANETTI¹**, **L. TAO²**, **D. AKINWANDE²**, ¹CNR-IMM, Laboratorio MDM, Agrate Brianza (MB), Italy; ²The University of Texas at Austin, TX, USA

F-6:L07 Light Detection from Nanocrystal Sensitized Graphene Photodetectors at kHz Frequencies

D. SPIRITO, **S. KUDERA**, **R. KRAHNE**, Istituto Italiano di Tecnologia, Nanochemistry department and Graphene Labs, Genoa, Italy; **V. MISEIKIS**, **C. COLETTI**, Istituto Italiano di Tecnologia, Center for Nanotechnology Innovation and Graphene Labs, Pisa, Italy; **C. GIANSANTE**, Center for Biomolecular Nanotechnologies @UNILE, Istituto Italiano di Tecnologia and CNR NANOTEC-Istituto di Nanotecnologia, Lecce, Italy

F-6:L08 2D Inorganic Materials as Control Layer in Highly Ordered Organic Photovoltaic Materials

L.C. LENTZ, A.M. KOLPAK, MIT, Cambridge, MA, USA

F-6:L09 Epitaxial Graphene on SiC as a Platform for Extremely Sensitive and Selective Gas Sensors

J. ERIKSSON, **C. STRANDQVIST**, **R. GUNNARSON**, **S. EKEROTH**, **U. HELMERSON**, I.G. IVANOV, R. YAKIMOVA, A. LLOYD SPETZ, Linköping University, Linköping, Sweden; **C. STRANDQVIST**, Graphensic AB, Linköping, Sweden

F-6:L11 Alkali Metal Insertion in TiO₂- and Li₄Ti₅O₁₂-graphene Composites for Battery Applications

M. ZUKALOVA, **A. ZUKAL**, **B. PITNA LASKOVA**, **L. KAVAN**, **J. Heyrovský**, Institute of Physical Chemistry, v.v.i., AS CR, Prague, Czech Republic

F-6:L12 Failure of Self Lubricating Properties of MoS₂: Oxidation or Water Molecules Adsorption?

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F-6:L13 Graphene Networks as Electrically-heatable Support for Layered Double Hydroxides for Applications in Heterogeneous Catalysis and Adsorption

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F-6:L14 Graphene Lubrication of Steel-steel Contacts

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F-6:L15 Wearable Electronics using Graphene Hybrid Nanostructures

JANG-UNG PARK, School of Materials Science and Engineering, UNIST, Ulsan, Korea

F-6:L16 Nitrogen-doped Graphene/Silver Hybrid Films to develop a Highly Sensitive Electrochemical Non-enzymatic Biosensor

M.T. TAJABADI, **M. SOOKHAKIAN**, **W. J. BASIRUN**, Department of Chemistry, Faculty of Science, University of Malaya, Kuala Lumpur, Malaysia

Poster Presentations

F:P01 Raman Spectroscopy and Surface Morphology in Thin Layers of Chalcogenides of Bismuth and Antimony

L.N. LUKYANOVA¹, **O.A. USOV¹**, **A.YU. BIBIK²**, **V.A. ASEEV²**, **V.N. PETROV¹**, **I.V. MAKARENKO¹**, **N.V. NIKONOROV²**, ¹Ioffe Institute, Saint-Petersburg, Russian Federation; ²Saint-Petersburg State University of Informational Technologies, Mechanics and Optics, Saint-Petersburg, Russian Federation

F:P02 Electromagnetic Properties in Multilayer Graphene within the Ritus Formalism: Transverse Electrical Conductivity

G. MURGUIA-ROMERO, **A. SÁNCHEZ**, **R. ZAVALA-MADRID**, Facultad de Ciencias, Universidad Nacional Autónoma de México, Distrito Federal, México

F:P03 Nanolayer Graphene Synthesis by Carbon Ion Implantation

JANGHYUK KIM, **GEONYEOP LEE**, **JIHYUN KIM**, Department of Chemical and Biological Engineering, Korea University, Seoul, South Korea

F:P04 Electrochemical Reduction of Graphene Oxide: Synthesis and Applications

A.B. LOPEZ-OYAMA^{1,2}, **M.A. DOMÍNGUEZ-CRESPO¹**, **R. GÁMEZ-CORRALES³**, **E. ONOFRE-BUSTAMANTE¹**, **A.M. TORRES-HUERTA¹**; ¹Instituto Politécnico Nacional, Programa de Doctorado en Tecnología Avanzada, CICATA-Altamira, Grupo CIAMS, Altamira, Tamps, México; ²Cátedra Conacyt, Del. Benito Juárez; ³Universidad de Sonora, Hermosillo, Sonora, México

F:P05 Maximizing the Potential of Layered Compounds for Hydrogen Production

O.E. MEIRON¹, **L. HOUBEN²**, **M. BAR-SADAN¹**, ¹Ben Gurion University of the Negev, the chemistry department, Beer Sheva, Israel; ²Chemical Research Support, Weizmann Institute of Science, Rehovot, Israel

F:P06 Opportunities for sp²-hybridized Carbon Nitride

P.O.Å. PERSSON, **J. PALISAITIS**, **A. KAKANAKOVA-GEORGIEVA**, Department of Physics, Chemistry and Biology (IFM), Linköping University, Sweden

F:P08 Electrical Conductivity of Graphene – Ni nanoparticle Composite in Accordance with the Content of Organic Matters

YOU-BI KIM, **Y.W. HONG**, **T.H. SHIN**, **J.H. PAIK**, **KICET**, Jinju-si, Gyeongsangnam-do, South Korea

F:P09 Visualizing Chemical States and Defects induced Magnetism of Graphene Oxide by Spatially-resolved-X-ray Microscopy and Spectroscopy

Y.F. WANG, **S.B. SINGH**, **M.V. LIMAYE**, **Y.C. SHAO**, **S.H. HSIEH**, **L.Y. CHEN**, **H.C. HSUEH**, **WAY-FAUNG PONG**, Department of Physics, Tamkang University, Tamsui, Taiwan

F:P10 Interfacial Engineering for Enhancement of Electrical Characteristics in MoS₂ Field-effect Transistors

DONGRI QIU, **EUN KYU KIM**, Quantum-Function Research Laboratory and Department of Physics, Hanyang University, Seoul, Korea

F:P11 Anticorrosion Properties of Electrochemical Reduced Graphene Oxide Coatings on 304 L Stainless Steel

A.B. LÓPEZ-OYAMA^{1,2}, **M.A. DOMÍNGUEZ-CRESPO¹**, **E. ONOFRE-BUSTAMANTE¹**, **A.M. TORRES-HUERTA¹**, **A.R. HERNÁNDEZ-BASILIO³**, ¹Instituto Politécnico Nacional, Programa de Doctorado en Tecnología Avanzada, CICATA-Altamira, Grupo CIAMS, Altamira, Tamps, México; ²Cátedra Conacyt, Del. Benito Juárez; ³Instituto Politécnico Nacional, Alumna de maestría en Tecnología Avanzada CICATA Altamira, Grupo CIAMS, Altamira, Tamps, México

F:P12 Nanoperforated Graphenes for Energy Storage Applications

HYUN KYUNG KIM, **SEOK WOO LEE**, **YEON JUN CHOI**, **KWANG BUM KIM**, Department of Material Science and Engineering, Yonsei University, Seoul, Republic of Korea

F:P13 Aerogels Based on Microwave Plasma Torch Synthesized Graphene

FR. SULTANOV, **Z.A. MANSUROV**, Institute of Combustion Problems, Almaty, Kazakhstan; **S.C. CHANG**, **S. XING**, **F. ROBLES-HERNANDEZ**, **S.S. PEI**, Center for Advanced Materials University of Houston, Houston, TX, USA; **Y.W. CHI**, **K.P. HUANG**, Mechanical and Systems Research Laboratories, Industrial Technology Research Institute Chutung, Hsinchu, Taiwan, R.O.C.

SYMPOSIUM G
**MULTIFUNCTIONAL INORGANIC ONE-
 DIMENSIONAL NANOSTRUCTURES:
 STATUS AND POTENTIAL**

Oral Presentations

Session G-1

Growth and Functionalization of 1-D Nanostructure

G-1:IL01 Controlled Growth and Optoelectronic Properties of Wide Bandgap Semiconducting Nanowires

S. GRADECAK, Department of Materials Science and Engineering, MIT, Cambridge, MA, USA

G-1:IL02 Growth and Structure of Self-catalyzed III-V Nanowires on Silicon

V.G. DUBROVSKII, St. Petersburg Academic University, St. Petersburg, Russia Ioffe Physical Technical Institute RAS, St. Petersburg, Russia

G-1:IL03 GaN/InGaN Nanowire Structures - MBE Growth and Optical Properties

H. RIECHERT, Paul-Drude-Institut, Berlin, Germany

G-1:IL04 Demonstration of Hole Gas Accumulation Control in Ge/Si Core-shell Nanowires

NAOKI FUKATA¹, **K. NISHIBE¹**, **M. YU¹**, **W. JEVASUWAN¹**, **T. TAKEI¹**, **Y. BANDO¹**, **W. WU²**, **Z.L. WANG²**, ¹National Institute for Materials Science (NIMS), Tsukuba, Japan; ²School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA, USA

G-1:IL05 Heterostructure Formation in Nanowires of Alloyed Compound Semiconductors - Experiments and Theory

F. GLAS, **G. PRIANTE**, **F. OEHLER**, **K. PANTZAS**, **G. PATRIARCHE**, **J.-C. HARMAND**, Laboratoire de Photonique et de Nanostructures, CNRS, Université Paris Saclay, Marcoussis, France

G-1:IL06 Hybrid Nanophotonics-nanomaterial Platforms with III/V Semiconductor Nanowires on Si

MASAYA NOTOMI, NTT Basic Research Laboratories and NTT Nanophotonics Center, Atsugi, Japan

G-1:IL07 MBE Growth of Self Assisted InAs Nanowires on Graphene

JUNG-HYUN KANG, **Y. COHEN**, **Y. RONEN**, **M. HEIBLUM**, **D. CONVERTINO**, **A. ROSSI**, **C. COLETTI**, **S. HEUN**, **L. SORBA**, **H. SHTRIKMAN**, Braun Center for Submicron Research, Weizmann Institute of Science, Rehovot, Israel; Istituto Nanoscienze-CNR and Scuola Normale Superiore, Italy

G-1:IL08 Real-time Investigation of III-V Nanowire Growth using In-situ TEM

K. DICK THELANDER, Solid State Physics, Lund University, Lund, Sweden Center for Analysis and Synthesis, Lund University, Lund, Sweden

G-1:IL09 Au-catalyst Assisted Self-assembly of CdTe Nanowires by Metalorganic Vapour Phase Epitaxy

V. DI CARLO, **F. MARZO**, **N. LOVERGINE**, Dept. of Engineering for Innovation, University of Salento, Lecce, Italy; **P. PRETE**, IMM-CMR, Lecce, Italy

G-1:IL10 Fabrication of Nanocomposite Nanofibers: Reactions Mechanisms and Properties

M. AGHAYAN¹, **I. HUSSAINOVA^{1,2}**, ¹Tallinn University of Technology, Department of Materials Engineering, Tallinn, Estonia; ²TMO University, St. Petersburg, Russian Federation

G-1:IL11 Guided Growth of Horizontal Nanowires: A General Approach to Structural Control and Large-scale Integration

E. JOSELEVICH, Department of Materials and Interfaces, Weizmann Institute of Science, Rehovot, Israel

G-1:IL12 Quantum Dots in Group IV Nanowires

A. LUGSTEIN¹, **M. GLASER¹**, **SEBASTIAN GLASSNER¹**, **S. PRUCNAL²**, **ANDREAS JOHANNES³**, **SÓNIA CONESA-BOJ⁴**, **CARSTEN RONNING³**, **A. FONTCUBERTA I MORRAL⁴**, **W. SKORUPA²**, **E. BERTAGNOLLI¹**, ¹Institute for Solid State Electronics, Vienna University of Technology, Austria; ²Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; ³Institute for Solid State Physics, Friedrich-Schiller-University Jena, Germany; ⁴Lab. des Matériaux Semiconducteurs, EPFL, Lausanne, Switzerland

G-1:IL13 III-V Nanowires, Growth Challenges and Applications in Next Generation Photovoltaics

E. ALARCON-LLADO, **A. FONTCUBERTA I MORRAL**, **G. TUTUNCUOGLU**, EPFL, Lausanne, Switzerland

G-1:L14 Single Wall and Multiwall Nanotubes of WS₂: Their Synthesis, Properties and Applications

A. ZAK, **O. GRINBERG**, Holon Institute of Technology, Holon, Israel; **R. POPOVICH-BIRO**, **R. TENNE**, Weizmann Institute of Science, Rehovot, Israel; **V. BRUESER**, Leibnitz Institute of Plasma, Greifswald, Germany; **E. ZUSSMAN**, Technion-Israel Institute of Technology, Haifa, Israel; **T. LIVNEH**, Nuclear Research Center, Beer-Sheva, Israel

G-1:L15 Selective-area MOVPE Growth of GaAs Nanowires on Silicon using a Non-lithographic Approach to SiO₂ Mask Patterning

E. STEVANATO, Dept. of Engineering for Innovation, University of Salento & Italian Institute of Technology, Lecce, Italy; **A. PEDIO**, **F. MARZO**, **N. LOVERGINE**, Dept. of Engineering for Innovation, University of Salento, Lecce, Italy; **P. PRETE**, IMM-CMR, Lecce, Italy

Session G-2

Structure and Properties of 1-D Nanostructures

G-2:IL01 Analysis of 1D-nanostructure Properties using in Situ Transmission Electron Microscopy

D. GOLBERG, WPI-MANA, National Institute for Materials Science (NIMS), Tsukuba, Ibaraki, Japan

G-2:IL02 Thermoelectric Properties of Single Nanowires

I. ZARDO, Department of Physics, University of Basel, Basel, Switzerland

G-2:IL03 X-ray Investigations of Single Nanowire Devices

J. WALLENTIN, Synchrotron Radiation Research, Lund University, Sweden

G-2:IL04 From 1D Silicene Nanoribbons to 2D Sheets

P. DE PADOVA, Consiglio Nazionale delle Ricerche, Istituto di Struttura della Materia, Roma, Italy

G-2:IL05 Dislocation-driven Nanowire Growth and Lead Halide Perovskite Nanowire Lasers with Low Lasing Thresholds and High Quality Factors

SONG JIN, Department of Chemistry, University of Wisconsin-Madison, Madison, WI, USA

G-2:IL06 Contact-free Surface Acoustic Wave Control of Nanowire Heterostructures

H.J. KRENNER¹, **M. WEISS¹**, **J.B. KINZEL¹**, **F.J.R. SCHÜLEIN¹**, **M. HEIGL¹**, **D. BÜHLER¹**, **A. WIXFORTH¹**, **D. RUDOLPH²**, **M. BICHLER²**, **G. ABSTREITER^{2,3}**, **J.J. FINLEY²**, **G. KOBLMÜLLER²**, ¹Lehrstuhl für Experimentalphysik 1, Universität Augsburg, Augsburg, Germany; ²Walter Schottky Institut, TU München, Garching, Germany; ³Institute for Advanced Study, TU München, Garching, Germany

G-2:IL07 GaAs-AlGaAs Core-(Multi)Shell Nanowire Structures: MOVPE Growth and Nano-scale Optical/Electronic Properties

P. PRETE, IMM-CNR, Lecce, Italy; **R. ROSATO**, **E. STEVANATO**, **F. MARZO**, **N. LOVERGINE**, Dept. of Engineering for Innovation, University of Salento, Lecce, Italy

G-2:IL08 Probing and Exploiting Ultrafast Charge Carrier Dynamics in Semiconductor Nanowires

H.J. JOYCE, **S. BAIG**, **G. TAINTER**, Department of Engineering, University of Cambridge, UK; **G. TÛTÜNÇÜOĞLU**, **F. MATTEINI**, **A. CASADEI**, **F. AMADUZZI**, **F. JABEEN**, **A. FONTCUBERTA I MORRAL**, Laboratory of Semiconductor Materials, EPFL, Switzerland; **J.L. BOLAND**, **P. PARKINSON**, **C.L. DAVIES**, **S. CONESA-BOJ**, **L.M. HERZ**, **M.B. JOHNSTON**, Department of Physics, University of Oxford, UK; **K. PENG**, **N. JIANG**, **L. FU**, **H.H. TAN**, **C. JAGADISH**, Department of Electronic Materials Engineering, Research School of Physics and Engineering, The Australian National University, Australia

G-2:IL09 Structure-property Correlations in 1D-nanowires using Atom Probe Tomography

L.J. LAUHON, Dept. of Materials Science and Engineering, Northwestern University, Evanston, IL, USA

G-2:IL10 Quantum Gases in ZnO Nanowires

R. SCHMIDT-GRUND, Universität Leipzig, Institut für Experimentelle Physik II, Leipzig, Germany

G-2:IL11 Structural and Quantum Transport Properties of Functionalized Boron Nitride Nanotubes

YOKE KHIN YAP, Department of Physics, Michigan Technological University, Houghton, MI, USA

G-2:L12 Developing Multi-functional Nanocontacts to Nanowires

A. LORD, **J.E. EVANS**, Centre for NanoHealth, Swansea University, UK; **S.P. WILKS**, College of Science, Swansea University, UK

G-2:L13 Unraveling Size Effect of Metallic Nanowires towards Ultra-strong Metal Nanostructured Material

IN-SUK CHOI, High Temperature Energy Materials Research Center, Korea Institute of Science and Technology, Seoul, Rep.of Korea

G-2:L14 Synthesis and Characterization of Ni/TiO₂ Nanocomposite Coatings as Potential Electrocatalysts for the Hydrogen Evolution Reaction (HER)

E. DANAILA, L. BENEÀ, Competences Center: Interfaces-Tribocorrosion-Electrochemical Systems (CC-ITES), Faculty of Engineering, Dunarea de Jos University of Galati, Galati Romania

Session G-3

Modeling and Simulation of 1-D Nanostructures

G-3:IL01 Electronic Transport in 1D Nanostructures

J. LI, Y.M. NIQUET, Univ. Grenoble Alpes & CEA Grenoble, France; **C. DELERUE**, IEMN, Lille, France

G-3:IL02 Theoretical Study of Ordered III-V Nanowire Arrays for Light Emission and Detection

B. WITZIGMANN, University of Kassel, Kassel, Germany

G-3:L03 Ab Initio Electronic Transport in Atomic Carbon Chains

J.-C. CHARLIER, University of Louvain, Institute of Condensed Matter and Nanosciences, Louvain-la-Neuve, Belgium

G-3:L04 Influence of the Arsenic Flux on the Formation of Axial Heterostructure in (Al,Ga,In)As Nanowires

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Session G-4

Processing, Characterization and Modeling of 1-D Nanostructure-polymer/metal/ceramics Composites

G-4:IL01 Selective Lateral 1D Epitaxy: III-V Planar Nanowire Growth, Doping, and Transistors

XIULING LI, Department of Electrical and Computer Engineering, Micro and Nanotechnology Laboratory, University of Illinois, Urbana, IL, USA

G-4:IL02 Observation of Metal to Insulator Transitions and Ferroelectric Domain Switching in Phase Change Materials Prior to Amorphization

R. AGARWAL, Department of Materials Science and Engineering, University of Pennsylvania, Philadelphia, PA, USA

G-4:L03 Electrospinning and Thermal Processing of PZT Nanofiber Mats with Controlled Shape

G.S. GRADER, O. ROZENT, V. BEILIN, **G.E. SHTER**, Technion-Israel Institute of Technology, Haifa, Israel

G-4:L04 Biodegradable Inorganic Nano-architectures to avoid Accumulation in Excretory System Organs

D. CASSANO^{1,2}, D. ROTA MARTIR¹, G. SIGNORE¹, V. PIAZZA¹, **V. VOLIANI¹**, ¹Center for Nanotechnology Innovation @NEST, Istituto Italiano di Tecnologia, Pisa, Italy; ²NEST-Scuola Normale Superiore, Pisa, Italy

G-4:L05 Boron Nitride Nanotube: Synthesis, Functionalization, and Nanocomposites

C.M. HOMENICK, Y. MARTINEZ-RUBI, K.S. KIM, M.B. JAKUBINEK, C.T. KINGSTON, B. SIMARD, Security and Disruptive Technologies Portfolio, National Research Council Canada, Ottawa, Canada; B. ASHRAFI, Aerospace Portfolio, National Research Council Canada, Montreal, Canada

G-4:L06 Fabrication of Y₂Ti₂O₇/SiC Functionally Graded Materials by Magnetic Field Application

S.T. NGUYEN, T. NAKAYAMA, H. SUEMATSU, T. SUZUKI, S. TANAKA, Y. NAGASAWA, K. NIIHARA, Nagaoka University of Technology, Nagaoka, Niigata, Japan

Session G-5

1-D Nanostructures-based Applications

G-5:IL01 Zinc Oxide Nanorods Field-effect Transistors Array Biosensor for Comprehensive Detecting Glucose, Cholesterol and Urea

YOON-BONG HAHN, R. AHMAD, DA-UN-JIN JUNG, School of Semiconductor and Chemical Engineering, and Nanomaterials Processing Research Center, Chonbuk National University, Jeonju, Republic of Korea

G-5:L02 Gallium Arsenide Nanowire Lasers

C. JAGADISH, Department of Electronic Materials Engineering, Research School of Physics and Engineering, Australian National University, Canberra, A.C.T., Australia

G-5:IL03 Artificial Photosynthesis on Metal-nitride Nanowire Arrays

ZETIAN MI, B. ALOTAIBI, S. FAN, Y. WANG, S. VANKA, Department of Electrical and Computer Engineering, McGill University, Montreal, Quebec, Canada

G-5:IL04 Ultrafast Dynamics in Plasmonic and Photonic Nanowire Lasers

R.F. OULTON, T.P.H. SIDIROPOULOS, S.A. MAIER, O. HESS, Imperial College London, London, UK; R. RÖDER, S. GEBURT, C. RONNING, FSU Jena, Jena, Germany

G-5:IL05 Nanowire Field-effect Transistor-based Biosensors: A Tool for Life Science

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Poster Presentation

G:P01 Effect of Buffer Layer on Electrical and Optical Properties based on SnO₂/Ag/SnO₂ Multi Layer Film

JIN-GYUN KIM, **GUN-EIK JANG**, Department of Materials Engineering, Chungbuk National University, Cheongju, Korea

G:P02 Highly Flexible and Transparent Conductive Electrode based on Silver Nanowires

CHANG SU KIM, MYUNGKWAN SONG, DONG-HO KIM, Advanced Functional Thin Films Department, Korea Institute of Materials Science (KIMS), Changwon, Korea

G:P03 Au-Ag Core Shell Nanowire Network for Highly Stretchable and Transparent Supercapacitor Applications

HABEOM LEE¹, SUKJOON HONG², JIN HWAN LEE¹, YOUNG DUK SUH¹, JINHYEONG KWON¹, JUNYEOB YEO², HYUNMIN CHO¹, SEUNG HWAN KO¹, ¹Seoul National Univ, Seoul, Korea; ²Mechanical Engineering, University of California, Berkeley, Berkeley, CA, USA

SYMPOSIUM H

ELECTROACTIVE POLYMERS AND SHAPE MEMORY POLYMERS: ADVANCES IN MATERIALS AND DEVICES

Oral Presentations

Session H-1

Advances in EAP Materials

H-1:IL01 The Evolution of Strong, Fast, Powerful, Durable, and Cheap Polymer Artificial Muscles from Carbon Nanotube Muscles

R.H. BAUGHMAN, A.G. MACDIARMID, NanoTech Institute, the University of Texas at Dallas, Dallas, TX, USA

H-1:IL02 Electromechanical Properties of CNT-ionic Gel Actuators

KINJI ASAKA, T. SUGINO, K. KIYOHARA, National Institute of Advanced Industrial Science and Technology (AIST), Ikeda, Osaka, Japan

H-1:IL03 Improved Dielectric Elastomer and Bistable Electroactive Polymer Materials and Devices

QIBING PEI, Department of Materials Science and Engineering University of California, Los Angeles, CA, USA

H-1:L04 Stronger VHB Dielectric Elastomer Actuator

GIH-KEONG LAU, THANH-GIANG LA, School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore

H-1:L05 Piezoelectric Polymer Foams: Structure and Property Adjustment for Air-borne Ultrasonic Transducer

M. SBORIKAS¹, J. EALO², **M. WEGENER¹**, ¹Department of Sensors and Actuators, Fraunhofer IAP, Potsdam, Germany; ²School of Mechanical Engineering, University of Valle, Ciudad Universitaria Meléndez, Cali, Colombia

H-1:L06 Polymeric Electrochemical Motors Sense Physical and Chemical Working Conditions: Artificial Proprioception

T.F. OTERO¹, **Y.A. ISMAIL²**, L. VALERO^{1,3}, J.G. MARTINEZ¹, ¹Laboratory for Electrochemistry, Intelligent Materials and Devices, Univ. Politécnic de Cartagena, Cartagena, Spain; ²Dept.of Basic Sciences, College of Applied Science, A'Sharqiyah University, Ibra, Oman; ³Electronic Engineering School, Universidad Autónoma del Estado de México, Toluca, México

H-1:IL07 Green EAP Materials and Physics of the Electromechanical Responses in Ionic EAPs

ZHONGYANG CHENG, P. BASS, Materials Research and Education Center, Auburn University, Auburn, AL, USA

H-1:IL08 Impact of Structural Modifications on Electrically Induced Properties of Relaxor Polymer Systems

V. BOBNAR, G. CASAR, S. GLINSEK, J. KORUZA, B. MALIC, J. Stefan Institute, Ljubljana, Slovenia; X. LI, Q.M. ZHANG, Department of Electrical Engineering and Materials Research Institute, The Pennsylvania State University, University Park, PA, USA

H-1:IL09 High Dielectric Permittivity Elastomers for Artificial Muscles

D.M. OPRIS, S. DÜNKI, E. PERJU, F. NÜESCH, Swiss Federal Laboratories for Materials Science and Technology Empa, Dübendorf, Switzerland

H-1:IL10 Piezoelectric and Dielectric behaviour of Odd Nylon Blends

D.S. KELKAR, Institute of Science, Nagpur, India; S.A. PANDE, Laxminarayan Institute of Technology, Nagpur, India

Session H-2

Analysis and Mechanical Mechanisms

H-2:IL01 Biological Ferroelectricity – Phenomena, Mechanism, and Implications

JIANGYU LI, University of Washington, Seattle, WA, USA

H-2:IL02 Asymmetric Bilayer Artificial Muscles Based on Polypyrrole

MASAKI FUCHIWAKI, Kyushu Institute of Technology, Iizuka, Fukuoka, Japan; J.G. MARTINEZ, T.F. OTERO, Universidad Politécnica de Cartagena, Spain

H-2:IL03 New Resonance Mode in Dielectric Elastomer Actuators

JIANWEN ZHAO, YONG GE, SHU WANG, BO HUANG, Harbin Institute of Technology, Weihai, China

H-2:IL04 Theoretical Model of the Stress-composition Interaction for Electrochemical Actuators Based on Single-walled Carbon Nanotubes and Ionic Liquids

H. RANDRIAMAHAZAKA, Université Paris Diderot, Sorbonne Paris Cité, ITODYS, UMR 7086 CNRS, Paris Cedex, France; KINJI ASAKA, National Institute of Advanced Industrial Science and Technology (AIST), Ikeda, Osaka, Japan

H-2:IL05 Thermodynamics and Stability of Dielectric Elastomer

LIWU LIU¹, YANJU LIU¹, JINSONG LENG², ¹Department of Astronautical Science and Mechanics, Harbin Institute of Technology (HIT), Harbin, China; ²Centre for Composite Materials, Science Park of Harbin Institute of Technology (HIT), Harbin, China

H-2:IL06 Detection and Quantification of Structural Processes in Conducting Polymers Exchanging Cations

L. VALERO^{1,2}, J.G. MARTINEZ², T.F. OTERO², M. FUCHIWAKI³, Y.A. ISMAIL⁴, ¹Electronic department, Engineering school, Universidad Autónoma del Estado de México, Toluca, México; ²Centre for Electrochemistry and Intelligent Materials (CEMI), Universidad Politécnica de Cartagena, Aulario II, Cartagena, Murcia, Spain; ³Kyushu Institute of Technology, Department of Mechanical Information Science and Technology, Iizuka (Fukuoka), Japan; ⁴Dept. of Basic Sciences, College of Applied Science, A'Sharqiyah University, Ibra, Oman

Session H-3

Device Development and Integration Technologies

H-3:IL01 Stretchable Conducting Polymer Electrodes for Soft Actuators

HIDENORI OKUZAKI, University of Yamanashi, Kofu, Japan

H-3:IL02 Solid State Electrochemical Microactuator on Soft Substrates

P. CEDRIC, A. MAZIZ, G.T.M. NGUYEN, F. VIDAL, LPPI, University of Cergy-Pontoise, Cergy, France; M. BENFETRIT, C. SOYER, E. CATTAN, IEMN, CNRS, Villeneuve D'Ascq, France

H-3:IL03 Skin-inspired Multimodal Sensors for Soft Robots

I. GRAZ, Soft Matter Physics, Johannes Kepler University, Linz, Austria

H-3:IL04 IPMC Actuators Fabricated Using MEMS Technology

SHIGEKI TSUCHITANI¹, K. KIKUCHI¹, I. SHIMIZU², T. TANIGUCHI², H. MIKI¹, ¹Department of Systems Engineering, Wakayama University, ²Graduate School of Systems Engineering, Wakayama University, Wakayama, Japan

H-3:IL05 Interpenetrating Polymer Networks for Novel Actuators

C. PLESSE, G.T.M. NGUYEN, **F. VIDAL**, LPPI / Université de Cergy Pontoise, Neuville sur Oise, France

H-3:IL06 Miniaturized Dielectric Elastomer Actuators (DEA): Towards Intelligent Soft Machines

H. SHEA, EPFL, Neuchâtel, Switzerland

H-3:IL07 Humanoids and the Role of Electroactive Materials/ Mechanisms in Advancing their Capability

Y. BAR-COHEN, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

H-3:IL08 Comparison of Annealing Treatments on Contact Resistance between Au Contacts and IGZO Semiconductor on TFTs on Shape Memory Polymer

G. GUTIERREZ-HEREDIA, O. RODRIGUEZ, J. ESPINOZA, R. REIT, W. VOIT, University of Texas at Dallas, Richardson, TX, USA

Session H-4

Applications of EAPs

H-4:IL01 Organic Bionics Enabled by 3D Printing

G.G. WALLACE, ARC Centre of Excellence for Electromaterials Science, Intelligent Polymer Research Institute, University of Wollongong, Wollongong, NSW, Australia

H-4:IL02 Elastomer Transducers

S.A. CHIBA, Chiba Science Institute, Tokyo, Japan; M. WAKI, Wits Inc., Tochigi, Japan; Y. TANAKA, N. TSURUMI, K. OKAMOTO, K. NAGASE, ROHM Co., Ltd., Kyoto, Japan; M. HOMMA, H. YOKOTA, K. ODAGIRI, H. SATO, T. SAIKI, J. KANEKO, ADEKA Corp., Tokyo, Japan

H-4:IL03 Electroactive Polymer and its Nanocomposites: Theory, Experiment and Applications

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H-4:IL04 A Viscoelastic Soft Dielectric Elastomer Generator Operating in an Electrical Circuit

R. DENZER, Division of Solid Mechanics, Lund University, Lund, Sweden; E. BORTOT, Department of Civil, Environmental and Mechanical Engineering, University of Trento, Trento, Italy; M. GEI, School of Engineering, Cardiff University, Cardiff, Wales, UK; A. MENZEL, TU Dortmund University, Dortmund, Germany and Division of Solid Mechanics, Lund University, Lund, Sweden

Session H-5

Advances in SMPs

H-5:IL01 Rewritable Shape Memory Polymers – Materials with Latent Ability to Change Permanent Shapes by Photoirradiation

C.N. BOWMAN, Department of Chemical and Biological Engineering, University of Colorado, Boulder, CO, USA

H-5:IL02 Fractional Calculus Approach to Viscoelastic Behavior of Amorphous Shape Memory Polymers

CHANGQING FANG, HUIYU SUN, State Key Laboratory of Mechanics and Control of Mechanical Structures, Nanjing University of Aeronautics and Astronautics, Nanjing, China; JIANPING GU, Department of Materials Engineering, Nanjing Institute of Technology, Nanjing, China

H-5:IL03 Light-matter Concepts in Azobenzene-based Photoresponsive Polymers

W. OATES, J. BIN, Florida State University, Tallahassee, FL, USA

H-5:IL04 Cold Hibernated Elastic Memory (CHEM) Structures. Description & Applications

W. SOKOLOWSKI, Jet Propulsion Laboratory / California Institute of Technology, Pasadena, CA, USA

H-5:IL05 A Thermomechanical Constitutive Model for Shape Memory Polymer Composites

HUIYU SUN, JIANPING GU, State Key Laboratory of Mechanics and Control of Mechanical Structures, Nanjing University of Aeronautics and Astronautics, Nanjing, Jiangsu, China

H-5:IL06 Stereolithography 3D Printing of Shape Memory Polymers

M. LAYANI, M. ZAREK, D. COHN, S. MAGDASSI CASALI, Center for Applied Chemistry, Institute of Chemistry, The Hebrew University of Jerusalem, Jerusalem, Israel

H-5:IL07 Shape Memory Behavior in a Blend of Zinc-neutralized Carboxyl terminated Polybutadiene and Poly(styrene-co-4-vinylpyridine)

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H-5:IL08 Characterization for Carbon Fiber Reinforced Epoxy based Shape Memory Polymer Composite

FENGFENG LI¹, JIANGUO CHEN¹, LIWU LIU¹, YANJU LIU¹, JINSONG LENG²,
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Session H-6

Applications of SMPs and their Composites

H-6:IL01 Novel Behavior in Smart Polymeric Materials: Stress Memory and its Potential Applications

JINLIAN HU, H. NARAYANA, Institute of Textiles and Clothing, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong

H-6:L02 Form-filling ADP/Chitosan/Ceramic (ACC) Sponge for Potential Use in Bone Defects

K. JAHAN, M. MEKHAIL, M. TABRIZIAN, McGill University, Montreal, Quebec, Canada

H-6:IL05 Elastomers with High Elastic Energy Storage Capacity and Shape-actuating Ability

M. ANTHAMATTEN, YUAN MENG, JISU JIANG, JEY-CHANG YANG, University of Rochester, Rochester, NY, USA

Poster Presentations

H:P01 Towards a New Class of Green Hibryd Ionic Polymer-polymer Metal Composites

G. DI PASQUALE¹, **S. GRAZIANI**², A. POLLICINO¹, R. PUGLISI¹, V. DE LUCA²,
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H:P03 Conducting Electroactive Polyaniline Thin Films applied as Conductometric pH Sensor

H.J.N.P.D. MELLO, M. MULATO, Department of Physics, Faculty of Philosophy, Sciences and Letters at Ribeirão Preto, University of São Paulo (USP), Ribeirão Preto, SP, Brazil

H:P04 Multi-functional Matrix based on Polyurethane and Hybrid Fillers

K. PETCHAROEN, A. SIRIVAT, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

H:P05 Preparation of Compliant Electrode with Multiwalled Carbon Nanotubes filled Natural Rubber

P. TANGKITTHANACHOKE, A. SIRIVAT, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

H:P06 Electrically Responsive Material based on Poly(2-Chloroaniline) and Pectin Hydrogel as Actuator

W. KONGKAEW, A. SIRIVAT, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

H:P07 Efficient Linear Approach for the Closed-loop Control of a Ionic Polymer Bending Actuator

B. TONDU, A. SIMAITE, P. SOUERES, C. BERGAUD, Electrical Engineering Department, INSA, University of Toulouse and LAAS/CNRS, Toulouse, France

H:P08 Piezoelectric Fluoroethylenepropylene Films Based on Space Charges and Void Structure: Preparation and Application in Vibration Energy Harvesters

XIAOQING ZHANG, LIMING WU, School of Physics Science and Engineering, Tongji University, Shanghai, China; G.M. SESSLER, Institute for Telecommunications Technology, Darmstadt University of Technology, Darmstadt, Germany

H:P09 Effect of Plasticizer Type and Electric Field Strengths on Electromechanical Properties of Poly (lactic acid)

N. THUMMARUNGSAN, A. SIRIVAT, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

H:P10 Two-way Shape Memory Behaviour of Electrospun Non-woven Mats prepared from Sol-gel Crosslinked Poly(ϵ -caprolactone)

S. PANDINI¹, S. AGNELLI¹, A. MERLETTINI², C. GUALANDI², M.L. FOCARETE³, M. TOSELLI³, K. PADERNI⁴, M. MESSORI⁴,
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⁴Dipartimento di Ingegneria "Enzo Ferrari", Università degli Studi di Modena e Reggio Emilia, Modena, Italy

H:P11 Deformation and Recovery Properties of Shape Memory Polymer Composites Tube

TIANZHEN LIU, LIWU LIU, YANJU LIU, **JINSONG LENG**, Department of Astronautical Science and Mechanics, Harbin Institute of Technology (HIT), Harbin, P.R. China

H:P12 Smart Release Devices with much Load based on SMP Composites

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SYMPOSIUM I

NEW CONCEPTS AND ADVANCES IN PHOTOCATALYTIC MATERIALS FOR ENERGY AND ENVIRONMENTAL APPLICATIONS

Oral Presentations

Session I-1

Design Elements and Advanced Concepts for Photo-functional Materials

I-1:IL01 Nanostructured Materials for Photocatalytic Energy Conversion Applications

E. SELLI, G.L. CHIARELLO, M.V. DOZZI, Dipartimento di Chimica, Università degli Studi di Milano, Milano, Italy

I-1:IL02 Solar Fuel Generation Enhanced by Surface Plasmon Resonance

NIANGIANG WU, Department of Mechanical & Aerospace Engineering, West Virginia University, Morgantown, WV, USA

I-1:IL04 Z-scheme over all Water Splitting on Rh/K4Nb6O17 Nanosheet Photocatalyst

HSIN-YU LIN, YU-LIN YE, Department of Materials Science and Engineering, National Dong Hwa University, Hualien, Taiwan

I-1:L05 Iron Oxide-based Electrocatalysts for Water Oxidation at Neutral pH

HIROSHI IRIE, K. ISHIKAWA, T. TAKASHIMA, Clean Energy Research Center, University of Yamanashi, Kofu, Yamanashi, Japan

I-1:L06 Water Splitting Semiconductor Photoanodes

J. AUGUSTYNSKI, R. SOLARSKA, Centre for New Technologies, University of Warsaw, Warsaw, Poland

I-1:L07 Bismuth Vanadate-based Heterojunction Photoelectrodes for Photoelectrochemical Water Splitting: Synthesis and Characterisation

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I-1:IL08 Reflections on Rust: Iron Oxide Photoelectrodes for Solar Energy Conversion and Storage

A. ROTHSCILD, Department of Materials Science and Engineering, Technion – Israel Institute of Technology, Haifa, Israel

I-1:IL09 Hybrid Organic/Inorganic Assemblies with Tailored Photoelectrochemical Activity: from Synthetic Aspects to Energy Applications

C. JANAKY, A. VARGA, A. KORMANYOS, G. SAMU, University of Szeged, Hungary; K. RAJESHWAR, The University of Texas at Arlington, TX, USA

Session I-2

Understanding Fundamentals of Photoinduced Processes and Charge Transport

I-1:L10 Flexible Transparent Conductive Electrodes and Photocatalytic Conversion of CO₂ to CO Gas Sensor using Single Crystal Cu Thin Film

SE-YOUNG JEONG^{1,2}, I.H. PARK¹, W.K. KIM³, S. LEE⁴, H.Y. PARK¹, Y.J. LEE¹, G.W. LEE⁵, ¹Department of Cogno-Mechatronics Engineering, Pusan National University, Miryang, Rep. of Korea; ²Department of optics and mechatronics engineering, Pusan National University, Miryang, Rep. of Korea; ³R&D Center, LG Display Co., Ltd., Paju, Rep. of Korea; ⁴Materials and Science Engineering, University of Maryland, College Park, Maryland, USA; ⁵Korea Research Institute of Standards and Science & Department of Science of Measurement, University of Science and Technology, Daejeon, Rep. of Korea

I-1:L11 Hybrid Nanostructured Materials for the Harvesting and Conversion of Solar Energy

J. MATOS, Biomaterials Department, Technological Development Unit, University of Concepción, Parque Industrial Coronel, Concepción, Chile

I-1:IL12 Electron Trapping in Semiconductor Photocatalysis

BUNSHO OHTANI^{1,2}, AKIO NITTA², NAOYA MURAKAMI³, MAI TAKASE⁴, ¹Institute for Catalysis, Hokkaido University, Sapporo, Japan; ²Graduate School of Environmental Science, Hokkaido University, Sapporo, Japan; ³Graduate School of Engineering, Kyushu Institute of Technology, Kitakyushu, Fukuoka, Japan; ⁴Graduate School of Engineering, Muroran Institute of Technology, Muroran, Japan

I-1:IL13 Doped Lanthanum Ferrite Perovskites: Promising Materials for Photocatalytic Applications

F. PARRINO¹, E. GARCÍA-LÓPEZ¹, G. MARCÌ¹, L. PALMISANO¹, V. FELICE², I. NATALI SORA², L. ARMELAO³, ¹"Schiavello-Grillone" Photocatalysis Group, Dipartimento di Energia, Ingegneria dell'informazione e Modelli matematici (DEIM), University of Palermo, Palermo, Italy; ²INSTM R.U. Bergamo and Dipartimento di Ingegneria, University of Bergamo, Dalmine, Bergamo, Italy; ³IENI-CNR and INSTM, Dipartimento di Scienze Chimiche, Università di Padova, Padova, Italy

I-1:L14 Enhancing Photocatalytic Activity of TiO₂ by a Synergistic Effect between Plasmon Resonance in Ag Nanoparticles and Optical Interference

G. CACCIATO^{1,2}, M. ZIMBONE², M. BAYLE³, C. BONAFOS³, V. PRIVITERA², M.G. GRIMALDI^{1,2}, **R. CARLES**³, ¹Dipartimento di Fisica ed Astronomia-Università di Catania, Catania, Italy; ²IMM-CNR, Catania, Italy; ³CEMES-CNRS Université de Toulouse, Toulouse Cedex, France

I-1:L15 Ternary TiO₂-Cu₂S-Fly Ash System: Synthesis, Characterisation and Application in Adsorption and Photocatalysis

L. ANDRONIC, M. VISA, A. DUTA, Transilvania University of Brasov, R&D Centre of Renewable Energy Systems and Recycling, Brasov, Romania

I-1:IL16 Novel Functional Materials Applied to Photocatalysis

YEN-TING CHEN¹, **KAO-SHUO CHANG**^{1,2}, ¹Department of Materials Science & Engineering, National Cheng Kung University, Tainan City, Taiwan; ²Promotion Center for Global Materials Research (PCGMR), National Cheng Kung University

I-1:L17 Micro-TiO₂ as Photocatalyst for New Ceramic Surfaces Activated via Digital Printing

M. STUCCHI, C.L. BIANCHI, C. PIROLA, Università degli studi di Milano, Milano, Italy; G. CERRATO, Università degli studi di Torino, Torino, Italy; A. DIMICHELE, Università degli studi di Perugia, Perugia, Italy; V. CAPUCCI, GranitiFiandre SpA, Fiorano M.se, Italy

I-1:L18 Designing Bimetallic Reduction Co-catalysts – Correlating Atomic Structure with Properties

M. BAR SADAN, Department of chemistry, Ben Gurion University of the Negev, Israel

I-1:L19 Nanoplasmonics-assisted Degradation of Pollutants and Oxidation of Glycerol under Visible Light

Z. CHEHADI^{1,2}, S. ZAID^{3,4}, J.-S. GIRARDON^{3,4}, J. TOUFAILY², M. CAPRON^{3,4}, F. DUMEIGNIL^{3,4}, T. HAMIÉH², R. BACHELOT¹, S. JRADI¹, ¹Laboratoire de Nanotechnologie et d'Instrumentation Optique, Institut Charles Delaunay, UMR 6281 CNRS, Université de Technologie de Troyes, Troyes Cedex, France; ²Laboratory of Materials, Catalysis, Environment and Analytical Methods, Faculty of Sciences I, Doctorate School of Science and Technology, Lebanese University, Beirut, Lebanon; ³Université Lille Nord de France, Lille, France; ⁴Unité de Catalyse et de Chimie du Solide, UCCS (UMR CNRS 8181), Villeneuve d'Ascq, France

I-1:L20 A New Strategy to synthesize TiO₂ Mesocrystals with Superior Photocatalytic Activity

YANNA GUO, HUAN XIE, JIN CHEN, HUI LI, BINGYU LEI, **LEI ZHOU**, School of Life Science and Technology, Huazhong University of Science and Technology, Wuhan, P.R. China

I-2:IL01 Understanding Charge Transfer Processes on Metal Oxide Surfaces through Laser Flash Photolysis Analysis

J. SCHNEIDER¹, I. KRETSCHMER¹, **D. BAHNEMANN**^{1,2}, ¹Institut für Technische Chemie, Leibniz Universität Hannover, Germany; ²St. Petersburg State University, St. Petersburg, Russia

I-2:IL02 Charge-carrier Dynamics in Photocatalytic Processes

C. COLBEAU-JUSTIN¹, A. HERISSAN¹, S. PIGEOT-RÉMY², O. DURUPHY², S. CASSAIGNON², C. FERRONATO³, R. HAZIME³, C. GUILLARD³, ¹Laboratoire de Chimie Physique, CNRS UMR 8000, Université Paris-Sud, Orsay, France; ²Chimie de la Matière Condensée de Paris, Collège de France, CNRS UMR 7574, UPMC, Paris, France; ³IRCELYON, CNRS UMR 5256, Université Lyon 1, Villeurbanne, France

I-2:IL03 Role of Reduced Graphene Oxide in Promoting the Photoelectrochemical Responses of 1D Oxide-0D Chalcogenide Nanocomposites

R. SUBRAMANIAN, University of Nevada, Reno Pawan Pathak, University of Nevada, Reno, USA

I-2:L04 Mimicking in Photocatalysis the Photosynthesis Z Scheme with one Monophasic Material

J.C. CONESA, R. LUCENA, Inst. de Catálisis y Petroleoquímica, CSIC, Madrid, Spain; P. PALACIOS, **P. WAHNON**, Inst. de Energía Solar, Univ. Politécnica de Madrid, Spain

I-2:IL05 Molecular Electrets: Effects of Localized Fields on Photo-induced Charge Transfer

J.M. LARSEN, E.M. ESPINOZA, **V.I. VULLEV**, Department of Bioengineering and Department of Chemistry, University of California, Riverside, CA, USA

I-2:IL06 Interfacing Light Absorbers with Catalysts for Enhanced Photo(electro)catalysis

R. BERANEK, Institute of Electrochemistry, Universität Ulm, Germany

I-2:L07 Optical Characterization of CdTe highly doped with Antimony

S. COLLINS, I. KHAN, V. EVANI, C. FERIKIDES, University of South Florida, Tampa, FL, USA

I-2:L08 Kinetics of Photocatalytic, Self-cleaning Surfaces: Connecting Contaminant Removal to Contact Angle Evolution

D. OLLIS, Chemical Engineering Department, North Carolina State University, USA

I-2:IL09 Charge Transport and Recombination in Nanostructured Materials for Photoelectrochemical and Solar Cells

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I-2:IL10 TiO₂ Nanostructures for Energy and Environmental Applications

M. WARK, Institute of Chemistry, Carl von Ossietzky University Oldenburg, Oldenburg, Germany

I-2:IL11 Photocatalytic Activation of Biomaterials

K.H. CHEUNG, P. KOSHY, M.B. PABBURUWE, **C.S. SORRELL**, School of Materials Science and Engineering, UNSW Australia, Sydney, NSW, Australia

I-2:IL12 Analysis of the Dynamics in Composition of Pt and Ni/NiO promoted SrTiO₃ in Overall Water Splitting

G. MUL, Mesa+ Institute for Nanotechnology, University of Twente, Enschede, The Netherlands

I-2:IL13 Metal Oxides for Photoelectrochemical Water Splitting and Environmental Remediation

S. CARAMORI, V. CRISTINO, N. DALLE CARBONARE, F. RONCONI, C.A. BIGNOZZI, G. LONGOBUCCO, L. PASTI, A. MOLINARI, Department of Chemical and Pharmaceutical Sciences, University of Ferrara, Ferrara, Italy; R. ARGAZZI, CNR/ISOF c/o Department of Chemical and Pharmaceutical Sciences, University of Ferrara, Ferrara, Italy

I-2:IL14 Organic Photoelectrochemical Cells for Selective Redox Reactions

A. GUERRERO, Institute of Advanced Materials (INAM), Universitat Jaume I, Castelló, Spain

I-2:L15 Band Engineering of Titanium Dioxide Relevant to Solar Cells and Photocatalysis

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Session I-3

Design Approaches for Advanced Applications

I-3:IL01 Efficient Solar Driven Water Splitting using a Bipolar Membrane to enable pH-gradients

D.A. VERMAAS, W.A. SMITH, Delft University of Technology, Department of Chemical Engineering, Materials for Energy Conversion and Storage (MECS), Delft, The Netherlands

I-3:IL02 Development of Photocatalyst Sheet for Unassisted Sunlight-driven Water Splitting

T. HISATOMI, K. DOMEN, The University of Tokyo, Tokyo, Japan; Japan Technological Research Association of Artificial Photosynthetic Chemical Process (ARPCHEM)

I-3:L03 Quasi-1D Black Titanium Oxide Nanostructures for Water Splitting Applications

L. MASCARETTI, S. FERRULLI, P. MAZZOLINI, C.S. CASARI, V. RUSSO, A. LI BASSI, Micro and Nanostructured Materials Laboratory, Politecnico di Milano, Milano, Italy; R. MATARRESE, I. NOVA, Laboratory of Catalysis and Catalytic Processes, Politecnico di Milano, Milano, Italy

I-3:IL04 A Stand Alone Artificial Photosynthesis of Formate from Carbon Dioxide and Water

HYUNWOONG PARK, School of Energy Engineering, Kyungpook National University, Daegu, Korea

I-3:L05 Sculpting Photocatalysts on the Nano Scale

L. AMIRAV, Schulich Faculty of Chemistry, Technion - Israel Institute of Technology, Haifa, Israel

I-3:L06 A New Strategy for Solar Water Splitting Materials Design

L. VAYSSIERES, IRCRE, Xian Jiaotong University, Xi'an, China

I-3:IL07 Bioinspired Photoelectrode Designs for Solar Fuel Generation

K. RAJESHWAR, University of Texas, Dept of Chemistry & Biochemistry, Arlington, TX, USA

I-3:IL08 Reduction of Small Molecules in Photocatalytic Systems

W. MACYK, Faculty of Chemistry, Jagiellonian University, Kraków, Poland

I-3:L09 TiO₂/Pt/SnO₂ Multilayer Photo Catalytic Film

G.O. TESTONI, M.A. ZAGHETE, M.V. NOGUEIRA, J.P.C. COSTA, E.C. AGUIAR, J.A. VARELA, L. PERAZOLLI, Araraquara, SP, BRAZIL; UNESP-Chemical Institute - DBTQ

I-3:L10 Superhydrophilic and Photocatalytic Active Ceramic Glazes for Sanitary Ware

F. KNIES^{1,2}, K. SCHRANTZ¹, C. ANEZIRIS^{1,2}, T. GRAULE^{1,2}, ¹EMPA-Swiss Federal Labs for Materials Science and Technology, Laboratory for High Performance Ceramics, Duebendorf, Switzerland; ²TU Bergakademie Freiberg, Institute for Ceramics, Glass and Building Materials, Freiberg, Germany

I-3:IL11 VOCs Removal in Semiconductor Clean Lab Using Fiber-illuminated Honeycomb Reactor

YI-TING WU, KUNG-TE LU, JEFFREY C.S. WU, Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan

I-3:IL12 Mechanistic Studies of Charge Carriers in Materials for Artificial Photosynthesis

A.J. COWAN, University of Liverpool, Department of Chemistry, Liverpool, UK

I-3:L13 Artificial Photosynthesis Device Development for CO₂ Photoelectrocatalytic Conversion

J.F. THOMPSON, BIN CHEN, J. MINUZZO, N. LONDONO, NASA Ames Research Centre, Mountain View, CA, USA; G. WHITING, Palo Alto Research Center (PARC)

I-3:L14 Photocatalytic Ag/AgCl Polymer Composites

E.W. TATE, J.H. JOHNSTON, School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington, New Zealand

Poster Presentations

I:P01 Enhancement of Photocatalytic Reaction by Coupling TiO₂ with Graphene Oxide

H.M. YADAVEM, JUNG-SIK KIM, Department of Materials Science and Engineering, University of Seoul, Republic of Korea

I:P02 Effect of Annealing on the PL and Photocatalytic Properties of Solution Combusted ZnO Nanopowders

SUNG PARK, JI HYUNG RYU, JUNG EUN PARK, MIN JAE HAN, JAE CHUN LEE, Dept. of Materials Science and Engineering, Myongji University, Yongin, Korea

I:P03 Alkali Metal-doped TiO₂ Nanotube Array Films with Enhanced Open Circuit Voltage for Photocatalytic Solar Fuel Generation

S. ABD EL-NASSER, A. ESAWI, Department of Mechanical Engineering and the Yousef Jameel Science and Technology Research Center, The American University in Cairo, New Cairo, Egypt

I:P04 Hybrid DFT Study of the Fe:NiOOH OER Catalyst and its Interface to BIVO₄

J.C. CONESA, Inst. de Catálisis y Petroleoquímica, CSIC, Madrid, Spain

I:P05 Effect of Solvent Additives and P3HT on PDTSTTz/PCBM based Bulk Heterojunction Solar Cells

A.E. DEJENE, Ministry of Mines and Energy of Ethiopia, Addis Ababa, Bole-13, Ethiopia

I:P06 ZnO₂ Thin Films for Polymer Solar Cells

MYUNG-SEOK JEON, DO-HEYOUNG KIM, School of Chemical Engineering, Chonnam National University, Gwangju, Korea

I:P07 Flux Coating Fabrication of Nitride and Oxynitride Crystal Layers for Photoanode Applied to Solar Hydrogen Production

KATSUYA TESHIMA, SAYAKA SUZUKI, SHUJI OISHI, Shinshu University, Nagano, Japan; T. ISHIZAKI, Shibaura Institute of Technology, Japan

I:P08 Grafting of TiO₂ on PMMA Film and Reusability in Photodegradation of Organic Dye under UV and Visible Light Irradiation

R. KLAYSR¹, S. WICHAIDIT¹, O. MEKASUWANDUMRONG², P. PRASERTHDAM¹, ¹Center of Excellence on Catalysis and Catalytic Reaction Engineering, Department of Chemical Engineering, Faculty of Engineering, Chulalongkorn University, Bangkok, Thailand; ²Department of Chemical Engineering, Faculty of Engineering and Industrial Technology, Silpakorn University, Nakorn Pathom, Thailand

I:P09 Step by Step toward a Transparent Photo-super-capacitor

FR. RAMOS-BARRADO¹, F. MARTÍN¹, J. RODRÍGUEZ¹, E. NAVARRETE¹, M.C. LÓPEZ¹, E.A. DALCHIELE², ¹Nanotechnology Unit, Departamentos de Física Aplicada I & Ingeniería Química Facultad de Ciencias, Campus de Teatinos, Universidad de Málaga, Málaga, Spain, ²Instituto de Física & CINQUIFIMA, Facultad de Ingeniería, Montevideo, Uruguay

SYMPOSIUM J

FUNCTIONAL NANOMATERIALS FOR
NEW GENERATION SOLID STATE GAS
SENSORS

Oral Presentations

Session J-1

New Nanocarbons (CNTs, Graphene, New 2D
Materials)-based Gas Sensors; Nanosilicon-based
Gas Sensors**J-1:IL01 Graphene and 2D Materials Based Gas Sensors**

W. WLODARSKI, School of Electrical and Computer Engineering, RMIT University, Melbourne, Australia

J-1:IL02 Smell Sensors – Optical or by Electronics?

W. KNOLL, AIT Austrian Institute of Technology, Vienna, Austria, and Center for Biomimetic Sensor Science, Nanyang Technological University, Singapore

J-1:IL03 Nanostructured Films as Sensitive Elements for Surface Acoustic Wave (SAW) Sensors: Deposition Methods, Device Characterization and Design Trends

S.M. BALASHOV, O.V. BALACHOVA, A.V.U. BRAGA, Centro de Tecnologia da Informação Renato Archer, Campinas, Brazil; S. MOSHKALEV, Center for Semiconductor Components, State University of Campinas, Brazil; L.T. KUBOTA, R.A. TIMM, Department of Analytical Chemistry, State University of Campinas, Brazil

J-1:IL04 High Performance Chemoresistive Gas Sensors based on Self-activated Graphene and Functionalized Graphene

HO WON JANG, Department of Materials Science and Engineering, Seoul National University, Seoul, Korea

J-1:IL05 Graphene-based Materials and Nanostructures for Discriminative Gas Sensing

A. SINITSKII, University of Nebraska - Lincoln, Lincoln, NE, USA

J-1:L06 Microwatt Power Consumption Gas Sensors based on Decorated Carbon Nanotube

S. MOSHKALEV, R. SAVU, M. CANESQUI, A. VAZ, Center for Semiconductor Components, UNICAMP, Campinas, SP, Brazil

J-1:L07 Adsorption Characterization of Fabricated Buckypapers (BPs) for Volatile Organic Compound (VOC) Sampling and Analysis

JONGHWA OH, C.T. LUNGU, University of Alabama at Birmingham, Birmingham, AL, USA; E.L. FLOYD, University of Oklahoma, Oklahoma City, OK, USA

J-1:L08 Synthesis and Characterization of Multi Walled Carbon Nanotubes(MWCNTs)/Ag-ZnO Nanocomposite for Photocatalytic and Sensor Applications

A. WORKIE, Department of Chemistry, Bule Hora University, Bule Hora, Ethiopia; **A. TADDESSE**, Department of Chemistry, Haramaya University, Haramaya, Ethiopia; **S. ADMASSIE**, Department of chemistry, Addis Ababa University, Addis Ababa, Ethiopia

Session J-2

Semiconductor/Ion Conduction Oxides-based Gas Nanosensors

J-2:IL01 Nanostructured Semiconductor Gas Sensors for Detection of Sub-ppm Concentrations

T. SAUERWALD, M. LEIDINGER, A. SCHÜTZE, Saarland University, Saarbrücken, Germany; **J. HUOTARI**, J. LAPPALAINEN, Microelectronics and Materials Physics Laboratories, University of Oulu, Oulu, Finland

J-2:IL02 Detection of Particulate Matter by using Limiting Current-type Oxygen Sensor

M. NISHIBORI, H. WAKITA, K. SHIMANOE, Kyushu University, Kasuga, Fukuoka, Japan; **Y. SADAOKA**, Ehime University, Matsuyama, Ehime, Japan

J-2:L03 Functional Oxide Materials for High Performance SiC-FET Sensors for Indoor Air Quality Control

D. PUGLISI, M. BASTUCK, M. ANDERSSON, A. LLOYD SPETZ, Linköping University, Linköping, Sweden; **M. BASTUCK**, A. SCHUETZE, Saarland University, Saarbrücken, Germany; **M. ANDERSSON**, J. HUOTARI, J. LAPPALAINEN, A. LLOYD SPETZ, University of Oulu, Oulu, Finland; **V. KEKKONEN**, J. LIIMATAINEN, Picodeon LTD Oy, Ii, Finland

J-2:IL04 Highly Selective Detection of Methylbenzenes using p-type Oxide Semiconductors

JONG-HEUN LEE, Department of Materials Science and Engineering, Korea University, Seoul, Republic of Korea

J-2:IL05 Nanocomposites-based Oxygen Gas Sensors

M. BREZEANU, B.C. SERBAN, V. AVRAMESCU, C. COBIANU, V. DUMITRU, O. BUIU, A. STRATULAT, Honeywell Romania SRL, Bucharest, Romania; **A. DE LUCA**, Univ. of Cambridge; **S.Z. ALI**, Cambridge CMOS Sensors; **F. UDREA**, Univ. of Cambridge

J-2:IL06 Effective Design and Fabrication of Harsh Environment and Biomedical Gas Sensors

P.K. DUTTA, Department of Chemistry and Biochemistry, The Ohio State University, Columbus, OH, USA

J-2:IL07 Investigating the Selective Behaviour of CuO in Gas Sensing Applications

S. PALZER¹, J. WÖLLENSTEIN^{1,2}, J. KNEER¹, ¹Laboratory for Gas Sensors, Department of Microsystems Engineering, University of Freiburg, Germany; ²Fraunhofer Institute for Physical Measurement Techniques; Freiburg, Germany

J-2:IL08 Sensitivity and Selectivity of SnO₂-based Sensor for CO and H₂ Detections

XING-MIN GUO, JIE-TING ZHAO, XI-TAO YIN, University of Science and Technology Beijing, Beijing, China

J-2:L09 Synthesis and Gas-sensing Properties of Nanoporous Cobalt Oxide Materials

S. VETTER, S. HAFFER, T. WAGNER, **M. TIEMANN**, Faculty of Science, Department of Chemistry, University of Paderborn, Germany

J-2:L10 Low Temperature UV-activated Sensor Platform

I.N. IVANOV¹, C. JACOBS¹, E. MUCKLEY^{1,2}, ¹Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, TN, USA; ²University of Tennessee Knoxville, TN, USA

J-2:L11 Enhanced Gas Sensing Properties of Different ZnO 3D Hierarchical Structures

A. FIORAVANTI^{1,2}, A. BONANNO¹, M. MAZZOCCHI³, M.C. CAROTTA⁴, M. SACERDOTI⁵, ¹CNR-IMAMOTER Ferrara, Ferrara, Italy; ²Dipartimento di Chimica, Università di Parma, Parma, Italy; ³CNR-ISTEC Faenza, Italy; ⁴Consorzio Futuro in Ricerca, Ferrara, Italy; ⁵Dipartimento di Fisica e Scienze della Terra, Università di Ferrara, Ferrara, Italy

J-2:IL12 UV Activated Hollow ZnO Microspheres for Selective VOCs Sensors at Low Temperatures

XIAOGAN LI, Dalian University of Technology, School of Electronic Science and Technology, Institute for Sensor Technology, Dalian, Liaoning, P.R. China

J-2:IL13 Electrical Conductivity and Sensitivity of the Nanosized Metal Oxide Gas Sensors

A.A. VASILIEV, National Research Center "Kurchatov Institute", Moscow, Russia

J-2:IL14 New Semiconductor Gas Sensor Based on Enhancing Oxygen Partial Pressure

K. SHIMANO, N. MA, R. KATO, M. NISHIBORI, Kyushu University, Kasuga, Fukuoka, Japan

J-2:L15 Self-doped Nanocolumnar Vanadium Oxides for Exhaled Breath Analyzer

SOO DEOK HAN, H.G. MOON, J.S. KIM, S.J. YOON, C.Y. KANG, Korea Institute of Science and Technology, Seoul, South Korea; **S.D. HAN**, C.Y. KANG, KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, South Korea

J-2:L16 Patterned Laser-grown Nanowires for Hydrogen Isotopes Detection with SAW-sensors

A. MARCU¹, C. VIESPE¹, I. NICOLAE¹, B. BUTOI¹, D. PAUL¹, L. AVOTINA^{1,2}, C.P. LUNGU¹, ¹National Institute for Laser Plasma and Radiation Physics, Laser Department, Bucharest-Magurele, Romania; ²Institute of Chemical Physics, University of Latvia, Riga, Latvia

J-2:L17 Electronic Dopants in SnO₂ and ZnO: Effect for Surface Acidity and Gas Sensor Behavior

A.V. MARIKUTSA, N.A. VOROBYEVA, M.N. RUMYANTSEVA, **A.M. GASKOV**, Chemistry Department, Moscow State University, Moscow, Russia

J-2:IL18 Metal Oxide Nanocomposites and Surface Modifications for Chemical Sensing

M. EPIFANI, CNR-IMM, Lecce, Italy

J-2:L19 Pulsed Laser Deposited Platinum Decorated Tin Oxide Nanotree Layers as Highly Sensitive Gas Sensing Material

J. HUOTARI¹, T. HAAPALAINEN¹, T. BAUR², C. ALÉPÉE³, J.PUUSTINEN¹, **J. LAPPALAINEN**¹, ¹Microelectronics and Materials Physics Laboratories, University of Oulu, Oulu, Finland; ²Laboratory for Measurement Technology, Department of Mechatronics, Saarland University, Saarbrücken, Germany; ³SGX Sensortech SA, Corcelles-Cormondrèche, Switzerland

J-2:L20 Engineering Metal Oxide Nanoparticles for Gas Sensing Applications

XUCHUAN JIANG, Laboratory for Simulation and Modelling of Particulate Systems (SIMPAS), Department of Chemical Engineering, Monash University, Melbourne, VIC, Australia

J-2:L21 MgO-modified SrMoO₄ and Nano-SrMoO₄ Sensing Materials for H₂ and SO₂ Detection at High Temperatures

E. CIFTYUREK, K. SABOLSKY, **E.M. SABOLSKY**, Department of Mechanical & Aerospace Engineering, West Virginia University, Morgantown, WV, USA

Session J-3

Nanometal-based Gas Sensors; Polymer-based Gas Sensors

J-3:IL01 Template-assisted Fabrication of Metal Nanostructures for Gas Sensing Applications

Z.Z. OZTURK, Gebze Technical University, Dept. of Physics, Çayirova Campus, Gebze, Kocaeli, Turkey

J-3:IL02 Ultra-pure Organically-functionalised Gold Nanoparticles Nano-assemblies for Schottky-diode Gas Sensors

R. IONESCU, T.G. WELEAREGAY, G. PUGLIESE, Rovira i Virgili University, Tarragona, Spain; **U. CİNDEMİR**, L. ÖSTERLUND, Uppsala University, Uppsala, Sweden and Molecular Fingerprint Sweden AB, Uppsala, Sweden

Session J-4

Nanocomposite/Hybrid/Heterostructure-based Gas Sensors

J-4:IL01 Nanostructured Hybrid Thin Films for Gas Sensing

R. RIEDEL, TU Darmstadt, Darmstadt, Germany

J-4:IL02 Capacitive Chemical Sensors based on Metal-organic Framework/Polymer Composites

S. SACHDEVA, S.J.H. KOPER, F. KAPTEIJN, E.J.R. SUDHÖLTER, J. GASCON, L.C.P.M. DE SMET, Delft University of Technology, Delft, The Netherlands; D. SOCCOL, D. GRAVESTEIJN, NXP Semiconductors, 3001 Leuven, Belgium

J-4:LO3 Plasmon Enhanced MOX Gas Sensor

N. CATTABIANI, C. BARATTO, G. FAGLIA, E. COMINI, G. SBERVEGLIERI, Sensor Lab, CNR-INO and University of Brescia, Brescia, Italy

J-4:LO4 Organic and Inorganic Photosensitizers for Visible Light Activated MOS Gas Sensors

M.N. RUMYANTSEVA, A.S. CHIZHOV, A.V. MARCHEVSKY, E.V. PODOLKO, E.V. LUKOVSKAYA, O.A. FEDOROVA, A.M. GASKOV, Moscow State University, Moscow, Russia

J-4:LO5 Green Synthesis of Biopolymer-silver Nanoparticles Composites for Gas Sensing

S.A. PANDE, Laxminarayan Institute of Technology, Nagpur, India

J-4:IL06 Nanoscale Metal Oxide-based Heterojunctions for Gas Sensing

D.R. MILLER, S.A. AKBAR, PA. MORRIS, Department of Materials Science and Engineering, The Ohio State University, Columbus, OH, USA

J-4:IL07 Sensing Properties of Diode-type Gas Sensors

Y. SHIMIZU, T. HYODO, Graduate School of Engineering, Nagasaki University, Nagasaki, Japan

J-4:IL08 MIP-nanoparticle Composites and Core-shell Nanoparticles leading to Materials with Strongly Enhanced SensitivityP. LIEBERZEIT¹, G. MUSTAFA^{1,2}, W. CUYPERS¹, M. ZEILINGER¹, K. NAVAKUL^{1,3}, C. SANGMA³, ¹University of Vienna, Faculty for Chemistry, Department of Analytical Chemistry, Vienna, Austria; ²Quaid-e-Azam University, Islamabad, Pakistan; ³Kasetsart University, Faculty of Sciences, Department of Chemistry, Bangkok, Thailand

Poster Presentations

J:P01 Study of Al-ZnO Thin Films Deposited by RF Magnetron Sputtering for Gas Sensor ApplicationG.W.A. CARDOSO¹, G. LEAL¹, A.S. DA SILVA SOBRINHO², D.M.G. LEITE², M. MASSI^{1,2}, ¹Federal University of São Paulo – Science and Technology Institute, São José dos Campos, SP, Brazil; ²Technological Institute of Aeronautics, Plasmas and Processes Laboratory, São José dos Campos, SP, Brazil**J:P02 Crystalline Size Dependent Effect on the Gas Sensing Properties of ZnO Films based on Quantum Dots**

J.F. DENG, QIUYUN FU, D.X. ZHOU, W. LUO, Y.X. HU, Z.P. ZHENG, School of Optical and Electronic Information, Huazhong University of Science & Technology, Hongshan District, Wuhan City, P.R. China

J:P03 Enhancement of Hydrogen Sulfide Gas Sensing of Cadmium-doped ZnO Films based on ZnO QDs

J.F. DENG, Q.Y. FU, D.X. ZHOU, W. LUO, Y.X. HU, ZHIPING ZHENG, School of Optical and Electronic Information, Huazhong University of Science & Technology, Hongshan District, Wuhan City, P.R. China

J:P04 Hydrogen Gas Sensors based on Palladium/Silicon Oxide/Silicon Carbide Semiconductor StructuresJ. NEAMTU¹, F. CRACIUNOIU², D. OVEZEA¹, R. PASCU², V. MARINESCU¹, ¹National Institute for Research&Development in Electrical Engineering, Bucharest Romania; ²National Institute for R&D in Microtechnology, Bucharest, Romania**J:P05 Synthesis of Polyindole by Emulsion Polymerization: Effects of Oxidant and Surfactant Types**

K. PHASUKSOM, A. SIRIVAT, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

J:P06 Synthesis of Poly(p-phenylene) Nanoparticles: Effects of Surfactants and Dopants on Electrical Conductivity

P. CHOEICHOM, A. SIRIVAT, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

SYMPOSIUM K

NON-VOLATILE MEMORY DEVICES:
MATERIALS, EMERGING CONCEPTS
AND APPLICATIONS

Oral Presentations

Session K-1

Resistance Switching Memories (ReRAM)

K-1:IL01 New Trends and Progress in Redox-based Resistive Switching Memories

I. VALOV, Research Centre Juelich, Electronic Materials (PGI-7), Juelich, Germany

K-1:IL02 Structural Changes and Conductive Filament Formation in Silicon Oxide during Resistance SwitchingsA.J. KENYON¹, A. MEHONIC¹, M. BUCKWELL¹, L. MONTESI¹, M. SINGH MUNDE^{1,2}, D. GAO³, S. HUDZIAK¹, R.J. CHATER⁴, S. FEARN⁴, D. MCPHAIL⁴, M. BOSMAN², A.L. SHLUGER³, ¹Department of Electronic & Electrical Engineering, UCL, London, UK; ²Institute of Materials Research and Engineering, Singapore; ³Department of Physics and Astronomy and London Centre for Nanotechnology, University College London, London, UK; ⁴Department of Materials, Imperial College London, London, UK**K-1:LO3 Impact of Cation-stoichiometry on Switching Speed and Data Retention in SrTiO₃ Thin Film Devices**

N. RAAB, C. BÄUMER, S. MENZEL, R. DITTMANN, Peter Gruenberg Institut, Forschungszentrum Juelich GmbH, Juelich, Germany; K. FLECK, Institut fuer Werkstoffe der Elektrotechnik (IWE-2), RWTH Aachen, Aachen, Germany

K-1:LO4 Investigation of Ions Movement during the Operation of Al₂O₃-Based CBRAM using Thermodynamic and Kinetic Approaches

C. NAIL, P. BLAISE, G. MOLAS, M. BERNARD, A. ROULE, A. TOFFOLI, L. PERNIOLA, CEA/LETI, Grenoble, France; C. VALLÉE, CNRS/LTM, Grenoble, France

K-1:LO5 Resistive Switching and Nanoscale Electronic Transport in Au/Nb:SrTiO₃ Schottky Junctions

R. BUZIO, A. GERBI, E. BELLINGERI, CNR-SPIN Institute for Superconductivity, Innovative Materials and Devices, Genova, Italy; A.S. SIRI, D. MARRÉ, Physics Department, University of Genova, Genova, Italy

K-1:LO6 Switching Mechanisms in Binary Metal Oxide based RRAM

B. MAGYARI-KOPE, Y. NISHI, Stanford University, Stanford, CA, USA

K-1:LO7 Challenges and Opportunities of RRAM for Innovative Applications

D. DELERUYELLE, M. BOCQUET, J.-M. PORTAL, Im2np UMR CNRS 7334 and Aix-Marseille Université, France

K-1:LO8 Switching Performance of CMOS Integrated HfO₂-based Resistive Memory CellsC. WENGER¹, E. PEREZ¹, A. GROSSI², C. ZAMBELLI², P. OLIVO², ¹IHP GmbH - Leibniz Institute for innovative microelectronics, Frankfurt, Germany; ²Department Engineering ENDIF, Università degli Studi di Ferrara, Ferrara, Italy**K-1:LO9 Ab-initio Modeling of the Evolution of Oxygen Vacancies due to Heating and Electric Fields in HfO₂-RRAM**

L. SEMENTA, M. MONTORSI, L. LARCHER, University of Modena and Reggio Emilia, Modena, Italy

K-1:LO10 Potential Fluctuation in RRAM based on Non-stoichiometric Hafnium Sub-oxidesD.R. ISLAMOVI^{1,2}, V.N. KRUCHININ¹, V.S.H. ALIEV¹, T.V. PEREVALOV^{1,2}, V.A. GRITSENKO^{1,2}, I.P. PROSVIRIN³, O.M. ORLOV⁴, A. CHIN⁵, ¹Rzhanov Inst. of Semiconductor Physics SB RAS, Novosibirsk, Russian Fed.; ²Novosibirsk State University, Novosibirsk, Russian Fed.; ³Boreskov Inst. of Catalysis SB RAS, Novosibirsk, Russian Fed.; ⁴JSC Molecular Electronics Research Inst., Zelenograd, Russian Fed.; ⁵National Chia Tung University, Hsinchu, Taiwan**K-1:IL11 3D Vertical Integration of Resistive Switching Memory**

MING LIU, QING LUO, XIAOXIN XU, HANGBING LV, QI LIU, SHIBING LONG, Key Laboratory of Microelectronics Devices and Integrated Technology, Institute of Microelectronics, Chinese Academy of Sciences, Beijing, China

K-1:IL12 Different Applications of Memristors Enabled by Selector Devices

J. JOSHUA YANG, University of Massachusetts, Amherst, MA, USA

K-1:L13 Switching Kinetics of Ta2O5-based ReRAM: Limiting Processes and Ultimate Switching Speed

S. MENZEL¹, A. MARCHEWKA², B. RÖSGEN¹, W. KIM¹, V. HAVEL², K. FLECK², V. RANA¹, U. BÖTTGER², D. WOUTERS¹, R. WASER^{1,2}, ¹Forschungszentrum Jülich, Peter Grünberg Institut (PGI-7), Jülich, Germany; ²RWTH Aachen, Institut für Werkstoffe der Elektrotechnik (IWE 2), Aachen, Germany

K-1:L14 Engineering Defect Levels and Strain Fields as Functional Oxide Building Blocks for Novel ReRAM Architectures

R. SCHMITT, E. SEDIVA, R. KOROBKO, F. MESSERSCHMITT, S. SCHWEIGER, M. KUBICEK, J.L.M. RUPP, ETH Zurich, Department of Materials, Electrochemical Materials, Zurich, Switzerland

K-1:L15 Si-Ag Memristive Structures

C. DIAS, L.M. GUERRA, J. VENTURA, IFIMUP and IN - Institute of Nanotechnology, and Dept. of Physics and Astronomy, Faculty of Sciences, University of Porto, Porto, Portugal; H. LV, S. CARDOSO, P.P. FREITAS, INESC-MN and IN - Institute of Nanoscience and Nanotechnology, Lisboa, Portugal

K-1:L16 The Resistive Switching Behavior of ZnO Films Depending on Li Dopant Concentration and Electrode Materials

A. IGITYAN, Y. KAFADARYAN, N. AGHAMALYAN, S. PETROSYAN, Institute for Physical Research of NAS of Armenia, Ashtarak, Armenia

K-1:L17 Memristor Device Modeling based on Physical and Dynamical Measurements

J.P. STRACHAN, S. KUMAR, C. GRAVES, E. MERCED-GRAFALS, R.S. WILLIAMS, Hewlett Packard Labs, Palo Alto, CA, USA

K-1:L18 Study of the Resistive Switching Effect using a Three Terminal Bipolar Device

E. YALON, Technion, Israel Institute of Technology, Haifa, Israel, Current address: Stanford University, Stanford, CA, USA; D. RITTER, Technion, Israel Institute of Technology, Haifa, Israel

K-1:L19 Understanding of the Combined Threshold and Memory-Type Resistive Switching Behavior in Pt/NbOx/Ti/Pt Cells built from Amorphous Nb2O5 Films

S. HOFFMANN-EIFERT¹, **C. FUNCK**^{1,2}, N. ASLAM¹, S. MENZEL¹, E. LINN², R. WASER^{1,2}, ¹Forschungszentrum Jülich, PGI-7, and JARA-FIT, Jülich, Germany; ²Institute of Materials in Electrical Engineering and Information Technology, RWTH Aachen University, Germany

K-1:L20 Morphology-assisted Electrical Memory Performances of Well-defined Brush Polymers

MOONHOR REE, SUNGJIN SONG, JINSEOK LEE, DONGWOO WI, YONGJIN KIM, HOYEOL LEE, BRIAN J. REE, POSTECH, Dept. of Chemistry, Division of Advanced Materials Science, Pohang Accelerator Laboratory, and Polymer Research Institute Pohang, Republic of Korea

Session K-2

Phase Change Memories (PCM)

K-2:IL01 Phase-change Memories for Energy-efficient Data-centric IT Applications

P. FANTINI, Micron - Process R&D, Vimercate, Italy

K-2:IL02 Epitaxial Chalcogenide Superlattices for Memory Application

R. CALARCO, Paul-Drude-Institut für Festkörperelektronik, Berlin, Germany

K-2:IL03 Advances in Nanowire-based Phase Change Memories

M. LONGO, Laboratory MDM, IMM-CNR, Agrate Brianza, Italy

K-2:L05 Epitaxial Trigonal Ge-Sb-Te Alloys: Model Materials for Future Low Energy Consumption Non-volatile Memory Applications?

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K-2:L06 Au-catalyzed Synthesis and Characterization of In-Ge-Te Nanowires by MOCVD

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K-2:L07 Operation Fundamentals of Phase Change Memory Devices based on Ge-rich GST Materials and Featuring High Reliability Performances

V. SOUSA, G. NAVARRO, N. CASTELLANI, M. COUÉ, O. CUETO, C. SABBIONE, V. DELAYE, F. FILLOT, P. NOÉ, L. PERNIOLA, CEA-LETI, Grenoble Cedex, France; S. BLONKOWSKI, STMicroelectronics, Crolles, France; P. ZULIANI, R. ANNUNZIATA, STMicroelectronics, Agrate Brianza, Italy

K-2:IL08 Atomistic Simulations of the Heterogeneous Crystallization of Phase Change Materials

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K-2:IL09 Phase-change Memory: the Role of Lone-pair Electrons

A.V. KOLOBOV, P. FONS, J. TOMINAGA, Nanoelectronics Research Institute, National Institute for Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

K-2:L10 Integrated All-photonic Data Storage Enabled by Phase-change Materials

C. RIOS¹, M. STEGMAIER², P. HOSSEINI¹, C.D. WRIGHT³, W. PERNICE^{2,4}, H. BHASKARAN¹, ¹Department of Materials, University of Oxford, Oxford, UK; ²Institute of Nanotechnology, Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen, Germany; ³Department of Engineering, University of Exeter, Exeter, UK; ⁴Department of Physics, University of Muenster, Muenster, Germany

K-2:L11 Phase Change Material based Non-volatile Optoelectronic Interface for Optical Systems

G. RODRIGUEZ HERNANDEZ, P. HOSSEINI, C. RIOS, H. BHASKARAN, Oxford University, Department of Materials, Oxford, UK; C.D. WRIGHT, University of Exeter, Engineering Department, Exeter, UK

Session K-3

Magnetic, Ferroelectric and Multiferroic Materials for Memory Devices

K-3:IL01 Nano Spintronics Devices for CMOS Integration

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K-3:IL02 Ferroelectric HfO2 for Non-volatile Memory Devices

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K-3:L03 Hafnium Oxide based Ferroelectrics prepared by Chemical Solution Deposition

S. STARSCHICH, U. BÖTTGER, RWTH Aachen University, Institut für Werkstoffe der Elektrotechnik II, Aachen, Germany

K-3:L04 Toward Experimental Implementation of HfO2 based Ferroelectric Tunnel Junctions

A. CHERNIKOVA, D. NEGROV, **A. ZENKEVICH**, Moscow Institute of Physics and Technology, Dolgoprudny, Moscow region, Russia

K-3:L05 Formation of Nanoscale BaTiO3 MOSCAPs for Ferroelectric Field Effect Transistor Application

P. PONATH, A. POSADAS, University of Texas at Austin, Austin, TX, USA; M. SCHMIDT, P. HURLEY, R. DUFFY, Tyndall National Institute, University, Cork, Ireland; A.A. DEMKOV, University of Texas at Austin, Austin, TX, USA

K-3:IL06 Nonvolatile Resistive Switching in Interface-engineered Ferroelectric Junctions

A. SAWA, A. TSURUMAKI-FUKUCHI, Y. TOYOSAKI, H. YAMADA, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Ibaraki, Japan

K-3:IL07 Polarization-enabled Electronic Properties of Hybrid 2D-ferroelectric Structures

A. GRUVERMAN, Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE, USA

K-3:L08 Leakage Currents in FeRAM Capacitors: Mechanisms and Correct Interpretation

A. SIGOV, K. VOROTILOV, YU. PODGORNY, MIREA, Moscow, Russia

K-3:IL09 Memristive and Magnetoresistive Properties of SrTiO3 based Junctions

I. BERGENTI, P. GRAZIOSI, A. RIMINUCCI, L. VISTOLI, M. CALBUCCI, F. BORGATTI, V. DEDIU, ISMN CNR, Bologna, Italy; D. MACLAREN, School of Physics and Astronomy, University of Glasgow, UK

K-3:IL10 Advances and Challenges in STT-MRAM Technology

V. NIKITIN, D. APALKOV, R. CHEPULSKYY, R. BEACH, S. SCHAFER, V. VOZNYUK, Z. DUAN, M. KROUNBI, Samsung Electronics, Semiconductor R&D Center, San Jose, CA, USA

K-3:IL11 Magnetic Ratchet for Three-dimensional Spintronic Memory and Logic

D. PETIT, R. LAVRIJSEN, J.-H. LEE, R. MANSELL, A. FERNANDEZ-PACHECO, R.P. COWBURN, University of Cambridge, Cambridge, UK

K-3:IL12 Controlling Domain Wall Motion by Electric Field in CoFeB-MgO Devices with Perpendicular Anisotropy

D. RAVELOSONA¹, L. HERRERA DIEZ¹, Y. LIU¹, W. LIN¹, J.P. ADAM¹, N. VERNIER¹, G. AGNUS¹, B. OCKER², J. LANGER², E.E. FULLERTON³, ¹Institut d'Electronique Fondamentale, Université Paris-Sud - CNRS, UMR8622, Orsay, France; ²Singulus Technologies AG, Kahl am Main, Germany; ³Center for Magnetic Recording Research, University of California San Diego, La Jolla, CA, USA

K-3:IL13 Integrating MTJ Devices into a 130nm CMOS Process Flow

M. BUCHBINDER, TowerJazz, Migdal Ha'emek, Israel

K-3:IL14 Multibit Self-referenced Thermally Assisted MRAM

Q. STAINER^{1,2}, L. LOMBARD¹, K. MACKAY¹, C. DUCRUET¹, S. BANDIERA¹, R.C. SOUSA², G. VINAY², I.L. PREJBEANU², **B. DIENY**², ¹Crocus Technology SA, Grenoble, France; ²SPINTEC, CEA/INAC, CNRS, Univ.Grenoble Alpes, Grenoble, France

K-3:L15 Toward Sub-20 nm Magnetic Tunnel Junction for Embedded Cache Memory

TOSHIHIRO SUGII, HIDEYUKI NOSHIRO, YUICHI YAMAZAKI, CHIKAKO YOSHIDA, YOSHIHISA IBA, Fujitsu Limited, Atsugi, Japan

K-3:L16 Controlling of GMR Effect in MgO based Magnetic Tunnel Junctions

K. MUJASAM BATOO, King Abdullah Institute for Nanotechnology, King Saud University, Riyadh, Saudi Arabia

Session K-4

Memristive Materials, Devices and Emerging Applications

K-4:IL01 Recent Investigations on the Response of a Tantalum Oxide Memristor to Different Excitations

R. TETZLAFF, Chair of Fundamentals of Electrical Engineering, Institute of Circuits and Systems, Faculty of Electrical and Computer Engineering, Technische Universität Dresden, Germany

K-4:LO2 Memory Loss in a Tantalum Oxide Memristor

A. ASCOLI, R. TETZLAFF, Institut fuer Grundlagen der Elektrotechnik und Elektronik, TUD, Dresden, Germany; L.O. CHUA, Department of Electrical Engineering and Computer Sciences, University of California Berkeley, Berkeley, CA, USA; J.P. STRACHAN, R.S. WILLIAMS, Hewlett Packard Labs, Palo Alto, CA, USA

K-4:IL03 Efficient Implementation of Deep Neural Network with Spike Coding and Resistive RAM based Synapses

O. BICHLER, CEA, LIST, Gif-sur-Yvette, France; D. GARBIN, CEA, LETI, Minatec Campus, Grenoble, France; E. VIANELLO, CEA, LETI, Minatec Campus, Grenoble, France; D. ROCLIN, CEA, LIST, Gif-sur-Yvette, France; C. GAMRAT, CEA, LIST, Gif-sur-Yvette, France

K-4:IL04 RRAM for New Computing Paradigms Beyond von Neumann Architecture

BIN GAO, J.F. KANG, Institute of Microelectronics, Peking University, Beijing, China

K-4:IL06 Learning Synapses and Neuromorphic Circuits using Oxide-based Resistive RAM

D. IELMINI, DEIB, Politecnico di Milano, Italy

K-4:LO7 HfO2-based Memristive Device for Neuromorphic Computation

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K-4:LO8 Synaptic Functionality of Nanoscale HfO2 based Memristors in Crossbars

Yu. MATVEYEV, R. KIRTAEV, A. FETISOVA, D. NEGROV, A. ZENKEVICH, Moscow Institute of Physics and Technology, Dolgoprudny, Moscow Region, Russia

K-4:LO9 Emulation of Neural Dynamics with Memristive Devices

M. ZIEGLER¹, M. HANSEN¹, M. IGNATOV¹, A. PETRARU¹, K. OCHS², H. KOHLSTEDT¹, ¹Nanoelektronik, Technische Fakultät, Christian-Albrechts-Universität zu Kiel, Kiel, Germany; ²Lehrstuhl für Digitale Kommunikationssysteme, Ruhr-Universität Bochum, Bochum, Germany

K-4:L10 Bismuth Ferrite Thin Films with Mobile and Fixed Donors for Novel Memory Applications

H. SCHMIDT¹, TIANGUI YOU¹, NAN DU¹, D. BÜRGER¹, I. SKORUPA^{1,2}, T. MIKOLAJICK³, O.G. SCHMIDT^{1,4}, ¹Material Systems for Nanoelectronics, TU Chemnitz, Chemnitz, Germany; ²HZDR Innovation GmbH, Dresden, Germany; ³NaMLab gGmbH, Dresden, Germany; ⁴Institute for Integrative Nanosciences, IFW Dresden, Dresden, Germany

K-4:IL11 Phase Change Materials for Neuromorphic Computing

M. SALINGA, RWTH Aachen University, Aachen, Germany

K-4:IL12 Non-von Neumann Computing using Phase Change Devices

A. SEBASTIAN, IBM Research - Zurich, Rüschlikon, Switzerland

K-4:IL13 Artificial Synapses based on Ferroelectric Tunnel Junctions

V. GARCIA¹, S. BOYN¹, G. LECERF², B. XU³, S. FUSIL¹, L. BELLAICHE³, M. BIBES¹, A. BARTHÉLÉMY¹, S. SAÏGHI², J. GROLLIER¹, ¹Unité Mixte de Physique, CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France; ²Univ. Bordeaux, IMS, UMR 5218, Talence, France; ³Department of Physics and Institute for Nanoscience and Engineering, University of Arkansas, Fayetteville, Arkansas, USA

K-4:IL14 Ferroelectric Memristors for Neural Network Applications

Y. NISHITANI, Y. KANEKO, M. UEDA, Panasonic Corporation, Seika, Kyoto, Japan

Poster Presentations

K:P01 Direct Observation of Local Hot Electron Transport through Metal/HfO2/TiN Resistive Switching Devices

A. GERBI, R. BUZIO, D. MARRE, E. BELLINGERI, CNR-SPIN Institute for Superconductors, Innovative Materials and Devices, Genova, Italy; G. TALLARIDA, S. BRIVIO, S. SPIGA, CNR-IMM Institute for Microelectronics and Microsystems, Laboratorio MDM-IMM-CNR, Agrate Brianza (MB), Italy

K:P02 Impact of Electrode and Oxide Thicknesses on the ReRAM Performance of Metal/TiOx/Al2O3/Metal Nano Cross-point Structures with Oxides grown by Atomic Layer Deposition

HEHE ZHANG, A. HARDTDEGEN, S. HOFFMANN-EIFERT, Forschungszentrum Juelich, PGI-7, and JARA-FIT, Juelich, Germany

K:P03 Charge Transport and Characterization of Freestanding Ge1Sb2Te4 Platelets integrated in Coplanar Strip Lines

M. MIKULICS¹, M. SCHUCK¹, P. JOST², R. ADAM³, S. RIESS¹, Y.C. ARANGO¹, H. LÜTH¹, D. GRÜTZMACHER¹, H. HARDTDEGEN¹, ¹Peter Grünberg Institute (PGI 9) and JARA - Fundamentals of Future Information Technology, Forschungszentrum Juelich GmbH, Germany; ²Physikalisches Institut (IA), RWTH Aachen University; ³Peter Grünberg Institute (PGI 6) and JARA - Fundamentals of Future Information Technology

K:P04 Iron Based Nanomaterials on Silicon: Formation, Morphology and Magnetic Properties

N.I. PLUSNIN, IACP FEB RAS, Vladivostok, Russia; V.V. PAVLOV, P.A. USACHEV, IPTI RAS, St. Petersburg, Russia

K:P05 Structural, Dielectric and Ferroelectric Behavior in Bi1-xLaxFe1-yNiyO3 (x = 0.0, 0.1; y = 0.0, 0.05) Multiferroic Ceramics

A. KUMAR¹, P. SHARMA², QI LI¹, D. VARSHNEY², ¹Department of Physics, Southeast University, Nanjing, P.R. China; ²School of Physics, Devi Ahilya University, Indore, India

K:P06 Room Temperature Structure and Multiferroic Properties of Sm modified BiFeO3 Ceramics

P. SHARMA¹, A. KUMAR², D. VARSHNEY¹, QI LI², ¹Materials Science Laboratory, School of Physics, Vigyan Bhawan, Devi Ahilya University, Indore, India; ²Department of Physics, Southeast University, Nanjing, P.R. China

K:P07 Improvement of FeRAM Capacitor Properties: Lead Excess Role and Two-step Crystallization Process

K. VOROTILOV, A. SIGOV, D. SEREGIN, MIREA, Moscow, Russia

K:P08 Relevant Characteristics of Magnetic, PL, and CL based on GaMnN
JUWON LEE¹, YOON SHON¹, C.S. PARK², E.K. KIM², ¹Quantum-functional Semiconductor Research Center, Dongguk University-Seoul, Seoul, Republic of Korea; ²Quantum-Function Spinics Laboratory and Department of Physics, Hanyang University, Seoul, Republic of Korea

K:P09 Dynamic Control of Colossal Magnetoresistance and Insulator-metal Transition by a Memristive Switch

ZHI-HONG WANG¹, Q.H. ZHANG^{1,2}, G. GREGORI³, Y. YANG¹, L. GU¹, J.R. SUN¹, C.W. NAN², B.G. SHEN¹, H.-U. HABERMEIER³, ¹Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing, China; ²Department of Materials Science and Engineering, Tsinghua University, Beijing, China; ³Max-Planck-Institute for Solid State Research, Stuttgart, Germany

K:P10 Fabrication of Floating Gates based on Al@Al₂O₃ Core-shell Nanoparticles and Memory Properties for Nonvolatile Applications

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SYMPOSIUM L

SMART AND INTERACTIVE TEXTILES

Oral Presentations

Session L-1

Adaptive/Active Textiles

L-1:IL01 Interfacial Force Mapping by Artificial Smart Skins

XIAOMING TAO^{1,2}, ZHIFENG ZHANG¹, FEI WANG¹, QIAO LI¹, ¹Institute of Textiles and Clothing, The Hong Kong Polytechnic University, Hong Kong, China; ²Interdisciplinary Division of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong, China

L-1:IL02 Energy Storage Nanofibers by Centrifugal Spinning

XIANGWU ZHANG, Polymer and Fiber Science Program, Department of Textile Engineering, Chemistry and Science, College of Textiles, North Carolina State University, Raleigh, NC, USA

L-1:IL03 Adaptive Textile Materials

S. MINKO, Nanostructured Materials Lab, Department of Textiles, Merchandising, and Interiors, University of Georgia, Athens, GA, USA

L-1:IL04 Shape-memory Nanocomposite Elastomers filled with Carbon Nanomaterials

G.C. LAMA^{1,2}, G. GENTILE¹, P. CERRUTI¹, V. AMBROGI^{1,2}, C. CARFAGNA¹, ¹Institute for Polymers, Composites and Biomaterials of Italian National Research Council (IPC-CNR), Pozzuoli, Italy; ²Department of Chemical Engineering, Materials and Industrial Production, University of Napoli, Napoli, Italy

L-1:L05 Active Textile Materials via Polymer Grafting

I. LUZINOV, Department of Materials Science and Engineering, Clemson University, Clemson, SC, USA

L-1:L06 A Design: STEM Approach to Creating a Textile Platform for Programmable Structures

A. TOOMEY, V. KAPSALI, Royal College of Art, London, UK; Northumbria University, Newcastle, UK

L-1:L07 Temperature Responsive 3D Nitinol Textile with Adaptive Cross-section

M. VYSANSKA, K. JANOUCHOVA, Technical University of Liberec, Faculty of Textile Engineering, Liberec, Czech Republic; L. HELLER, P. SITTNER, Institute of Physics AS CR, vi v. i., Prague, Czech Republic

L-1:IL08 Light Emitting Textile Diffusers for a Photo Dynamic Therapy with Monitoring Possibilities

Y. OGUZ^{1,2}, C. COCHRANE^{1,2}, S.R. MORDON^{1,3}, V. KONCAR^{1,2}, ¹University Lille Nord de France, Lille, France; ²ENSAIT, GEMTEX, Roubaix, France; ³INSERM U 703, Lille University Hospital - CHRU, France

L-1:L09 Electromechanically Active Textiles for Soft Robotics

A. MAZIZ¹, A. KHALDI¹, N.-K. PERSSON², E.W.H. JAGER¹, ¹Biosensors and Bioelectronics Centre, Dept. of Physics, Chemistry and Biology (IFM), Linköping University, Linköping, Sweden; ²Smart Textiles, University of Borås, Borås, Sweden

L-1:L10 Textile Materials with SMA Elements for Active Protection against Heat and Flame

G. BARTKOWIAK, A. DABROWSKA, Central Institute for Labour Protection, National Research Institute, Warsaw, Poland

L-1:L11 Dispenser printed Actively Controlled Thermochromic Colour Changing Device on Fabric for Smart Fabric Applications

YANG WEI, Z. AHMED, R. TORAH, J. TUDOR, University of Southampton, Hampshire, UK

L-1:IL12 Advanced Microgel-functionalised Polyester Textiles Adaptive to Ambient Conditions

P. GLAMPEDAKI, Pharmathen, R&D Dpt., Pallini, Attiki, Greece

L-1:IL13 Advances in Photovoltaic Fabrics

YONG K. KIM, University of Massachusetts, Dartmouth, MA, USA

Session L-2

E-textiles

L-2:IL01 Printed Electroluminescent Fabrics

P. CALVERT, New Mexico Tech, Socorro, NM, USA; BIN HU, Dartmouth College, Hanover, NH, USA

L-2:IL02 Vibration Energy to Electricity Conversion of Electrospun Nanofibers

JIAN FANG, TONG LIN, Deakin University, Institute for Frontier Materials, Geelong, Australia

L-2:IL03 Next Generation Wearable Sensors Based on Nanostructured Materials

A.B. DALTON, University of Surrey, Department of Physics, Guildford, UK

L-2:IL04 Resistance-invariant Superstretchable Conductor for DC and AC Signal Transmission

YOURACK LEE, LE VIET THONG, MIN-KYU JOO, YOUNG HEE LEE, DONGSEOK SUH, Department of Energy Science, and IBS Center for Integrated Nanostructure Physics (CINAP), Institute for Basic Science, Sungkyunkwan University, Suwon, Korea

L-2:IL05 Multifunctional Energy Generation System Harnessing Natural Sources

E. SIORES, The University of Bolton, Bolton, UK

L-2:IL06 Wearable Biomedical Systems: Enhancing Quality of Life through Technology and Innovation

S. JAYARAMAN, Georgia Institute of Technology, Atlanta, GA, USA

L-2:IL07 Electronic Textiles Fabricated using Atomic Layer Deposition

HAN-BO-RAM LEE, Department of Materials Science and Engineering, Incheon National University, Incheon, Korea

L-2:IL08 Plastic Electronics as a Versatile Technology based on Organic Semiconductors: Perspectives for Smart Textiles

D. VANDERZANDE, imo-imomec, Hasselt University, Hasselt, Belgium

L-2:L09 Hybrid Large-area Thin-film / CMOS System Technology for Wearable Electronics

S. WAGNER, W. RIEUTORT-LOUIS, J. SANZ-ROBINSON, T. MOY, L. HUANG, Y. HU, Y. AFSAR, J.C. STURM, N. VERMA, Princeton University, Princeton, NJ, USA

L-2:L11 Organic Bioelectronic Textiles in Health Monitoring

E. ISMAILOVA, Dep. of Bioelectronics, Ecole des Mines de St-Etienne, Gardanne, France

Session L-3

Functionality, Manufacturing, Application

L-3:IL01 Aulana® and NgaPure®: Nanogold coloured and Antimicrobial Silver Woollen Textiles – A Journey from Discovery to Commercialisation

J.H. JOHNSTON, School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington, New Zealand

L-3:IL02 Reliable Fabric-based Organic Light-emitting Diodes

KYUNG CHEOL CHOI, SEONIL KWON, WOCHYUN KIM, HYUN CHEOL KIM, SEUNGYEOP CHOI, School of Electrical Engineering, KAIST, Republic of Korea

L-3:IL03 Resorbable Fibrous Polymers in Terms of Forensic Engineering of Advanced Polymeric Materials

M. KOWALCZUK, Polish Academy of Sciences, Centre of Polymer and Carbon Materials, Zabrze, Poland; School of Biology, Chemistry and Forensic Science, Faculty of Science and Eng., University of Wolverhampton, UK

L-3:IL05 One-way Fluid-transport Fabrics and their Functionality
HONGXIA WANG, HUA ZHOU, TONG LIN, Australian Future Fibers Research and Innovation Centre, Deakin University, Geelong, VIC, Australia

L-3:IL06 Design of Instructive Fibre Platforms for Tissue Engineering and Drug Delivery Applications
V. GUARINO, V. CIRILLO, R. ALTOBELLI, L. AMBROSIO, Institute of Polymers, Composites & Biomaterials and Department of Chemical Sciences & Materials Technology, National Research Council of Italy, Naples, Italy

L-3:IL07 Metal and Metal-oxide Nanoparticles for Textile Applications
Z. SAPONJIC, M. RADOICIC, V. VODNIK, M. MILOSEVICA, Department of Radiation Chemistry and Physics, Vinča Institute of Nuclear Sciences, University of Belgrade, Serbia; M. RADETIC, Textile Department, Faculty of Technology and Metallurgy, University of Belgrade, Serbia; V. LAZIC, D. MARKOVIC, Innovation Center, Faculty of Technology and Metallurgy, University of Belgrade, Serbia

L-3:IL08 Manufacturing Nanoyarns for Conventional and Technical End Uses
G.K. STYLIOS, Heriot Watt University, Scotland, UK

L-3:L09 Fabrication of Silver-zinc "Battery Fabric" for Applications in SMART Textiles
A.M. ZAMARAYEVA, I. DECKMAN, CH. CHANG, A.C. ARIAS, Department of Electrical Engineering and Computer Sciences, University of California at Berkeley, Berkeley, CA, USA; M. WANG, D.A. STEINGART, Mechanical and Aerospace Engineering, Andlinger Center for Energy and the Environment, Princeton University, Princeton, NJ, USA

L-3:L10 New Nanogold Colours for Textiles
E.G. WRIGGLESWORTH, J.H. JOHNSTON, School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington, New Zealand

L-3:L11 The Incorporation of Phase Change Material into Soft Armour Inserts: Achieving a Level of Cooling without Compromising Ballistic Protection
M.F. LING, K. NG, M. MAHONEY, A.P. HUNT, Defence Science and Technology Group, Department of Defence, Melbourne, VIC, Australia

L-3:L12 Airbrushed Liquid Crystal/Polymer Fibers for Responsive Textiles
J.L. WEST, J. WANG, A. JAKLI, Liquid Crystal Institute, Kent State University, Kent, OH, USA

L-3:IL13 Encapsulation of Photochromic Dyes and their Application to Textile Materials
B. VONCINA, B. NERAL, University of Maribor, Faculty of Mechanical Engineering, Institute for Engineering Materials and Design, Maribor, Slovenia; T. FECZKO, Institute of Materials and Environmental Chemistry, Research Centre for Natural Sciences, Hungarian Academy of Sciences, Research Institute of Chemical and Process Engineering, University of Pannonia, Hungary

L-3:L14 Highly-elastic Superhydrophobic Fibrous Membranes
 HUA ZHOU, HONGXIA WANG, HAITAO NIU, **TONG LIN**, Deakin University, Geelong, Australia

L-3:L16 Development and Characterization of Highly Absorbent Antimicrobial Alginate Fibers for Wound Dressings
M. ASHRAF, S. RIAZ, T. HUSSAIN, Y. NAWAB, A. REHMAN, National Textile University, Faisalabad, Pakistan; M. MUBIN, Agriculture University, Faisalabad, Pakistan

L-4:IL01 Practical Application of Side Emitting Optical Fibres
J. MILITKY, D. KREMENAKOVA, R. MISHRA, Textile Faculty, Dept. of Material Engineering, Liberec, Czech Republic

L-4:L02 Investigation of the Wetting Behaviour of Nanofunctionalised Wool Fabrics
M.J. COOK, J.H. JOHNSTON, School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington, New Zealand

L-4:L03 Composites based on Graphene Nanoplatelets in Screen-printable Textiles Electronics
A. KURCZEWSKA, M. SŁOMA, Central Institute for Labour Protection-National Research Institute, Lodz, Poland

L-4:L04 Color Tuning in Electroluminescent Textiles
E. LEMPA, C. GRASSMANN, M. RABE, Niederrhein University of Applied Sciences, Research Institute for Textile and Clothing, Moenchengladbach, Germany; A. KITZIG, E. NAROSKA, Niederrhein University of Applied Sciences, Institute for Pattern Recognition, Krefeld, Germany

L-4:L05 Design Proposal of Space Clothes that Supports Lives in the Future Space Tourism Era
M. OHKUBO¹, M. YAMAMURA², J. KANEBAKO³, L. ISHIGAMI², M. XUE¹, T. NOJIMA¹, S. YAMAGUCHI³, H. UCHIYAMA², N. YAMAZAKI^{2,4}, ¹University of Electro-Communications, Japan; ²Joshi University of Art and Design, Japan; ³Filmmaker; ⁴Astronaut

L-4:IL06 Activate the Potential of your Body: The Antelope Series by Wearable Life Science
P.G. SCHWARZ, Wearable Life Science GmbH, Nürnberg, Germany

L-4:IL07 Electrospun Drug-loaded Textiles for Biomedical and Healthcare Applications
I. BONADIES, Institute for Polymers, Composites and Biomaterials (IPCB), CNR, Pozzuoli (Na), Italy

L-4:L08 Electroluminescent Textile for Therapeutic Applications
C. GRASSMANN, E. LEMPA, M. RABE, Niederrhein University of Applied Sciences, Research Institute for Textile and Clothing, Moenchengladbach, Germany; A. KITZIG, E. NAROSKA, Niederrhein University of Applied Sciences, Institute for Pattern Recognition, Krefeld, Germany; B. NEUKIRCH, Niederrhein University of Applied Sciences, Faculty of Health Care, Krefeld, Germany

L-4:L09 Soft Condensed Matter Hybrid Fiber Sensors for Motion Detection and Vital Functions
M. MELNYKOWYCZ, **F. CLEMENS**, Empa Materials Science and Technology, Dübendorf, Switzerland; M. TSCHUDIN, STBL Medical Research AG, Wilen, Switzerland

Poster Presentations

L:P01 Preparation of Membranes for PEMFC by Electrospinning
M.F. DE RICCARDIS, D. CARBONE, L. CAPODIECI, M. RE, Italian National Agency for New Technologies, Energy and Sustainable Economic Development Dept. SSPT – Div. PROMAS – Lab. MATAS, Brindisi, Italy

L:P04 Smart Fabric Design and Printing Platform
 B. POPOV, T. TODOROV, V. MARINOV, S. STOYANOV, V. TODOROV, Grafixoft, Sofia, Bulgaria; R. TORAH, Y. WEI, N. GRABHAM, Y. LI, **J. TUDOR**, Department of Electronics and Computer Science, University of Southampton, Southampton, UK

L:P05 Risk Assessment of BPA in Thermo-sensitive Textiles
SHANSHAN HE, Key Laboratory of Textile Science & Technology, Ministry of Education, Donghua University, Shanghai, P.R. China

SYMPOSIUM M
NEXT GENERATION MICRO/NANO
SYSTEMS

Oral Presentations

Session M-1

Physical MEMS/NEMS

M-1:IL01 Fluidic Physical Sensors and Sensor Systems

B. JAKOBY, Institute for Microelectronics and Microsensors Johannes Kepler University Linz, Austria

M-1:IL02 Nanophotonic Structures made from Diamond

W. PERNICE, University of Muenster, Muenster, Germany

M-1:IL03 Emerging MEMS Devices and Exploitations in the Internet of Things Scenario

J. IANNAZZI, Fondazione Bruno Kessler-FBK, MicroSystems Technology-MST, Research Unit Center for Materials and Microsystems-CMM, Povo, Trento, Italy

M-1:IL04 Coupled Effects in Low Dimensional Nanosystems and their Applications

R.V.N. MELNIK^{1,2}, S. PRABHAKAR¹, ¹MS2Discovery Interdisciplinary Research Institute, Wilfrid Laurier University, Waterloo, ON, Canada; ²BCAM, Bilbao, Basque Country, Spain

Session M-2

Chemical Micro/Nano-sensors and Systems

M-2:IL01 Chemical Microsensors and Microsystems for the Food Industry

C. JIMENEZ-JORQUERA, Instituto de Microelectrónica de Barcelona (IMB-CNM), CSIC. Campus UAB, Bellaterra, Spain

M-2:IL02 Chemical and Physical Absorption Analysis with Nano-mechanical Resonators

S. SCHMID, Technical University of Denmark, DTU Nanotech, Lyngby, Denmark

M-2:IL03 Fabrication of Micro Three Dimensional Structures by Two Photon Polymerization with SiO/Resin

M.G. del R. HERRERA-SALAZAR, H. AKIYAMA, T. NAKAYAMA, H. SUEMATSU, T. SUZUKI, Y. YOSHITAKE, N. YAMADA, T. TAKAHASHI, K. NIIHARA, Nagaoka University of Technology, Nagaoka, Niigata, Japan

M-2:IL04 Nanosized Drug Delivery Biosensors

H.A. DEGHANIAN¹, N. HOSEINABADI², ¹Dept. of Materials Engineering, Isfahan Industrial University, Isfahan, Iran; ²Dept. of Materials Engineering and Metallurgy, Faculty of Engineering, Shiraz branch, Islamic Azad University, Iran

M-2:IL05 Transparent Optical Temperature Mo4+/V3+ co doped Si-Ga-based Nano Glass Ceramics Sensors

N. HOSEINABADI¹, H.A. DEGHANIAN², A. RABIEEZADEH¹, S.A. KHOSRAVIFARD¹, ¹Dept. of Materials Engineering and Metallurgy, Faculty of Engineering, Shiraz branch, Islamic Azad University, Shiraz, Iran; ²Dept. of Materials Engineering, Isfahan University of Technology, Isfahan, Iran

Session M-3

MOEMS/NOEMS

M-3:IL01 Optical MEMS for Telecom Application

M. NAKAJIMA, J. YAMAGUCHI, NTT Device Technology Laboratories, Atsugi-shi, Kanagawa, Japan

M-3:IL02 Optofluidic Sensors and Actuators

M.J. VELLEKOOP, M. OELLERS, University of Bremen, Institute for MicroSensors, -Actuators and -Systems (IMSAS), MCB, Bremen, Germany

M-3:IL03 Advanced Protective Coatings by Low Temperature Atomic Layer Deposition of HfO2 on Al Surfaces for Micro-mirror Applications

C. WIEMER, E. CIANCI, A. LAMPERTI, G. TALLARIDA, Laboratorio MDM, IMM-CNR, Agrate Brianza (MB), Italy; M. BERDOVA, S. FRANSSILA, Aalto University, Department of Materials Science and Engineering, Espoo, Finland; M. ZANUCCOLI, C. FIEGNA, Department of Electrical, Electronic and Information Engineering (DEI), Università di Bologna and IUNET, Cesena (FC), Italy; L. LAMAGNA, S. LOSA, S. ROSSINI, R. SOMASCHINI, S. GIOVENI, STMicroelectronics, Agrate Brianza (MB), Italy

M-3:LO4 Optical MEMS Technologies for Infrared Spectroscopy, Sensing and Imaging

D. SILVA, J. ANTOSZEWSKI, A. KEATING, J. DELL, L. FARAONE, The University of Western Australia, Crawley, WA, Australia

Session M-4

Smart Micro-nano System and Components Integration

M-4:IL01 Giant Piezoelectric Materials for Microelectromechanical Systems

M.S. RZCHOWSKI, Physics Department, University of Wisconsin-Madison, Madison, WI, USA

M-4:IL02 MEMS Sensor for Personal Nanoparticle Monitoring

H.S. WASISTO, W. WU, E. PEINER, TU Braunschweig, Inst. of Semiconductor Technology and LENA, Braunschweig, Germany; E. UHDE, Fraunhofer-WKI, MAIC, Braunschweig, Germany

M-4:LO3 Effect of Interfacial Incompatibility on the Stability of 3D Electronic Packages containing Through Silicon Vias (TSV)

I. DUTTA, H. YANG, M. UPADHYAYULA, L. MEINSHAUSEN, T.K. LEE*, School of Mechanical and Materials Engineering, Washington State University, Pullman, WA, USA; *Dept. of Mechanical and Materials Engineering, Portland State University, Portland, OR, USA

M-4:LO4 Artificial Intelligence integrated Multiscale, Multiphysics Computational Methods for Smart and Multifunctional Materials

A. MIYAMOTO, P. BONNAUD, R. MIURA, A. SUZUKI, N. MIYAMOTO, N. HATAKEYAMA, M. HARIYAMA, Tohoku University, Sendai, Miyagi, Japan

M-4:LO5 Shape Memory in Micro-patterned Thiol-ene Thermoset Pillars

W. VOIT, J. SALAZAR, A. JOSHI-IMRE, The University of Texas at Dallas, Richardson, TX, USA

M-4:LO6 New Hybrid Metal-mesogenic Nanosystems

T.I. SHABATINA, Department of Chemistry, M.V. Lomonosov Moscow State University, Moscow, Russian Federation

M-4:IL07 Dynamic Field Sensors in Magnetolectric Hexaferrite Films

S. ZARE, H. IZADKHAH, C. VITTORIA, Department of Electrical and Computer Engineering, Northeastern University, Boston, MA, USA

M-4:LO8 Crystalline Silicon and Colloidal Quantum Dots Heterojunction Devices

S. MASALA, V. ADINOLFI, J.-P. SUN, S. DEL GOBBO, O. VOZNYI, I.J. KRAMER, I.G. HILL, E.H. SARGENT, University of Napoli "Federico II", Italy

Session M-5

Radio Frequency MEMS

M-5:IL01 RF MEMS Applications to RF Tuneable Circuits

R. SORRENTINO, University of Perugia, Perugia, Italy; A. CAZZORLA, P. FARINELLI, L. PELLICCIA, RF Microtech s.r.l. Perugia, Italy

M-5:IL02 Metamaterials for Sensors and RF Electronics

F. MARTIN, J. NAQUI, J. BONACHE, CIMITEC, Departament d'Enginyeria Electrònica, Universitat Autònoma de Barcelona, Bellaterra (Barcelona), Spain

Session M-6

Energy Harvesting and Power Supply MEMS

M-6:IL01 Single-use Paper Fuel Cells

N. SABATE, Institució Catalana de Recerca i Estudis Avançats (ICREA) and Institut de Microelectrònica de Barcelona (IMB-CNM-CSIC), Campus UAB, Bellaterra-Barcelona (Spain); J.P. ESQUIVEL, Department of Bioengineering, University of Washington, Seattle, WA, USA

M-6:IL02 Alternative Power Sources for Microdevices

P.D. MITCHESON, Imperial College London, London, UK

M-6:LO3 Comparison between MEMS and Meso Scale Piezoelectric Energy Harvesters

A.D.T. ELLIOTT, L.M. MILLER; E. HALVORSEN; P.K. WRIGHT; P.D. MITCHESON, Department of Electrical and Electronic Engineering, Imperial College London, London, UK; Alphabet Energy, Hayward, CA, USA; Buskerud and Vestfold University College, Drammen, Norway; University of California, Berkeley, CA, USA; Department of Electrical and Electronic Engineering, Imperial College London, London, UK

Session M-7

Micro(nano)fluidics and Lab on Chip;
Bio-MEMS/NEMS**M-7:IL01 Nanobioengineering for Medical Applications**

J. SAMITIER, IBEC-Institute for Bioengineering of Catalonia, Barcelona, Spain

M-7:IL02 Soft-interface Design for Highly Sensitive Biosensor

MADOKA TAKAI, The University of Tokyo, Tokyo, Japan

M-7:L04 Gas Supply through Agarose Walls in Cell Culturing Microchips

F. BUNGE, S. VAN DEN DRIESCHE, M.J. VELLEKOOP, Institute of Microsensors, -actuators and -systems (IMSAS), MCB, University of Bremen, Germany

Session M-8

Flexible Sensors Technology

M-8:IL01 MEMS-based Differential Calorimetry for Biomolecular Characterization

QIAO LIN, Y. JIA, X. FENG, B. WANG, Department of Mechanical Engineering, Columbia University, New York, NY, USA

M-8:IL02 Flexible Solution-processed Photodetectors and their Use in X-ray Medical Imagers'

A. KUMAR¹, D. MOET¹, J.-L. VAN DER STEEN¹, A. VAN BREEMEN¹, S. SHANMUGAM¹, J. GILOT¹, R. ANDRIESEN¹, M. SIMON², W. RÜTTEN², A. DOUGLAS², R. RAAIJMAKERS³, P.E. MALINOWSKI⁴, K. MYNY⁴, **G.H. GELINCK**^{1,5}, ¹Holst Centre/TNO, Eindhoven, The Netherlands; ²Philips Research, Eindhoven, The Netherlands; ³Philips Healthcare, Best, The Netherlands; ⁴Department of Large Area Electronics, imec vzw, Leuven, Belgium; ⁵Applied Physics Department, TU Eindhoven, Eindhoven, The Netherlands

Poster Presentations

M:P01 Nanocolumnar VO₂ Thin Films as Transducer for Thermal Biosensor

S.D. HAN, J.S. KIM, **CHONG-YUN KANG**, Korea Institute of Science and Technology, Seoul, South Korea; S.D. HAN, B.Y. KIM, S. NAHM, C.Y. KANG, KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, South Korea

M:P02 A Wearable Swallowing Detecting Method based on Nanometer Materials Sensor

YI KANG, DONG-YI CHEN, M.L. XIA, SHI-JI HOU, Sichuan, China

M:P03 Sensors of the Surrounding Medium Refractive Index based on Nanoporous Glasses with Silver Nanoparticles

A. PSHENOVA, O.V. ANDREEVA, D.A. KLYUKIN, A.I. SIDOROV, ITMO University, Saint-Petersburg, Russia

M:P04 Electrochemical Deposition of Edta on Glassy Carbon Electrode for the Detection of Zinc in Water

A. TOUATI^{1,2}, M. BENOUNIS¹, H. BARHOUMI³, M. BOUROUROU³, N. MESSAI⁴, ¹LCIP, Department of Chemical Engineering, Institute of Science and Technology, University of Khenchela; Route de El Hamma, Khenchela, Algeria; ²Laboratory of Environment (LE), Department of Chemical Engineering, University of Annaba, Algeria; ³Laboratory of Physics and Chemistry of Interfaces, Faculty of Sciences of Monastir, Tunisia; ⁴UFR SEN, CReSTIC EA3804, University of Reims Champagne-Ardenne Moulin de la Housse, Reims cedex, France

M:P05 Sensor Sticker for Detection of Fungi Spore Contamination on Bananas

P. PAPIREDDY VINAYAKA, S. VAN DEN DRIESCHE, R. BLANK, M. KAHALI MOGHADDAM, W. LANG, M.J. VELLEKOOP, Institute for Microsensors, -actuators and -systems (IMSAS), University of Bremen, Bremen, Germany

M:P06 New Electrode Material: Boron-doped Diamond Compacts

YU.V. PLESKOV, M.D. KROTOVA, V.V. ELKIN, E.A. EKIMOV*, Frumkin Institute of Physical Chemistry and Electrochemistry, Russian Academy of Sciences, Moscow, Russia; *Institute for High Pressure Physics, Troitsk, Moscow, Russia

SYMPOSIUM N

PROGRESS IN WEARABLE/WIRELESS
AND IMPLANTABLE BODY SENSOR
NETWORKS FOR HEALTHCARE
APPLICATIONS

Oral Presentations

Session N-1

Advances in Sensing Devices for Biomedical
Monitoring**N-1:IL01 A Multisensor Platform for Metabolomics**

D.R.S. CUMMING, M. AL-RAWHANI, B.C. CHEAH, C. MARTIN, School of Engineering, Rankine Building, University of Glasgow, Glasgow, UK; M.P. BARRETT, A.I. MACDONALD, Institute of Infection, Immunity and Inflammation, Sir Graeme Davies Building, University of Glasgow, Glasgow, UK

N-1:IL02 Carbon-ceramic Micro Electrodes for Pace Makers and Similar Biomedical Applications

G. BLUGAN¹, F. DALCANALE¹, J. GROSSENBACHER², H. TEVAEARAI³, J. BRUGGER², T. GRAULE¹, J. KUEBLER¹, ¹Empa, Swiss Federal Laboratories for Materials Science and Technology, Laboratory for High Performance Ceramics, Duebendorf, Switzerland; ²EPFL, Microsystems Laboratory LMIS1, Lausanne, Switzerland; ³Bern University Hospital, Department of Cardiovascular Surgery, Bern, Switzerland

N-1:IL03 Tailoring Surfaces' Properties to Produce Materials for Sensitive Signalling of Binding Events

S.E.J. BELL, School of Chemistry and Chem. Eng., Queen's University, Belfast, UK

N-1:L04 Wearable Healthcare Devices based on Flexible Electronic Skins

HYUNHYUB KO¹, HEON SANG LEE², MIN PARK³, GEON-WOONG LEE⁴, ¹School of Energy and Chemical Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan Metropolitan City, Rep. of Korea; ²Department of Chemical Engineering, Dong-A University, Busan, Rep. of Korea; ³Photo-Electronic Hybrids Research Center, Korea Institute of Science and Technology, Seoul, Rep. of Korea; ⁴Nano Carbon Materials Research Group, Korea Electrotechnology Research Institute, Changwon, Rep. of Korea

Session N-2

Smart Fabrics and Wearable Patches

N-2:IL01 The Development of Screen, Inkjet and Dispenser Printing Techniques for Smart Fabric Applications

R. TORAH, Y. WEI, Y. LI, K. YANG, M. DE VOS, S. BEEBY, J. TUDOR, Department of Electronics and Computer Science, University of Southampton, Southampton, UK

N-2:IL02 Sensing Garments for Body Segments Reconstruction and Motion Capture

A. TOGNETTI, Research Center "E. Piaggio" and Information Engineering Department, University of Pisa, Italy

N-2:L03 Strategic Garment Designs for Self-powered Health Monitoring

J. JUR, M. YOKUS, A. MYERS, R. FOOTE, F. DIOMEDE, Department of Textile Engineering, Chemistry & Science, North Carolina State University, Raleigh, NC, USA

Session N-3

Wearable and Implantable Sensor Integration

N-3:IL01 Smart Eyeglasses for Everyday Life

O. AMFT, University of Passau, Passau, Germany

N-3:IL02 Advances in Bioelectronics for Retinal Prosthesis

W. MOKWA, Institute of Materials in Electrical Engineering I, RWTH Aachen University, Aachen, Germany

N-3:IL03 Implantable Brain Pressure Sensors: State-of-the-art

S. LEONHARDT, Philips Chair of Medical Information Technology, RWTH Aachen University, Aachen, Germany

Session N-4

Low Power Electronics, Energy Harvesting, Sensor Network Architecture

N-4:IL01 Energy Harvesting for Wearable Sensors

Z. LUO, J. SHI, **S.P. BEEBY**, Department of Electronics and Computer Science, University of Southampton, Southampton, UK

N-4:IL03 Smart Implants for Monitoring Surgical Site Infection

GUANG-ZHONG YANG, Hamlyn Centre, Imperial College London, UK

Session N-5

Materials Chemistry/Biology and Rapid Prototyping/3D Printing Additive Fabrication Technologies

N-5:IL01 From Finger Prick Sampling to On-body and Ultimately Implantable Chem/Bio-sensors: The Key Role of Active Fluidics in Realising the Long-term Functional Platforms of the Future

L. FLOREA, D. BRUEN, W. FRANCIS, A. DUNNE, S. COLEMAN, A. BENAZOUZ, **D. DIAMOND**, INSIGHT Centre for Data Analytics, National Centre for Sensor Research, Dublin City University, Dublin, Ireland

N-5:IL02 Soft Composite Materials in Bioengineering for Hard Problems in Biomedicine

JAE-WOONG JEONG, Department of Electrical, Computer, and Energy Engineering, University of Colorado, Boulder, CO, USA

N-5:IL03 Multimaterial and Multiscale Biofabrication Process for the Future Development of Patient Specific Tissues

G. VOZZI^{1,2}, F. MONTEMURRO², C. DE MARIA², ¹Dipartimento di Ingegneria dell'Informazione, University of Pisa, Pisa, Italy; ²Research Center "E. Piaggio", University of Pisa, Pisa, Italy

Session N-6

Applications in Healthcare and Personal Health Monitoring

N-6:IL01 The Role of Wearable Monitor for Healthcare

TOSHIYO TAMURA, Waseda University, Tokyo, Japan

N-6:L02 Monitoring of Firefighter's Physiological Parameters by using Advanced Wired Textiles

G. TARTARE, H.N.M. NGO, L. KOEHL, X. ZENG, GEMTEX, Roubaix, France

N-6:L03 Simplified 3d Mapping System for Biofield Building using Microsoft Kinect V2 mounted on a Mobile Robot following People

M. DESTRA, A. MITA, Department of System Design Engineering, Keio University, Yokohama, Japan

N-6:L04 Smile Catcher – A Gamification of Smiles to Encourage Social Interaction

N. FARVE, P. MAES, MIT Media Lab, Cambridge, MA, USA

N-6:L05 Extraction of Stair Walking Parameters in Living Space by using Kinect v2

AMI OGAWA, A. YOROZU, A. MITA, M. TAKAHASHI, Graduate School of Science and Technology, Keio University, Kanagawa, Japan; T. BOCK, Chair of Building Realization and Robotics, Technical University of Munich, Germany

Poster Presentation

N:P01 A Smart Wearable and Autonomous Negative Pressure Device for Wound Monitoring

B. MELAI¹, P. SALVO¹, N. CALISI¹, C. PAOLETTI¹, V. DINI², M. ROMANELLI², A. PAOLICCHI³, V. CASTELVETRO¹, R. FUOCO¹, F. DI FRANCESCO¹, ¹Department of Chemistry and Industrial Chemistry, University of Pisa, Pisa, Italy; ²Department of Clinical and Experimental Medicine, University of Pisa, Pisa, Italy; ³Department of Translational Research and New Technologies in Medicine and Surgery, University of Pisa, Pisa, Italy

SYMPOSIUM O

MINING SMARTNESS FROM NATURE FROM BIO-INSPIRED MATERIALS TO BIONIC SYSTEMS

Oral Presentations

Session O-1

Algorithms, Mechanisms and Structures in Nature as Inspiration for Mimicking

O-1:IL01 Biomimetic Art

F. SCHENK, Birmingham City University, Birmingham, West Midlands, UK

O-1:IL02 Order and Disorder in Natural Photonic Systems

B. WILTS, Adolphe Merkle Institute, Fribourg, Switzerland

O-1:IL03 Tuning Mechanical Properties of Spider Cuticle by its Composition and by Structural Gradients

Y. POLITI¹, B. BAR-ON¹, F.G. BARTH², P. FRATZL¹, ¹Department of Biomaterial, Max-Planck-Institute of Colloids and Interfaces, Potsdam, Germany; ²Department of Neurobiology, Faculty of Life Sciences, University of Vienna, Vienna, Austria

O-1:L04 Introducing Self-healing in a Lattice Spring Model to simulate Bone Fracture and Repair

F. BOSIA¹, L. BRELY¹, N.M. PUGNO^{2,3,4}, ¹Department of Physics, University of Torino, Torino, Italy; ²Laboratory of Bio-Inspired & Graphene Nanomechanics, Department of Civil, Environmental and Mechanical Engineering, University of Trento, Trento, Italy; ³Center for Materials and Microsystems, Fondazione Bruno Kessler, Povo (Trento), Italy; ⁴School of Engineering and Materials Science, Queen Mary University of London, London, UK

O-1:L05 Structural Integration Design for Enhanced Photoluminescence in Butterfly Wing

TONGXIANG FAN, School of Materials Science and Engineering, Shanghai Jiaotong University, Shanghai, China

Session O-2

Bio-inspired and Bio-enabled Materials and Manufacturing

O-2:IL01 Bio-enabled, Chemically-tailored, Hierarchically-structured, 3-D Materials

K.H. SANDHAGE, School of Materials Engineering, Purdue University, West Lafayette, IN, USA

O-2:IL02 Novel Bio-inspired Morphing Materials

G. LANZARA, K. SAMADIKHAH, E. BARRESI, Y. CHEN, Engineering Department, University of Rome, RomaTre, Italy

O-2:IL03 UV-absorbing Materials based on Natural Marine Sunscreens and Biopolymers

S.C.M. FERNANDES¹, V. BULONE^{1,2}, ¹Division of Glycoscience, School of Biotechnology, Royal Institute of Technology (KTH), AlbaNova University Center, Stockholm, Sweden; ²ARC Centre of Excellence in Plant Cell Walls, School of Agriculture, Food and Wine, University of Adelaide, Waite Campus, South Australia, Australia

O-2:L04 Transport and Mechanical Properties of Ordered Biomimetic Porous Materials from Freeze Casting and Ionotropic Gelation

M. KEUPER, K. KLANG, G. BUCK, C. LAUER, **K.G. NICKEL**, University Tuebingen, Applied Mineralogy, Tuebingen, Germany

O-2:L05 Textile as Artificial Nature - From Synthetic Sea Grass to Fibrous Implants

N.-K. PERSSON, Smart Textiles Technology Lab, Swedish School of Textiles, University of Borås, Borås, Sweden

O-2:L06 Multidimensional Biomimetic Synthesis of Magnetic Materials via Selective Mineralization of Ferritin Subunits

D. CARMONA¹, L. TRECCANI², S. LID³, L. COLOMBI CIACCHI^{3,4}, ¹Advanced Ceramics, Faculty of Production Engineering, University of Bremen, Germany; ²Petroceramics Spa, Kilometro Rosso Parco Scientifico Tecnologico, Stezzano, Bergamo, Italy; ³Hybrid Materials Interfaces, Faculty of Production Engineering, University of Bremen, Germany; ⁴MAPEX Center for Materials and Processes, University of Bremen, Germany

Session O-3

Functional Bio-inspired Surfaces and Interfaces

O-3:IL01 Nanostructuring Surfaces to Control Wetting
F. SCHELLENBERGER, S. WOOH, N. ENCINAS, P. PAPADOPOULOS, D. VOLLMER, **H.-J. BUTT**, Max Planck Institute for Polymer Research, Mainz, Germany

O-3:IL02 S-layer Lattices as Templates for Molecular Imprinting
D. PUM, E. LADENHAUF, D.S. WASTL, U.B. SLEYTR, University of Natural Resources and Life Sciences, Vienna, Austria; P.A. LIEBERZEIT, University of Vienna, Vienna, Austria

O-3:IL03 Cell-inspired Mechanoresponsive Interfaces
M. TIMMERMANN, S.B. GUTEKUNST, **C. SELHUBER-UNKEL**, Dept. Biocompatible Nanomaterials, University of Kiel, Germany

O-3:IL04 Bio-inspired Multifunctional Wrinkle Surface
HIROSHI ENDO, Department of Mechanical Systems Engineering, Toyama Prefectural University, Imizu, Japan

O-3:IL05 Biomimetic Design and Manufacturing of Anti-erosion Functional Surfaces Inspired from Desert Scorpion
ZHIWU HAN, Key Laboratory of Bionics Engineering of Ministry of Education, Jilin University, Changchun, China

O-3:IL06 Nature-inspired Polymeric Nanofur for Environmental Applications: from Oil Spill Cleaning to Frictional Drag Reduction
M. KAVALENKA, C. ZEIGER, F. VÜLLERS, J. KUMBERG, H. HÖLSCHER, Institute of Microstructure Technology, Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany

O-3:IL07 Spinach Extracts for the Development of Metal Patterns onto Plastic Substrates
D.E. WATSON, J. MARQUES-HUESO, M.P.Y. DESMULLIEZ, Heriot-Watt University, School of Engineering & Physical Sciences (EPS), Institute of Signals, Sensors and Systems, Microsystems Engineering Centre (MISEC), Edinburgh, Scotland, UK

O-3:IL08 Bioinspired Multi-gradient Surfaces with Water Collection/Repellency
YONGMEI ZHENG, School of Chemistry and Environment, Beihang University, Beijing, China

O-3:IL09 Nano-mechanical and Deformation Studies on Shell Structures
E.K. AMPAW¹, E.K. ARTHUR^{1,2}, T.O. OWOSENI^{1,2}, A.I. MALIK^{1,3}, T. TAN⁴, W.O. SOBOYEJO^{1,5,6}, ¹Department of Materials Science and Engineering, African University of Science and Engineering, African University of Science and Technology (AUST), Abuja Federal Capital Territory, Nigeria; ²Department of Mechanical Engineering, Kwara State University, Malete, Ilorin, Nigeria; ³Department of Mechanical Engineering, McGill University, Montreal, Canada; ⁴Department of Civil and Environmental Engineering, Vermont University, Burlington, VT, USA; ⁵Princeton Institute of Science and Technology of Materials (PRISM), Princeton, NJ, USA; ⁶Department of Mechanical and Aerospace Engineering, Princeton University, Princeton, NJ, USA

Session O-4

Bio-inspired Sensors and Actuators

O-4:IL01 Recent Developments in Bio-inspired Sensors Fabricated by Additive Manufacturing Technologies
G. KRIJNEN, R. SANDERS, Transducers Science & Technology Group, University of Twente, Enschede, The Netherlands

O-4:IL02 Nature-inspired DNA-based Sensors
F. RICCI, University of Rome, Tor Vergata, Rome, Italy

O-4:IL03 Micromechanics of Vibration Sensors in the Spider Cuticle
V.V. TSUKRUK, School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA, USA

O-4:IL04 A Bio-inspired Real-time Capable Artificial Lateral Line System for Freestream Flow Velocity Measurements
C. ABELS^{1,2,3}, W.M. MEGILL¹, A. QUALTIERI², M. DE VITTORIO^{2,3}, F. RIZZI², ¹Rhine-Waal University of Applied Sciences, Faculty of Technology and Bionics, Kleve, Germany; ²Center for Biomolecular Nanotechnologies @ UNILE, Istituto Italiano di Tecnologia, Arnesano (LE), Italy; ³Università del Salento, Dip. di Ingegneria dell'Innovazione, Lecce, Italy

Session O-5

Biologically Inspired Systems and Robotics

O-5:IL01 Bioinspired Micro- and Nanoswimmers
P. FISCHER, Max Planck Institute for Intelligent Systems, Stuttgart, and Institute of Physical Chemistry, Univ. of Stuttgart, Germany

O-5:IL02 Biologically Inspired Robots
P. MANOONPONG, The Maersk Mc-Kinney Moller Institute, Odense, Denmark

O-5:IL03 Biological Fundamentals on Biomimetics of Gecko Locomotion
ZHENDONG DAI, Institute of Bio-inspired Structure and Surface Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China

O-5:IL04 Three-dimensional Needle Steering for Neurosurgery - A Biologically Inspired Approach
R. SECOLI, F.M. RODRIGUEZ Y BAENA, Dept. Mechanical Eng., Imperial College London, London, UK

O-5:IL05 Auto-Gopher II – Wireline Deep Sampler driven by Percussive Piezoelectric Actuator and Rotary EM Motors
Y. BAR-COHEN¹, K. ZACNY², M. BADESCU¹, H.J. LEE¹, S. SHERRIT¹, X. BAO¹, G.L. PAULSEN², L. BEEGLE¹, ¹Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA; ²Honeybee Robotics Spacecraft Mechanisms Corporation, Pasadena, CA, USA

O-5:IL06 A Climbing Robots based Claws Interlocking with Flexible Material
AIHONG JI, ZHIHUI ZHAO, NAN JIANG, ZHENDONG DAI, Institute of Bio-Inspired Structure and Surface Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China

Session O-6

Bio-inspired Optics and Photonics

O-6:IL01 Bioinspired Optical Structure for Enhancement Infrared Absorption
WANG ZHANG, JUNLONG TIAN, JIAJUN GU, QINGLEI LIU, DI ZHANG, State key lab of metal matrix composites, Shanghai Jiao Tong University, Shanghai, China

O-6:IL02 Omnidirectional Anti-reflection Structures Inspired by the Random Nanostructures of the Glasswing Butterfly (Greta oto)
R.H. SIDDIQUE, G. GOMARD, **H. HÖLSCHER**, Karlsruhe Institute of Technology, Karlsruhe, Germany

O-6:IL03 Biological Inspiration in Optics and Photonics – Harnessing Nature's Light Manipulation Strategies and Manufacturing Capabilities for Multifunctional Optical Materials
M. KOLLE, J. SANDT, S. NAGELBERG, A. MCDUGAL, Mechanical Engineering Department, MIT, Cambridge, MA, USA; LING LI, J. AIZENBERG, School of Engineering and Applied Sciences, Harvard University, USA; P. VUKUSIC, College of Engineering, Mathematics and Physical Sciences, Exeter University, UK

O-6:IL04 Light Management in 2D Disordered Nanostructures of Black Butterfly (Pachliopta aristolochia) Scales
R.H. SIDDIQUE, Y.J. DONIE, G. GOMARD, H. HÖLSCHER, Karlsruhe Institute of Technology, Karlsruhe, Germany

O-6:IL05 Morpho-colored Materials having High Reflectance in Wide Angle without Color-change: Multi-developments for Practical Applications
AKIRA SAITO, Osaka University & RIKEN (SPRING-8), Osaka, Japan

O-6:IL06 Cellulose Photonics: From Nature to Applications
S. VIGNOLINI, Department of Chemistry, University of Cambridge, Cambridge, UK

O-6:IL07 Bioinspired Materials Templates by Nature Species
DI ZHANG, JIAJUN GU, WANG ZHANG, QINGLEI LIU, SHENMING ZHU, HUILAN SU, State Key Lab of Metal Matrix Composites, Shanghai Jiao Tong University, Shanghai, China

Session O-7

Biologically Inspired Functional/Smart Structures

O-7:IL01 **Bioinspired Functional Gel-shell Beads**

M. FISCHLECHNER, Inst. for Life Sciences, University of Southampton, UK

O-7:IL02 **Plant Inspired Smart Materials: Pomelos, Nuts and Metal Foams**

C. FLECK¹, **P. SCHÜLER**¹, **M. THIELEN**², **S. FISCHER**³, **P. ZASLANSKY**⁴, **A. BÜHRIG-POLACZEK**⁵, **T. SPECK**², ¹Materials Engineering, Institute of Technology Berlin, Germany; ²Botanical Garden & Plant Biomechanics Group, University of Freiburg, Germany; ³Foundry Institute, RWTH Aachen, Germany; ⁴Julius Wolff Institute, Charité Berlin, Germany

O-7:IL03 **Creating Artificial Cells using Microfluidics**

O. CES, Dept. of Chemistry and Institute of Chemical Biology, Imperial College London, UK

O-7:IL04 **Micro-rockets and Micro-containers obtained through Modifications of Electrospun Polymeric Microtubes**

A. SITT, J. LAHANN, Advanced polymers and bio-materials group Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany; **J. SOUKUPOVA**, Regional Centre of Advanced Technologies and Materials, Faculty of Science, Palacky University, Olomouc, Czech Republic; **D. MILLER**, **D. VERDI**, **H. HESS**, Dept. of Biomedical Engineering Columbia University, New York, NY, USA

O-7:IL05 **Bio-inspired Design and Fabrication of Multifunctional Nanocomposites**

QINGWEN LI, Suzhou Institute of Nanotech and Nanobionics, Suzhou, China

O-7:IL06 **4D Textiles inspired by Hydronastic Systems**

V. KAPSALI, London College of Fashion - University of Arts London, London, UK

O-7:IL07 **Tunable Self-assembled Micro/Nano Structures via Wrinkling on Shape-memory Polymers for Mimicking Iridescent Plant Surfaces**

S. SCHAUER, **H. HÖLSCHER**, Karlsruhe Institute of Technology, Institute of Microstructure Technology, Karlsruhe, Germany

Session O-8

Ongoing and Perspective Applications of Bio-inspired Technologies

O-8:IL01 **Discovery of New peptide Polymers that Display Aqueous Phase Behavior**

A. CHILKOTI, Department of Biomedical Engineering, Duke University, Durham NC, USA

O-8:IL02 **Parallel Computing with Molecular Motors**

H. LINKE, **M. LARD**, NanoLund, Lund University, Lund, Sweden; **T. KORTEN**, **S. DIEZ**, TU Dresden; **A. MÅNSSON**, Linné University, Kalmar; **D. NICOLAU Jr.**, Molecular Sense; **D. NICOLAU Sr.**, McGill University

O-8:IL03 **Biomimetic Hairy Surfaces as Superhydrophobic Transparent Coatings and Translucent Films for Optical Applications**

F. VUELLERS, **M.N. KAVALENKA**, **H. HÖLSCHER**, Institute of Microstructure Technology, Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany

Poster Presentations

O:P01 **Materials and Structures of Veins and Lamina in Leaf of Giant Water Lily**

H. KOBAYASHI¹, **Y. YABUGAKI**², **K. HORIKAWA**¹, **T. YAMAUCHI**³, ¹Department of Mechanical Science and Bioengineering, Osaka University, Toyonaka, Japan; ²Mitsubishi Electric Corporation, Amagasaki, Japan; ³Department of Material Science and Technology, Niigata University, Niigata, Japan

O:P02 **Hydroxyapatite Derived from Natural Bovine Bone for Biomedical Application**

S. RAMESH, **A. NIAKAN**, **C.Y. TAN**, Center for Advanced Manufacturing & Material Processing, Department of Mechanical Engineering, Faculty of Engineering, University of Malaya, Kuala Lumpur, Malaysia

O:P03 **Superhydrophobicity of Surfaces from the Contribution of Topography**

K.A. GROSS, **K. STIPRAIS**, **J. LUNGEVICS**, **E. JANSONS**, **L. PLUDUMA**, Faculty of Material Science and Applied Chemistry, Riga Technical University, Latvia; **B. ANDERSONS**, **H. SANSONETI**, Wood Chemistry Institute, Latvia

O:P04 **Catalyst Infiltration of SOFC Electrodes Assisted by a Bio-surfactant**

O. OZMEN, **K. SABOLSKY**, **J.W. ZONDLO**, **E.M. SABOLSKY**, West Virginia University, Morgantown, WV, USA; **S. LEE**, **K. GERDES**, National Energy Technology Laboratory – Regional University Alliance (NETL-RUA), U.S. DOE, Morgantown, WV, USA

O:P05 **A Two-dimensional Biomimetic Underwater Active Electro-location Position System based on FFT Feature Extraction Cross Localization Algorithm**

JIEGANG PENG, School of Automation Engineering and Center for Robotics, University of Electronic Science and Technology of China, Chengdu, Sichuan, P.R. China

Special Session O-9/P-5

BIOMIMETIC DESIGN AND MOTION CONTROL IN AUTONOMOUS AND REMOTELY OPERATED UNDERWATER VEHICLES

Oral Presentations

O-9/P-5:IL01 **Bio-inspired Intelligent Global Diagnostic & Control Systems**

R.A. SHOURESHI, **SUNWOOK LIM**, New York Institute of Technology, Old Westbury, New York, USA; **C.M. AASTED**, Center for Pain and the Brain, Harvard Medical School P.A.I.N. Group, Boston Children's Hospital, Boston, MA, USA

O-9/P-5:IL02 **Robotic Fish Development for the Next Generation Underwater Vehicle**

IKUO YAMAMOTO, Nagasaki University, Graduate School of Engineering, Nagasaki, Japan

O-9/P-5:L04 **Investigation on the Tail Flexibility Effect by Numerical Simulation with Multi-body System**

JIANXIN HU, University of Oxford, Oxford, UK; **Q. XIAO**, University of Strathclyde, Glasgow, UK; **M. POREZ**, **F. BOYER**, Ecole des Mines de Nantes, Nantes, France; **D. PAN**, University of Zhejiang, Hangzhou, China

O-9/P-5:L05 **A Creative Approach of Modelling Self-propelled 3DoF Multi-body Fish with OpenFOAM and Coupled External Programme**

ZHENKAI ZHAO, **QING XIAO**, Department of Naval Architecture, Ocean & Marine Engineering, University of Strathclyde, Glasgow, UK

O-9/P-5:L06 **Numerical Simulation of Fish Swimming and Manoeuvring with their Pectoral Fins**

RUOXIN LI, **QING XIAO**, Department of Naval Architecture, Ocean and Marine Engineering, University of Strathclyde, Glasgow, UK

O-9/P-5:IL07 **An Octopus-inspired Robot**

M. CIANCHETTI, **C. LASCHI**, The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy

O-9/P-5:IL08 **Bionic Sonar Structure and Skin Material inspired by Dolphins**

QIJUN LIU, **ZHIMING LIU**, **JIE YU**, **ZIXUAN ZHANG**, **WENJIAN WU**, National University of Defense Technology, Changsha, Hunan, China

O-9/P-5:IL09 **Lateral Line inspired Pressure Sensory System for Wall Detection**

YIMING XU, **KAMRAN MOHSENI**, Department of Mechanical and Aerospace Engineering, Department of Electrical and Computer Engineering, and Institute for Networked Autonomous Systems, University of Florida, Gainesville, FL, USA

O-9/P-5:IL10 **Inspired by Fish: Evolving, Building, and Controlling Flapping Flexible Propulsive Structures for Aquatic Robots**

J.H. LONG Jr., Vassar College, Poughkeepsie, New York, USA

O-9/P-5:IL11 **Propulsive Performance of Dolphin Based on Numerical Simulation of Standing Swimming**

K. ISOGAI, Kyushu University, Fukuoka, Japan

Poster Presentation

O-9/P-5:P01 **Anthropomorphic Robotic Grasper for Atmospheric Diving Suits (ADS) and Remotely Operated Vehicles (ROV)**

B. GAJJAR, President Vishwa Robotics Robotics, Research Scientist Massachusetts Institute of Technology, Cambridge, MA, USA

Special Session O-10/P-6

BIOMIMETIC MORPHING OF UNMANNED AERIAL VEHICLES*Oral Presentations***O-10/P-6:IL01 Bio-inspired State Sensing and Awareness for Morphing Fly-by-feel UAVs**

F. KOPSAFTOPOULOS, R. NARDARI, YU-HUNG LI, **FU-KUO CHANG**, Department of Aeronautics and Astronautics, Stanford University, Stanford, CA, USA

O-10/P-6:IL02 Shape Memory Alloy- and Piezoelectric-based Adaptive Structures for Morphing Aircraft and Wind Turbine Rotors

D.A. SARAVANOS, Department of Mechanical Engineering & Aeronautics, University of Patras, Patras, Greece

O-10/P-6:L03 Vision-based Fuzzy Controller for the Quadrotor Tracking a Ground Target

XUCHAO CHEN¹, ZHIQIANG CAO¹, YUEQUAN YANG², CHAO ZHOU¹, MIN TAN¹, ¹Institute of Automation, Chinese Academy of Sciences, Beijing, China; ²College of Information Engineering, Yangzhou University, China

O-10/P-6:L04 Parylene Flapping-wings with Self-organized Micro Wrinkles

H. TANAKA, Tokyo Institute of Technology, Tokyo, Japan; Y. SHIMASUE, I. KITAMURA, H. LIU, Chiba University, Chiba, Japan

O-10/P-6:IL05 Artificial Hair Sensors - Bioinspired Flight Control Feedback

B. DICKINSON, United States Air Force Research Laboratory, Eglin Air Force Base, FL, USA

O-10/P-6:IL06 Aquatic Micro Aerial Vehicles (AquaMAV): From Diving Birds and Flying Fish to Aerial-aquatic Robots

M. KOVAC, Aerial Robotics Laboratory, Imperial College London, London, UK

O-10/P-6:L07 Hybrid Fiber Reinforced Composite with Embedded Functionality

M.H. MALAKOOTI, Department of Aerospace Engineering, University of Michigan, Ann Arbor, MI, USA; B.A. PATTERSON, HYUN-SIK HWANG, Department of Materials Science and Engineering, University of Florida, Gainesville, FL, USA; **H.A. SODANO**, Department of Aerospace Engineering, Department of Materials Science and Engineering, University of Michigan, Ann Arbor, MI, USA

O-10/P-6:L08 Yaw Control of a Smart Morphing Tailless Aircraft Concept

L.L. GAMBLE, **D.J. INMAN**, University of Michigan, Ann Arbor, MI, USA

O-10/P-6:IL09 Bioinspired Morphing Systems and Multi-functionality

J. KUDVA, NextGen Aeronautics, Inc., Torrance, CA, USA; G. SPEDDING, University of Southern California; R. KORNBLUH, SRI International

O-10/P-6:IL10 Morphing Aircraft Skin Based on a Woven Strip Structure

H. TOKUTAKE, Kanazawa University, Kanazawa, Japan

O-10/P-6:L11 Aerodynamic Performance of a Manduca Sexta Inspired Engineered Wing

A.M. DELUCA, R.P. O'HARA, Department of Aeronautics and Astronautics, Air Force Institute of Technology, WPAFB, OH, USA

SYMPOSIUM P

EMBODYING INTELLIGENCE IN STRUCTURES AND INTEGRATED SYSTEMS*Oral Presentations*

Session P-1

Smart Materials/Sensors/Actuators/MEMS/NEMS

P-1:IL01 CNT Transduction for Measuring Composite Shear and Air Flow: Triggering of Autonomous Response

K. SLINKER^{1,2}, C. KONDASH^{1,2}, G. REICH³, **J. BAUR**¹, ¹Materials and Manufacturing Directorate, Air Force Research Laboratory, Wright-Patterson Air Force Base, OH, USA; ²Universal Technology Corporation, Beavercreek, OH, USA; ³Aerospace Systems Directorate, Air Force Research Laboratory, Wright-Patterson Air Force Base, OH, USA

P-1:IL02 Piezoceramic MFC Thin Films Experimental Shear Sensing Response Simulation

A. BENJEDDOU, Institut Supérieur de Mécanique de Paris, Saint Ouen, France

P-1:IL03 Shape control by PZT

H. IRSCHIK, Johannes Kepler University of Linz, Linz, Austria; M. KROMMER, Vienna University of Technology, Vienna, Austria; C. ZEHETNER, Linc Center of Mechatronics, Linz, Austria

P-1:IL04 Shape Memory Alloys Wires for Engineering Applications. Particular Characteristics of NiTi SMA: From Small to Medium Diameter

S. CASCIATI, DICA Dept., University of Catania, Siracusa, Italy; M. VECE, Structural Mechanics Dept., Pavia University, Italy; **V. TORRA**, Applied Physics Dept. Polytechnic University of Catalonia, Barcelona, Spain

P-1:L05 Nano-carbon Cement based Sensors for Smart Structures

G. AKRAS, G. NOISEUX-LAUZE, J. ORELLANA, Royal Military College of Canada, Kingston, Ontario, Canada

P-1:L06 Carbon Nanotube Nanocomposites with Enhanced Strength and Damping Capabilities

G. LANZARA, S. CHAKRABARTI, G. FORMICA, University of Rome, RomaTre, Italy; M. TALO, **W. LACARBONARA**, Sapienza University of Rome, Italy

P-1:IL07 Vibroacoustic Behaviour of Periodic Smart Structures

M. ICHCHOU, C. ZHOU, J.P. LAINE, A. ZINE, Ecole Central de Lyon, Ecully, France

P-1:IL08 Perspectives of TiNi-based and Fe-based SMA in Vibration Protection of Structures

A. VOLKOV, F.S. BELYAEV, M.E. EVARD, N.A. VOLKOVA, Saint Petersburg State University, Saint Petersburg, Russia

P-1:L09 In Situ Monitoring of CFRP's Fatigue Damage due to Manufacturing Flaws using Carbon Nanotube-embedded Spatial Strain Sensor

YINGJUN ZHAO, S. HOERRMANN, M. SCHAGERL, Institute of Constructional Lightweight Design, Johannes Kepler University Linz, Linz, Austria; C. DOPPLER, Laboratory for Structural Strength Control of Lightweight Constructions, Linz, Austria

P-1:L10 FBG-Galfenol Integrated Magnetic Field Sensors for Harsh Environments

D. DAVINO, **C. VISIONE**, University of Sannio, Benevento, Italy; M.A. CAPONERO, C. CIANFARANI, A. POLIMADEI, ENEA C.R. Frascati, Frascati, RM, Italy

P-1:L11 The BaO-B2O3-2AlF3*3LaF3 System as a Basis for Obtaining of a New Class of Ferroelectric Glass-ceramics

K.A. NALBANDYAN, N.B. KNYAZYAN, Institute of General and Inorganic Chemistry of NAS RA, Yerevan, Armenia

P-1:IL12 Nonlinear Modeling and Analysis of Electro-active Plates: Stability, Post-buckling Behavior and Nonlinear Vibrations

M. KROMMER, E. STAUDIGL, Y. VETYUKOV, Institute of Mechanics and Mechatronics, Vienna University of Technology, Vienna, Austria

P-1:IL13 Dynamics of Shallow Arched Microstructures

M.I. YOUNIS, Physical Sciences and Engineering Division, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia

Session P-2 Integration Technologies

P-2:IL01 Development and Application of Some Hybrid Nonlinear Dissipative Devices

Z. LU, D. ZHANG, Tongji University, China; **S.F. MASRI**, University of Southern California, Los Angeles, CA, USA; X. LU, Tongji University, China

P-2:IL02 Model Order Reduction in Nonlinear Systems

L. FARAVELLI, University of Pavia, Pavia, Italy

P-2:IL03 Bridge Deflection Estimation under Unknown Moving Loads by Fusion of Measured Acceleration and Strain Data

YING LEI, WEI HUA, Department of Civil Engineering, Xiamen University, Xiamen, China

P-2:IL04 Advances in Ultrasonic Defect Detection and Imaging in Structures

T. NGUYEN, S. STERNINI, **F. LANZA DI SCALEA**, Department of Structural Engineering, University of California San Diego, La Jolla, CA, USA

P-2:L05 A Magnetostrictive Energy Harvesting System for Bridge Structural Health Monitoring

C.S. CLEMENTE, **D. DAVINO**, A. IELARDI, M.R. PECCE, C. VISONI, University of Sannio, Benevento, Italy

P-2:IL06 Integrating Modeling Tools with Measurements in Predictions

C. PAPANITRIOU, C. ARGYRIS, Department of Mechanical Engineering, University of Thessaly, Volos, Greece

Session P-3 Smart Structures and Integrated Systems

P-3:IL01 Multifunctional Design of Materials & Structures: Critical Issues

B.-L. ("LES") LEE, U.S. Air Force Office of Scientific Research, Arlington, VA, USA

P-3:IL02 Monitoring of Building for Safety, Security and Soundness

AKIRA MITA, Department of System Design Engineering, Keio University, Yokohama, Japan

P-3:IL03 Smart Monitoring System Based on Electromechanical Impedance and Guided Ultrasonic Waves

A. NASROLLAHI¹, V. GULIZZI², **P. RIZZO**¹, ¹University of Pittsburgh, Department of Civil & Environmental, Pittsburgh, PA, USA; ²Department of Civil, Environmental, Aerospace, and Materials Engineering, University of Palermo, Palermo, Italy

P-3:IL04 Data Science and Engineering for Structural Health Monitoring

HUI LI, YUEQUAN BAO, SHUNLONG LI, School of Civil Engineering, Harbin Institute of Technology, Harbin, China

P-3:IL05 Verification of the Rotation Algorithm with Data from a Three Story Stee Frame Test

K. BALAFAS, **A. KIREMIDJIAN**, YIZHANG LIAO, R. RAJAGOPAL, Stanford University, Stanford, CA, USA; C.H. LOH, National Taiwan University, Taipei, Taiwan

P-3:IL06 Structural Control for Large Civil Infrastructure

S. CASCIATI, University of Catania, Siracusa, Italy; L. ELIA, University of Pavia, Italy

P-3:IL07 Mobile Wireless Sensor Networks for the Assessment of Civil Infrastructure System Performance: Truck and UAV-based Sensing Systems

J.P. LYNCH, Department of Civil and Environmental Engineering, Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI, USA

P-3:IL08 Sparse Solution Techniques in Load and Damage Monitoring Systems

C.-P. FRITZEN, D. GINSBERG, Dept. of Mechanical Engineering, University of Siegen, Siegen, Germany

P-3:L09 Wind Turbine Fault Detection through Principal Component Analysis and Statistical Hypothesis Testing

F. POZO, Y. VIDAL, CoDALab, Departament de Matemàtiques, Escola Universitària d'Enginyeria Tècnica Industrial de Barcelona (EUETIB), Universitat Politècnica de Catalunya (UPC), Barcelona, Spain

P-3:IL11 On-line Monitoring of High Speed Rail Systems

YI-QING NI, Hong Kong Branch of National Rail Transit Electrification and Automation Engineering Technology Research Center, Hong Kong; Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong

P-3:IL12 Adapting Fault-tolerant Control to Integration

J. RODELLAR, Ch. TUTIVEN, Y. VIDAL, L. ACHO, Universitat Politècnica de Catalunya, Department of Mathematics, Barcelona College of Industrial Engineering, Control Dynamics and Applications Research Group (CoDALab), Barcelona, Spain

P-3:IL13 Embodying Inspection and Monitoring Intelligence into Structural Systems

HOON SOHN, HYUNG JIN LIM, SU YOUNG YANG, JI MIN KIM, JUN LEE, SANG MIN LEE, YOUNG TAK KIM, Department of Civil and Environmental Engineering, KAIST, Daejeon, South Korea

P-3:IL14 Piezoelectrically Actuated Bimorph Deformable Mirrors for Adaptive Optics

A. PREUMONT, D. ALALUF, Université Libre de Bruxelles, ULB, Brussels, Belgium

P-3:IL15 Composite Structures with Nerves of Glass Fibers

A. GUEMES, Dept. Aeronautics, Universidad Politécnica de Madrid, Madrid, Spain

P-3:L16 Data Evaluation in Smart Sensor Networks using Inverse Methods and Artificial Intelligence (AI): Towards Real-time Capability and Enhanced Flexibility

S. BOSSE, Department of Mathematics and Computer Science, University of Bremen, Bremen, Germany; A. LECHLEITER, Center for Industrial Mathematics (ZeTeM), University of Bremen, Bremen, Germany; **D. LEHMUS**, ISIS Sensorial Materials Scientific Centre, University of Bremen, Bremen, Germany

P-3:L17 Integrated Sensing, Monitoring and Healing of Composite Systems

O.S. KUPONU, V. KADIRKAMANATHAN, The University of Sheffield, Sheffield, UK; B. BHATTACHARYA, Indian Institute of Technology Kanpur, Kanpur, India; S.A. POPE, The University of Sheffield, Sheffield, UK

P-3:L18 Controllable Truss-frame Nodes in Semi-active Damping of Vibrations

B. POPLAWSKI, C. GRACZYKOWSKI, L. JANKOWSKI, Institute of Fundamental Technological Research (IPPT PAN), Warsaw, Poland

Session P-4 Ongoing and Perspective Applications

P-4:IL01 Structural Monitoring and Assessment of Composite Structure

W. OSTACHOWICZ, Polish Academy of Sciences (IMP PAN) and Warsaw University of Technology, Poland

P-4:L03 Intelligent Materials - Enabling Internet of Things in Steel Industry

E. HAKANEN, V. ELORANTA, Department of Industrial Engineering and Management, School of Science, Aalto University, Espoo, Finland; T. TURUNEN, Department of Management Studies, School of Business, Aalto University, Helsinki, Finland and Cambridge Service Alliance, University of Cambridge, Cambridge, UK

P-4:IL04 New Directions of Health Monitoring for Building Structures

AKIRA NISHITANI, PING XIANG, SHOHEI MARUTANI, Waseda University, Tokyo, Japan; TOMOHIKO HATADA, RYUUTA KATAMURA, Kajima Corporation, Japan

P-4:IL05 Nonlinear Performance of Hybrid Carbon Fiber Composites embedded with ZnO Nanorods

M.Y. AL-HAIK, A.Y. BOROUJENI, M. ZAKARIA, **M.R. HAJJ**, Virginia Tech, Blacksburg, VA, USA

P-4:IL06 Adaptive Self-protection against Shock and Vibrations

L. JANKOWSKI, C. GRACZYKOWSKI, P. PAWLowski, G. MIKULOWSKI, B. POPLAWSKI, R. FARAJ, J. HOLNICKI-SZULC, Institute of Fundamental Technological Research (IPPT PAN), Warsaw, Poland

Special Session O-9/P-5

BIOMIMETIC DESIGN AND MOTION CONTROL IN AUTONOMOUS AND REMOTELY OPERATED UNDERWATER VEHICLES

Oral Presentations

O-9/P-5:IL01 Bio-inspired Intelligent Global Diagnostic & Control Systems

R.A. SHOURESHI, SUNWOOK LIM, New York Institute of Technology, Old Westbury, New York, USA; C.M. AASTED, Center for Pain and the Brain, Harvard Medical School P.A.I.N. Group, Boston Children's Hospital, Boston, MA, USA

O-9/P-5:IL02 Robotic Fish Development for the Next Generation Underwater Vehicle

IKUO YAMAMOTO, Nagasaki University, Graduate School of Engineering, Nagasaki, Japan

O-9/P-5:IL04 Investigation on the Tail Flexibility Effect by Numerical Simulation with Multi-body System

JIANXIN HU, University of Oxford, Oxford, UK; Q. XIAO, University of Strathclyde, Glasgow, UK; M. POREZ, F. BOYER, Ecole des Mines de Nantes, Nantes, France; D. PAN, University of Zhejiang, Hangzhou, China

O-9/P-5:IL05 A Creative Approach of Modelling Self-propelled 3DoF Multi-body Fish with OpenFOAM and Coupled External Programme

ZHENKAI ZHAO, QING XIAO, Department of Naval Architecture, Ocean & Marine Engineering, University of Strathclyde, Glasgow, UK

O-9/P-5:IL06 Numerical Simulation of Fish Swimming and Manoeuvring with their Pectoral Fins

RUOXIN LI, **QING XIAO**, Department of Naval Architecture, Ocean and Marine Engineering, University of Strathclyde, Glasgow, UK

O-9/P-5:IL07 An Octopus-inspired Robot

M. CIANCHETTI, C. LASCHI, The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy

O-9/P-5:IL08 Bionic Sonar Structure and Skin Material inspired by Dolphins

QIJUN LIU, **ZHIMING LIU**, **JIE YU**, **ZIXUAN ZHANG**, **WENJIAN WU**, National University of Defense Technology, Changsha, Hunan, China

O-9/P-5:IL09 Lateral Line inspired Pressure Sensory System for Wall Detection

YIMING XU, **KAMRAN MOHSENI**, Department of Mechanical and Aerospace Engineering, Department of Electrical and Computer Engineering, and Institute for Networked Autonomous Systems, University of Florida, Gainesville, FL, USA

O-9/P-5:IL10 Inspired by Fish: Evolving, Building, and Controlling Flapping Flexible Propulsive Structures for Aquatic Robots

J.H. LONG Jr., Vassar College, Poughkeepsie, New York, USA

O-9/P-5:IL11 Propulsive Performance of Dolphin Based on Numerical Simulation of Standing Swimming

K. ISOGAI, Kyushu University, Fukuoka, Japan

Poster Presentation

O-9/P-5:P01 Anthropomorphic Robotic Grasper for Atmospheric Diving Suits (ADS) and Remotely Operated Vehicles (ROV)

B. GAJJAR, President Vishwa Robotics Robotics, Research Scientist Massachusetts Institute of Technology, Cambridge, MA, USA

Special Session O-10/P-6

BIOMIMETIC MORPHING OF UNMANNED AERIAL VEHICLES

Oral Presentations

O-10/P-6:IL01 Bio-inspired State Sensing and Awareness for Morphing Fly-by-feel UAVs

F. KOPSAFTOPOULOS, **R. NARDARI**, **YU-HUNG LI**, **FU-KUO CHANG**, Department of Aeronautics and Astronautics, Stanford University, Stanford, CA, USA

O-10/P-6:IL02 Shape Memory Alloy- and Piezoelectric-based Adaptive Structures for Morphing Aircraft and Wind Turbine Rotors

D.A. SARAVANOS, Department of Mechanical Engineering & Aeronautics, University of Patras, Patras, Greece

O-10/P-6:L03 Vision-based Fuzzy Controller for the Quadrotor Tracking a Ground Target

XUCHAO CHEN¹, **ZHIQIANG CAO**¹, **YUEQUAN YANG**², **CHAO ZHOU**¹, **MIN TAN**¹, ¹Institute of Automation, Chinese Academy of Sciences, Beijing, China; ²College of Information Engineering, Yangzhou University, China

O-10/P-6:L04 Parylene Flapping-wings with Self-organized Micro Wrinkles

H. TANAKA, Tokyo Institute of Technology, Tokyo, Japan; **Y. SHIMASUE**, **I. KITAMURA**, **H. LIU**, Chiba University, Chiba, Japan

O-10/P-6:IL05 Artificial Hair Sensors - Bioinspired Flight Control Feedback

B. DICKINSON, United States Air Force Research Laboratory, Eglin Air Force Base, FL, USA

O-10/P-6:IL06 Aquatic Micro Aerial Vehicles (AquaMAV): From Diving Birds and Flying Fish to Aerial-aquatic Robots

M. KOVAC, Aerial Robotics Laboratory, Imperial College London, London, UK

O-10/P-6:L07 Hybrid Fiber Reinforced Composite with Embedded Functionality

M.H. MALAKOOTI, Department of Aerospace Engineering, University of Michigan, Ann Arbor, MI, USA; **B.A. PATTERSON**, **HYUN-SIK HWANG**, Department of Materials Science and Engineering, University of Florida, Gainesville, FL, USA; **H.A. SODANO**, Department of Aerospace Engineering, Department of Materials Science and Engineering, University of Michigan, Ann Arbor, MI, USA

O-10/P-6:L08 Yaw Control of a Smart Morphing Tailless Aircraft Concept

L.L. GAMBLE, **D.J. INMAN**, University of Michigan, Ann Arbor, MI, USA

O-10/P-6:IL09 Bioinspired Morphing Systems and Multi-functionality

J. KUDVA, NextGen Aeronautics, Inc., Torrance, CA, USA; **G. SPEDDING**, University of Southern California; **R. KORNBLOH**, SRI International

O-10/P-6:IL10 Morphing Aircraft Skin Based on a Woven Strip Structure

H. TOKUTAKE, Kanazawa University, Kanazawa, Japan

O-10/P-6:L11 Aerodynamic Performance of a Manduca Sexta Inspired Engineered Wing

A.M. DELUCA, **R.P. O'HARA**, Department of Aeronautics and Astronautics, Air Force Institute of Technology, WPAFB, OH, USA

Session P-7

Security Devices

P-7:L01 SPARTACUS: Enabling Space Technologies in Security Research

C. FUGGINI, **I. TESFAI**, D'Apollonia, Milan, Italy

P-7:L02 SPARTACUS: Positioning Units for Critical Asset Tracking and Emergency Management

L. VITTUARI, **B. PAVKOVIC**, **A. GUINAMARD**, **F. CASCIATI**, **M. ZANZI**, **A. GHETTI**, **L. BERBAKOV**, **M. VECE**, University of Bologna, Bologna, Italy

P-7:L03 Satellite and Inertial Navigation Solution in Crises Management Operation for First Responders Applications

A. GHETTI, **L. VITTUARI**, **M. ZANZI**, University of Bologna, Bologna, Italy

P-7:L04 Satellite and Inertial Navigation Solution in Crises Management Operation for Transport and Relief Goods Applications

F. CASCIATI, **S. CASCIATI**, **L. FARAVELLI**, **M. VECE**, University of Pavia, Pavia, Italy

11th International Conference

MEDICAL APPLICATIONS OF NOVEL BIOMATERIALS AND NANOTECHNOLOGY

Oral Presentations

Session Q-1

Advances in Stimuli Responsive, Active and Multi-functional Biomaterials

Q-1:IL01 Biodegradable Thermoplastic Elastomeric Composites

P.T. MATHER, E. MCMULLIN, J.M. ROBERTSON, P.A. FALCONE, Syracuse Biomaterials Institute and Biomedical and Chemical Engineering Department, Syracuse University, Syracuse, NY, USA

Q-1:IL02 Bioinspired and Multifunctional Phospholipid Polymer Nanoparticles

KAZUHIRO ISHIHARA, The University of Tokyo, Tokyo, Japan

Q-1:IL03 Nanostructured Biomaterials for Medical and Biological Applications

J.Y. YING, Institute of Bioengineering and Nanotechnology, Singapore

Q-1:IL04 Design of Biodegradable Injectable Polymer Systems Exhibiting Temperature-responsive Covalent Hydrogel Formation

YUICHI OHYA, YASUYUKI YOSHIDA, KEISUKE KAWAHARA, AKINORI KUZUYA, Department of Chemistry and Materials Engineering, Kansai University, Suita, Osaka, Japan

Q-1:IL05 Multifunctional Organic Electronics for Cell Sensing and Manipulation

PEILIN CHEN, Research Center for Applied Sciences, Academia Sinica, Taipei, Taiwan

Q-1:IL06 Non-adhesive, Slippery, Antimicrobial Surfaces using Dynamic Surface Lubricant Layers

B.D. HATTON¹, N. LAVIELLE², D. ASKER¹, ¹University of Toronto, Toronto, ON, Canada; ²ESPCI ParisTech and Ecole Polytechnique, France

Q-1:IL07 Nitric Oxide -A Key Player for Novel Anti-cancer Immunotherapeutics-

YUKIO NAGASAKI, Department of Materials Science and Medical Sciences, Satellite Laboratory, International Center for Materials Nanoarchitectonics (WPI-MANA), University of Tsukuba, Japan

Q-1:IL08 Design of Nanogel Particles for Capture and/or Release of Target Molecules/Ions

YU HOSHINO, Kyushu University, Fukuoka, Japan

Q-1:IL09 In Vitro Bioactivity Study of TiCaPCO(N) and Ag-doped TiCaPCO(N) Films in Simulated Body Fluid

E.V. LEVASHOV, D.V. SHTANSKY, I.V. SUKHORUKOVA, A.N. SHEVEYKO, PH.V. KIRYUKHANTSEV-KORNEEV, E.I. ZAMULAEVA, National University of Science and Technology "MISIS", Moscow, Russia

Q-1:IL10 Translation of Basic Materials Research into Orthopedic Medicine

K. GALL, Duke University, Durham, NC, USA

Q-1:IL11 Polymer Brushes Grafted Conjugated Polymers for Biomedical Applications

J. TRAVAS-SEJDIC, J. MALMSTRÖM, A.J. HACKETT, D.E. WILLIAMS, Polymer Electronics Research Centre, School of Chemical Sciences, University of Auckland, New Zealand and MacDiarmid Institute for Advanced Materials and Nanotechnology, New Zealand

Session Q-2

Multifunctional Materials in Tissue Engineering and Regenerative Medicine

Q-2:IL01 Engineering Anisotropy at Nano- to Macroscale: Towards Bioactive Biomaterials

S. SANT, Department of Pharmaceutical Sciences, Department of Bioengineering, McGowan Institute for Regenerative Medicine, Pittsburgh, PA, USA

Q-2:IL02 Cell Encapsulation and Printing

C. MIGLIARESI, N. CAGOL, D.MANIGLIO, V. LIADUNSKAYA, A. MOTTA, Department of Industrial Engineering and BIOTech Research Center, University of Trento, Italy

Q-2:IL03 Robust Regenerative Engineering of the Shoulder

R. JAMES, **C.T. LAURENCIN**, Department of Orthopaedic Surgery and The Raymond and Beverly Sackler Center for Biomedical, Biological, Physical and Engineering Sciences, University of Connecticut Health Center, Farmington, CT, USA

Q-2:IL04 Fabrication of Interconnected Porous Calcite from Calcium Sulfate and its Tissue Response

KUNIO ISHIKAWA, KANJI TSURU, Dept. of Biomaterials, Faculty of Dental Science, Kyushu University, Fukuoka, Japan

Q-2:IL05 Progress in Calcium-magnesium Phospho-silicate Hydraulic Bio-cements

T. TROCZYNSKI, M. YAGHTIN, Materials Engineering, University of British Columbia, Vancouver B.C., Canada

Q-2:IL06 Developmentally Inspired Approach to Cartilage Tissue Engineering

E. JABBARI, University of South Carolina, Columbia, SC, USA

Q-2:IL07 Supramolecularly Movable Polyrotaxane Surfaces Directing Stem Cell Differentiation

N. YUI, J.-H. SEO, Tokyo Medical and Dental University, Tokyo, Japan; T. YAMAOKA, S. KAKINOKI, M. HIRATA, National Cerebral and Cardiovascular Center Research Institute, Osaka, Japan

Q-2:IL08 Enhanced Tissue Infiltration into Porous Scaffolds by Active Growth Factor-immobilizing Technology

T. YAMAOKA, S. KAKINOKI, National Cerebral and Cardiovascular Center Research Institute, Suita, Osaka, Japan; Y. HASHIMOTO, S. BABA, Osaka Dental University, Chuo-ku, Osaka, Japan

Q-2:IL09 Fabrication of Poly(lactic Acid) (PLA) Scaffolds via Nonsolvent induced Phase Separation Technique

E. REZABEIGI, P.M. WOOD-ADAMS, **R.A.L. DREW**, Department of Mechanical and Industrial Engineering, Concordia University Montreal, Canada

Q-2:IL10 Synthesis and Characterization of an Innovative Radially-compliant Scaffold for Large Osteochondral Defects: The Honey

F. SCALERA, B. PALAZZO, A.N. CANCELLI, S. SCIALLA, A. SANNINO, **F. GERVASO**, University of Salento, Lecce, Italy; D. IZZO, Dhitech S.c.a.r.l, Lecce, Italy; A. BARCA, IRCCS San Raffaele Scientific Institute (Section of Lecce), Lecce, Italy; G. PERETTI, IRCCS Istituto Ortopedico Galeazzi, Milan, Italy

Q-2:IL11 Preparation of Gradient-type Decellularized Tissue-polymer Complex for Soft Tissue-polymer Interlinking Device

A. KISHIDA, Y. ZHANG, K. NAM, T. KIMURA, Institute of Biomaterials and Bioengineering, Tokyo Medical and Dental University, Tokyo, Japan

Q-2:IL12 Collagen Fiber Bio-composite Laminates and Constructs

M. SHARABI, R. HAJ-ALI, The Fleischman Faculty of Engineering, D. BENAYAHU, Sackler School of Medicine, Y. BENAYAHU, George S. Wise Faculty of Life Sciences, Tel Aviv University, Tel Aviv, Israel

Q-2:IL13 Photoactive Nanofiber Materials

J. MOSINGER, P. HENKE, J. DOLANSKY, Faculty of Science, Charles University in Prague, Prague, Czech Republic

Q-2:IL14 Nanoporous TiO₂ Films produced by Anodizing of Ti-6Al-4V Alloy and their Tribocorrosion Performances for Biomedical Application

L. BENEÀ¹, E. DANAILA¹, J.-P. CELIS², ¹Competences Center: Interfaces-Tribocorrosion-Electrochemical Systems (CC-ITES), Faculty of Engineering, Dunarea de Jos University of Galati, Galati, Romania; ²Department of Materials Engineering, Faculty of Engineering, Katholieke Universiteit Leuven, Leuven, Belgium

Session Q-3

Smart Drug/Gene Delivery and Release Systems

Q-3:IL01 Manipulation of Lipid Bilayer Membranes by Peptide/Cationic Copolymer Complex**A. MARUYAMA**, Tokyo Institute of Technology, Yokohama, Japan**Q-3:IL02 Injectable Calcium Phosphate Cements for Bone Regeneration: to Aid is to Degrade!****J.J.J.P. VAN DEN BEUCKEN**, Radboudumc, Nijmegen, The Netherlands**Q-3:IL03 Antibacterial Bioglass Coatings for Orthopaedics by HVFSF Suspension Spraying****I. ARHIRE**, R. GADOW, A. KILLINGER, Institute for Manufacturing Technologies of Ceramic Components and Composites, University of Stuttgart, Stuttgart, Germany; **A. BERNSTEIN**, Musculoskeletal research lab, Clinics of Orthopedics and Trauma Surgery, University of Freiburg, Freiburg, Germany**Q-3:IL04 PolyEthylene (Glycol) Microneedles Devices for Drug Delivery and Diagnostic Applications****P. DARDANO**, A. CALIÒ, J. POLITI, I. REA, L. DE STEFANO, IMM-CNR uos Napoli, Italy; **V. DI PALMA**, M.F. BEVILACQUA, A. DI MATTEO, ST Microelectronics, Italy**Q-3:IL05 BN Nanoparticles with a Petal-like Surface as Anticancer Drug-delivery System****D.V. SHTANSKY**¹, I.V. SUKHORUKOVA¹, I.V. ZHITNYAK², A.M. KOVALSKI¹, A.T. MATVEEV¹, O.I. LEBEDEV³, X. LI⁴, N.A. GLOUSHANKOVA², D. GOLBERG³, ¹National University of Science and Technology "MISIS", Moscow, Russia; ²N.N. Blokhin Russian Cancer Research Center, Moscow, Russia; ³CRISMAT, UMR 6508, CNRS-ENSICAEN, Caen, France; ⁴National Institute for Materials Science (NIMS), Tsukuba, Ibaraki, Japan**Q-3:IL06 Advances in Delivery of Stimuli-sensitive Combination Nanopreparations of siRNA and Chemotherapeutic Drugs to Treat Multidrug Resistant Tumors****V. TORCHILIN**, Center for Pharmaceutical Biotechnology and Nanomedicine, Northeastern University, Boston, MA, USA**Q-3:IL07 Engineering of Enzyme Nano-capsules for Biomedical Applications****A. KISHIMURA**, Department of Applied Chemistry, Faculty of Engineering, Kyushu University, and Center for Molecular Systems, Kyushu University, Japan**Q-3:IL08 Novel Sol Gel Antibiotic Release Coatings for Cementless Arthroplasty Fixations****R. AKID**¹, **T. NICHOL**², **T.J. SMITH**², **J.T. CALLAGHAN**³, **P.V. HATTON**³, ¹School of Materials, University of Manchester, UK; ²BioMedical Research Centre, Sheffield Hallam University, UK; ³School of Clinical Dentistry, University of Sheffield, UK**Q-3:IL09 Liposome Loaded Chitosan Hydrogels. A Promising Delayed Release Biomaterial and Related Mechanism****J. DESBRIERES**¹, M. POPA², C. PEPTU², S. BACAITA³, ¹Université de Pau et des Pays de l'Adour, IPREM (UMR CNRS 5254), Hélio parc Pau Pyrénées, Pau cedex, France; ²Department of Natural and Synthetic Polymers, "Gheorghe Asachi" Technical University of Iasi, Iasi, Romania; ³Department of Physics, "Gheorghe Asachi" Technical University of Iasi, Iasi, Romania**Q-3:IL10 Calcium Phosphate Coatings with Therapeutic Drug Release for Prosthetic Devices in Orthopaedics****R. GADOW**¹, **P. KRIEG**¹, **I. ARHIRE**¹, **A. KILLINGER**¹, **A. BERNSTEIN**², ¹Institute for Manufacturing Technologies of Ceramic Components and Composites (IMTCCC), University of Stuttgart, Stuttgart, Germany; ²Musculoskeletal research lab, Department of Surgery, Clinics of Orthopedics and Trauma Surgery, University of Freiburg - Medical Centre, Freiburg, Germany**Q-3:IL11 Study on the Magnetic Fe3O4 with Cyclodextrin Composite for Drug Delivery****C.L. WANG**, **Y.H. ZHOU**, **W.T. LIANG**, **Y. ZHANG**, **Y.J. GUO**, **C. DONG**, **S.M. SHUANG**, Department of Chemistry and Chemical Engineering and Institute of Environmental Science, Shanxi University, Taiyuan, P.R. China**Q-3:IL12 Macroporous BaO-6Fe2O3-Based Nanostructured Vehicle for Drug Delivery****S. TORRES**, **V.S. LOPEZ**, **M.E. CONTRERAS**, IIMM UMSNH, Morelia, Michoacan, Mexico; **A. BRAVO**, CMEB UMSNH, Tarimbaro, Michoacan, Mexico**Q-3:IL13 Prodigious Loaded PLGA-based Composites: for Extended Localized Drug Release****Y. DANYUO**^{1,2}, **O. OBERIAFOR**³, **J.D. OBAYEMI**^{1,4}, **S. DOZIE-NWACHUKWU**^{1,3}, **C.J. ANI**^{5,6}, **O.S. ODUSANYA**³, **M.G. ZEBAZE KANAB**², **K. MALATESTA**⁷, **W.O. SOBOYEJO**^{1,7,8}, ¹Dept. of Materials Science and Eng., African University of Science and Tech. (AUST), Abuja, Federal Capital Territory, Nigeria; ²Dept. of Materials Science and Eng., Kwara State University, Nigeria; ³Biotechnology and Genetic Eng. Advanced Lab., Sheda Science and Technology Complex (SHESTCO), Abuja, Federal Capital Territory, Nigeria; ⁴Dept. of Materials Science and Eng., Kwara State University, Nigeria; ⁵Dept. of Theoretical Physics, African University of Science and Tech. (AUST), Abuja, Federal Capital Territory, Nigeria; ⁶Dept. of Physics, Salem University, Lokoja-Ajakuta Road, Kogi, Nigeria; ⁷Dept. of Mechanical and Aerospace Eng., Princeton, NJ, USA; ⁸Princeton Inst. for the Science and Technology of Materials (PRISM), Princeton, NJ, USA

Session Q-4

Nanomaterials Systems for Bio-imaging and Therapy

Q-4:IL01 Dynamic Culturing Systems for Cell-seeded Functionalized Implantable Scaffolds**V. SIKAVITSAS**^{1,2}, **C. WILLIAMS**², **A. SIMMONS**¹, **Z. MUSSETT**², ¹Schools of Chemical, Biological, and Materials Engineering, ²Stephenson School of Biomedical Engineering, The University of Oklahoma, Norman, OK, USA**Q-4:IL02 Interaction of Noble Nanoparticles of Different Morphology with Human Skin and Skin Cells****C. GRAF**, **D. NORDMEYER**, **E. RÜHL**, Freie Universität Berlin, Berlin Germany; **F. RANCAN**, **S. AHLBERG**, **A. VOGT**, **J. LADEMANN**, Charité - Universitätsmedizin, Berlin, Germany; **C. SENGSTOCK**, **M. KÖLLER**, Bergmannsheil University Hospital, Bochum, Germany; **J. DIENDORF**, **M. EPPL**, University of Duisburg Essen, Essen, Germany; **J. RAABE**, Paul Scherrer-Institut, Villigen, Switzerland**Q-4:IL03 Stealth Liposomes Conferred with Light-triggered Cargo Release for Theranostic Applications****D. LUO**, **K.A. CARTER**, **A. RAZI**, **J. GENG**, **S. SHAO**, **D. GIRALDO**, **U. SUNAR**, **J. ORTEGA**, **J.F. LOVELL**, University at Buffalo, State University of New York, Buffalo, NY, USA**Q-4:IL04 15 Years of Commercializing Nanomedicine into Real Medical Products****T.J. WEBSTER**, Department of Chemical Engineering, Northeastern University, Boston, MA, USA, and Center of Excellence for Advanced Materials Research, King Abdulaziz University, Jeddah, Saudi Arabia**Q-4:IL05 Dendrimer-nanoparticle Conjugates as Efficient Tools for in Vivo Cancer Targeting****S. BEGIN-COLIN**, **D. FELDER-FLESCHE**, Institut de Physique et Chimie des Matériaux de Strasbourg, IPCMS UMR CNRS-UdS-ECPM 7504, Strasbourg cedex, France**Q-4:IL06 Genomic Nanomedicines for Cancer Therapy****S. SRIDHAR**, Northeastern University and Harvard Medical School, Boston, MA, USA**Q-4:IL07 Functional Nanoparticles for Tumor Imaging****MINGYUAN GAO**, Institute of Chemistry, Chinese Academy of Sciences, Beijing, China**Q-4:IL08 Fluorescent Nanoparticles of Silicon and Carbon for Breast Cancer Imaging****J.S. KANATHASAN**, **V. SWAMY**, **U.D. PALANISAMY**, Monash University Malaysia, Bandar Sunway, Selangor, Malaysia; **A.K. RADHAKRISHNAN**, International Medical University, Bukit Jalil, Kuala Lumpur, Malaysia**Q-4:IL09 Centimeter-deep Tissue Fluorescence Microscopy for Biomedical Applications****BAOHONG YUAN**, **BINGBING CHENG**, University of Texas at Arlington, Department of Bioengineering, Arlington, TX, USA**Q-4:IL10 Design of Functionalized Iron Oxide Nanoparticles for Theranostics****D. FELDER-FLESCHE**, **D. MERTZ**, **S. BEGIN**, IPCMS UMR CNRS Unistra 7504, Strasbourg Cedex, France**Q-4:IL11 3D Chiral Nanostructure for High-sensitivity Molecular Imaging with Optical Coherence Tomography****NANGUANG CHEN**, **KALPESH MEHTA**, **PENGFELI ZHANG**, Department of Biomedical Engineering, National University of Singapore, Singapore

Q-4:L13 Ultrasensitive *In Vivo* Detection of Primary Gastric Tumor and Lymphatic Metastasis Using Upconversion Nanoparticles

R.R. QIAO¹, C.H. LIU², K.C. WU², M.Y. GAO¹, ¹Institute of Chemistry, the Chinese Academy of Sciences, Beijing, China; ²State Key Laboratory of Cancer Biology, Xijing Hospital of Digestive Diseases, Fourth Military Medical University, Xi'an, China

Q-4:L14 A Protease-activated Ratiometric Fluorescent Probe for pH-mapping of Malignant Tumor

YI HOU¹, J. ZHOU¹, ZHENYU GAO², X.Y. SUN¹, C.Y. LIU¹, D.H. SHANGGUAN¹, W.S. YANG², M.Y. GAO¹, ¹Institute of Chemistry, the Chinese Academy of Sciences, Zhong Guan Cun, Beijing, China, ²College of Chemistry, Jilin University, Changchun, China

Q-4:L15 Relaxor Single-crystal Plates with Nano Size Ferroelectric Domains Applied to Ultrasonic Probe for Medical Uses

TOSKIO OGAWA, TAIKI IKEGAYA, Department of Electrical and Electronic Engineering, Shizuoka Institute of Science and Technology, Fukuroi, Japan

Poster Presentations

Q:P01 Cryochemical Synthesis and Antibacterial Activity of Hybrid Compositions based on Ag and Cu Nanoparticles included in Nanocrystals of Antibiotics

O.I. VERNAYA¹, D.I. KHVATOV², A.N. BORODINA¹, M.A. MARKOV¹, V.P. SHABATIN¹, A.M. SEMENOV², T.I. SHABATINA¹, Moscow State University, ¹Chemical Department, ²Biological Department, Moscow, Russian Federation

Q:P02 Preparation of Bone-hemostasis Materials with Sugar-containing Hydroxyapatite and Natural Plant-derived Polymer

YEONJEONG NOH¹, T. UMEDA¹, T. MUSHI², K. ITATANI¹, ¹Department of Materials and Life Sciences, Sophia University, Tokyo, Japan; ²2nd Department of Orthopaedic Surgery, Toho University, Tokyo, Japan

Q:P03 Antibacterial Property of Chitosan/poly(vinyl alcohol) Blend Nanofibers

S. HABIBI, M. RAZAGHPUR, Islamic Azad University, Yadegar e Imam Khomeini(RAH) Shahr-e-Rey Branch, Tehran, Iran

Q:P04 Sintering and Characterization of Submicron Zirconia-(0-30 vol%) Alumina Composites

R.E. PRESTES SALEM, E.M.J.A. PALLONE, Sao Paulo University, Pirassununga, SP, Brazil; F.R. MONTEIRO, A.S.A. CHINELATTO, A.L. CHINELATTO, Ponta Grossa State University, Ponta Grossa, PR, Brazil

Q:P05 Synthesis, Characterization and SERS Activity of Silver Nanoparticles using Hibiscus Cannabinus Flower and Leaf Extracts

K. THARANI, **L.C. NEHRU**, Department of Medical Physics, Bharathidasan University, Trichirappalli, Tamilnadu, India

Q:P06 MOF@Activated Carbon: A New Material for Adsorption of Aldicarb in Biologic Systems

C.A. FERNANDES DE OLIVEIRA, F.F. SILVA, D.M.B. SOUZA, I.A. SOUZA, S.A. JÚNIOR; Universidade Federal de Pernambuco, Recife, Brazil; G.C. JIMENEZ, J.F.S. NETO; Universidade Federal Rural de Pernambuco, Recife, Brazil

Q:P07 Functionalizing Surface Electrical Potential of Hydroxyapatite Coatings

L. PLUDUMA, K.A. GROSS, E. FREIMANIS, I. DAENKE, Faculty of Materials Science and Applied Chemistry, Riga Technical University, Latvia; P. VUORISTO, H KOIVULUOTO, Department of Materials Science, Tampere University of Technology, Finland

Q:P08 Clinical Investigation and Bio-compatibility Evaluation of Novel Synthetic Bone Graft Substitute, OsvehOss®

M. STIRI¹, H. KHADIVI AYASK¹, **N. SASANI**¹, M. GOLESTANIPOUR², A. MOLOUDI², M. ZAREPOUR¹, ¹Osveh Asia Medical Instrument Co., Mashhad, Iran; ²Materials Research Group, Iranian Academic Center for Education, Culture and Research (ACECR), Mashhad Branch, Iran

Q:P09 Sol-gel Synthesis of Biocompatible Glasses: A Study of Particle Growth Kinetics using Dynamic Light Scattering

R. BORGES, **J. MARCHI**, Federal University of ABC, Santo André, Brazil

Q:P10 Drilling Quantification and Bioactivity of Novel Machinable Hydroxyapatite : Yttrium Phosphate Bioceramic Composite

R. GHOSH, R. SARKAR, S.K. PAL, Department of Ceramic Engineering, National Institute of Technology, Rourkela, Odisha, India; S. PAUL, Department of Mechanical Engineering, Indian Institute of Technology, Kharagpur, West Bengal, India

Q:P11 Nanocomposites of PLLA and WS2 Nanotubes for Bioresorbable Vascular Scaffolds

T. DI LUCCIO, ENEA Centro Ricerche Portici, Portici (NA), Italy and California Institute of Technology, Pasadena, CA, USA; K. RAMACHANDRAN, J.A. KORNFIELD, California Institute of Technology, Pasadena, CA, USA

Q:P12 Electrospun Gelatin Nanofibrous Scaffolds for Cartilage Tissue Engineering

Sh. ALIAKBARSHIRAZI, A. TALEBIAN, Guilan University, Rasht, Iran Islamic Azad University, Yadegare Imam Khomeini (RAH) Branch, Tehran, Iran

Q:P13 Synthesis of Mesoporous Magnesium Ferrite (MgFe2O4) using Porous Silica Templates

M. BAGHERI, M.A. BAHREVAR, Department of Semiconductors, Materials and Energy Research Center (MERC), Karaj, Iran; A. BEITOLLAHI, Ceramic Division, Iran University of Science and Technology (IUST), Tehran, Iran

Q:P14 Lipid Coated Chitosan Nano- and Microparticles for Pulmonary Application

A. SOMMERWERK, S.R. PINNAPIREDDY, J. BRÜSSLER, J. SCHÄFER, **U. BAKOWSKY**, Marburg University, Pharmaceutical Technology und Biopharmaceutics, Marburg, Germany

Q:P15 Investigation on the Cholic Acid Derivative Functionalized Fe3O4 Magnetic Nanoparticles for Drug Delivery

WENTING LIANG, TAO GONG, CHUAN DONG, SHAOMIN SHUANG, Department of Chemistry and Chemical Engineering and Institute of Environmental Science, Shanxi University, Taiyuan, P.R. China

Q:P16 Antibacterial Activation of Magnesium doped Hydroxyapatite and Loaded by Ciprofloxacin

S. ZIANI^{1,2}, S. MESKI², H. KHIREDDINE², ¹Département de Pétrichimie et de Génie des Procédés, Faculté de Technologie, Université 20 Aout 1955, Skikda, Algérie; ²Laboratoire de Génie de l'Environnement (LGE), Faculté de Technologie, Université A.MIRA, Bejaia, Algérie

Q:P17 Ketorolac Tromethamine Release contained in SBA-15 and CMK-3 Mesoporous Materials

J.M. JUAREZ, J. CUSSA, M.B. GÓMEZ COSTA, O.A. ANUNZIATA, Centro de Investigación en Nanociencia y Nanotecnología (NANOTEC), Facultad Regional Córdoba, Universidad Tecnológica Nacional, Córdoba, Argentina

Q:P19 Magnetic Nanocomposite Thermoseeds for Post Operative Treatment of Breast Cancer

K. KAN-DAPAAH, Dept. of Biomedical Engineering, University of Ghana, Accra, Ghana; N. RAHBAR, D. CROSSON, A. TAHLLIL, Dept. of Civil and Env. Eng., Worcester Polytechnic Institute, USA; N. YAO, W. SOBOYEJO, Dept. of Mechanical and Aerospace Eng., Princeton University, USA

Q:P20 Green Synthesis with Microwave Surface Passivation of Carbon Quantum Dots from Citrus Microcarpa Bunge Peels

P.A.N. DE YRO, M.A. CHUA II, B.T. SALON, Materials Science Division, Industrial Technology Development Institute, Department of Science and Technology, Bicutan, Taguig City, Philippines; School of Graduate Studies, Mapúa Institute of Technology, Muralla St, Intramuros, Manila, Philippines

Q:P21 Use of Nanodiamonds Platforms to Evaluate Gamma Irradiated Red Blood Cells

M. ACOSTA-ELIAS¹, A. ANGULO-MOLINA¹, A. SARABIA-SAINZ¹, E. SILVA-CAMPA¹, A. BURGARA-ESTRELLA¹, B. CASTANEDA², K. SANTACRUZ-GOMEZ², R. MELENDREZ¹, M. BARBOZA-FLORES¹, D. SOTO-PUEBLA¹, S. ALVAREZ-GARCÍA¹, **M. PEDROZA-MONTERO**¹, ¹Departamento de Investigación en Física, Universidad de Sonora, México; ²Departamento de Física, Universidad de Sonora, México

Q:P22 Photobactericidal Activity of FeFe2O4&Au0 Core & Shell Nanocomposite

O.M. LAVRYNENKO, Y.S. SHCHUKIN, G.A. DOLYNSKYI, F.D. Ovcharenko Institute of Bio-Colloid Chemistry, Kyiv, Ukraine; R.E. KAVETSKY, Institute of Experimental Pathology, Oncology and Radiobiology, National Ukrainian Academy of Sciences, Kyiv, Ukraine

Q:P23 Magnetic Properties and Relaxivities of Stabilized Colloidal Solutions of Mg-Zn Ferrite as Potential Contrasting Agents for Magnetic Resonance Imaging

V. PANKOV¹, E. PETROVA¹, D. KOTSIKAU¹, V. NATAROV¹, T. SHUTAVA², ¹Belarusian State University, Minsk, Belarus; ²The Institute of Chemistry of New Materials of the National Academy of Sciences of Belarus, Belarus

Focused Session Q-5

BIOMEDICAL APPLICATIONS OF CARBON NANOTUBES AND GRAPHENE: OPPORTUNITIES AND CHALLENGES

Oral Presentations

Q-5:IL01 Graphene in Biomedical Applications

A. ZURUTUZA, Graphenea S.A., Donostia - San Sebastian, Spain

Q-5:IL02 Multifunctional Carbon Nanotubes for Anticancer Therapy
C. MENARD-MOYON, L. MUZI, A. BIANCO, CNRS, Institut de Biologie Moléculaire et Cellulaire, Laboratoire d'Immunopathologie et Chimie Thérapeutique, UPR 3572, Strasbourg, France; **I. MARANGON**, F. GAZEAU, Laboratoire Matière et Systèmes Complexes, UMR 7057 CNRS-Université Paris-Diderot, Paris, France; **G. PASTORIN**, Department of Pharmacy, National University of Singapore, Singapore

Q-5:IL03 Graphene Water Dispersions! Preparation and Applications
E. VAZQUEZ, Universidad de Castilla-La Mancha, Ciudad Real, Spain

Q-5:IL04 Light Weight and Flexible High-performance Sensor Platforms for Medical Diagnostics

M. MEYER¹, **L. BARABAN**¹, **F. PUMP**^{1,2}, **G. CUNIBERTI**^{1,2,3}, ¹Institute for Materials Science, TU Dresden, Germany; ²Dresden Center Computational Materials Science, TU Dresden, Germany; ³Center for Advancing Electronics Dresden (cfaed), TU Dresden, Germany

Q-5:IL05 Immunosensor based on Carbon Nanotubes and Graphene
M. HOLZINGER, Département de Chimie Moléculaire, University of Grenoble-Alpes, Grenoble, France

Q-5:IL06 Towards NanoMRI with Mechanical Resonators based on Nanotubes and Graphene

A. BACHTOLD, ICFO - The Institute of Photonic Sciences, Castelldefels (Barcelona), Spain

Q-5:IL07 Graphene-based Optoelectronic Liquid Sensing Platform
M. STEINER¹, **M. ENGEL**², **R. GIRO**¹, **P.W. BRYANT**¹, **R.F. NEUMANN**¹, **P. AVOURIS**², **C. FEGER**², ¹IBM Research, Rio de Janeiro, Brazil; ²IBM Research, Yorktown Heights, NY, USA

Q-5:IL08 Graphene Interfaced with Bio-components: Sensors, Wraps, Wrinkles and Flap-valves

V. BERRY, Department of Chemical Engineering, University of Illinois at Chicago, Chicago, IL, USA

Q-5:IL09 Graphene and Graphene Oxide Sensors for Monitoring Chronic Wounds

N. CALISI, **B. MELAI**, **P. SALVO**, **C. PAOLETTI**, **R. FUOCO**, **V. MOLLIKA**, **F. DI FRANCESCO**, Department of Chemistry and Industrial Chemistry, University of Pisa, Pisa, Italy

Q-5:IL10 Carbon Nanohorns for Targeted Therapy

EIJIRO MIYAKO, Nanomaterial Research Institute (NMI), National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

Q-5:IL11 Carbon-based Substrates for Stem Cell Differentiation
T. NAYAK, **C. ZHAO**, **H. ANDERSEN**, **H.K. HO**, **B. OEZYILMAZ**, **G. PASTORIN**, National University of Singapore, Pharmacy Department, Singapore

Q-5:IL12 Anodic-electrophoretic Deposited Graphene Oxide onto Anodized Titanium for Orthopaedic Applications

S. SIRIVISOOT, Biological Engineering Program, Faculty of Engineering, King Mongkut's University of Technology Thonburi, Bangkok, Thailand

Q-5:IL13 Fate of Functionalized Carbon Nanotubes In the Brain: From the in Vitro Interactions to the in Vivo Response

C. BUSSY, Centre for Tissue Injury and Repair, Faculty of Biology, Medicine and Health & National Graphene Institute, University of Manchester, Manchester, UK

Q-5:IL14 Graphene in Medicine: Immune Cell Interactions

L.G. DELOGU, Department of Chemistry and Pharmacy, University of Sassari, Sassari, Italy

Q-5:IL15 Risk of Altered Respiratory Immunity Associated with Exposure to Carbonaceous Nanomaterials

A.A. SHVEDOVA, CDC/NIOSH and Dept. Physiology & Pharmacology, WVU, Morgantown, WV, USA; **V.E. KAGAN**, University of Pittsburgh, Pittsburgh, PA, USA

Focused Session Q-6

MATERIALS NANOTECHNOLOGIES FOR IMPLANTABLE NEURAL INTERFACES

Oral Presentations

Q-6:IL01 Semiconductor Nanowires for Neural Interface Applications

C.N. PRINZ, Division of Solid State Physics, NanoLund and Neuronano Research Center, Lund University, Lund, Sweden

Q-6:IL02 Carbon Nanotube Technology for Flexible Neuronal Interfacing

Y. HANEIN, School of Electrical Engineering, Tel Aviv University, Tel Aviv, Israel

Q-6:IL03 Biomimetic Surface Modifications for a Seamless and Stable Neural Electrode-tissue Interface

X. TRACY CUI, University of Pittsburgh, Pittsburgh, PA, USA

Q-6:IL05 Tissue Engineering Conducting Polymer Coatings for Implantable Neural Interfaces

R. GREEN, Biomedical Engineering, UNSW, Sydney, Australia

Q-6:IL06 A Direct Comparison of Glassy Carbon and PEDOT-PSS for High Charge Injection and Low Impedance Neural Interfaces

M. VOMERO¹, **E. CASTAGNOLA**², **S. DE FAVERI**², **E. MAGGIOLINI**², **I. REMBADO**², **L. FADIGA**^{2,3}, **S. KASSEGNE**¹, **D. RICCI**², ¹MEMS Research Lab., Department of Mechanical Engineering, College of Engineering, San Diego State University, San Diego, CA, USA; ²CTNS@UniFe, Istituto Italiano di Tecnologia, Ferrara, Italy; ³Section of Human Physiology, University of Ferrara, Ferrara, Italy

Q-6:IL07 Nanostructured Diamond for the Attachment and Proliferation of Human Stem Cells and Functional Neural Networks

A. TAYLOR¹, **B. VAGASKA**², **R. EDGINGTON**¹, **P. FERRETTI**², **C. HEBERT**³, **G. PIRET**³, **P. BERGONZO**³, **R. JACKMAN**¹, ¹London Centre for Nanotechnology and Department of Electronic and Electrical Engineering, University College London, London, UK; ²Institute of Child Health, University College London, London, UK; ³Diamond Sensors Group, CEA-LIST, Saclay, France

Q-6:IL08 Investigation of HfO₂-based Capacitive Transducers for Neural Interfacing

G. TALLARIDA¹, **S. SPIGA**¹, **A. CORNA**², **L. GELMI**¹, **A. LAMPERTI**¹, **M. FANCIULLI**^{1,2}, ¹Laboratorio MDM - CNR-IMM, Agrate Brianza, Italy; ²Dipartimento di Scienza dei Materiali, Università degli Studi di Milano Bicocca, Milano, Italy

Q-6:IL09 Ti/HAP Biocomposite Coatings Synthesised by Means of Laser Metal Deposition Technique

M. TLOTLENG, Department of Mechanical Engineering Science, University of Johannesburg, Auckland Park Campus, Johannesburg, South Africa, and Laser Materials Processing Group, National Laser Center, Council for Scientific and Industrial Research, Pretoria, South Africa

Q-6:IL10 Stretchable Hydrogel Bioelectronics: From 3D Printing to Neural Applications

XUANHE ZHAO, Soft Active Materials Laboratory, MIT, Cambridge, MA, USA

Q-6:IL11 Novel Bioceramics and Composite Structures for Intelligent Neuroimplantation

R. GADOW¹, **F. KERN**¹, **A. KILLINGER**¹, **A. GHARABAGHI**², ¹Institute for Manufacturing Technologies of Ceramic Components and Composites (IMTCCC), University of Stuttgart, Stuttgart, Germany; ²Klinik für Neurochirurgie, Universitätsklinikum Tübingen, Tübingen, Germany

Q-6:IL12 Soft and Leaky Encapsulation Materials for Neural Interface Devices

A. JOSHI-IMRE, **A. GARCIA SANDOVAL**, **R. MODI**, **S. COGAN**, **W. VOIT**, The University of Texas at Dallas, Richardson, TX, USA

Q-6:IL13 3D Diamond Electrode Arrays for In-vivo Neural Networks Interfacing

C. HÉBERT, **E. SCORSONE**, **P. BERGONZO**, CEA LIST, Diamond Sensors Laboratory, Gif-sur-Yvette, France; **L. ROUSSEAU**, **M. COTTANCE**, **G. LISSORGUES**, ESIEE-Paris, ESYCOM University Paris-EST, Cité Descartes, Noisy le Grand Cedex, France; **A. BENDALI**, **A. SBARTAI**, **S. PICAUD**, INSERM, U968 Institut de la vision Paris, France; **G. PIRET**, **B. YVERT**, INSERM, UA01, Clinatex lab, Biomedical Research Center E J. Safra, Grenoble, France; **J.-P. MAZELLIER**, Thales Research and Technology, Palaiseau, France; **F. SAUTER-STARACE**, CEA/LETI, MINATEC Campus, CLINATEC, Grenoble, France; **A. TAYLOR**, **R.B. JACKMAN**, London Centre for Nanotechnology, University College London, London, UK

Q-6:IL15 Systemic Inhibition of Innate Immunity Pathways Improves Intracortical Microelectrode Performance

J.R. CAPADONA, J.K. HERMANN, M. RAVIKUMAR, Department of Biomedical Engineering, Case Western Reserve University, Cleveland, OH, USA; Advanced Platform Technology Center, L. Stokes Cleveland VA Medical Center, USA

Q-6:IL16 Recording High Frequency Neural Signals using Conformable and Low-impedance ECoG Electrodes Arrays coated with PEDOT-PSS-PEG

E. CASTAGNOLA¹, M. MARRANI², E. MAGGIOLINI¹, S. DE FAVERI¹, F. MAITA², L. PAZZINI², D. POLESE², A. PECORA², L. MAIOLO², L. FADIGA^{1,3}, D. RICCI¹, ¹CTNS@UniFe, Istituto Italiano di Tecnologia, Ferrara, Italy; ²CNR-IMM Istituto per la Microelettronica e i Microsistemi, Rome, Italy; ³Section of Human Physiology, University of Ferrara, Ferrara, Italy

Q-6:IL17 Interface Investigation of Electrogenic Cells on 3D Laser-patterned PEDOT Structures

F. SANTORO¹, G.C. FARIA^{2,3}, Y. VAN DE BURGT², A. SALLEO², B. CUI¹, ¹Department of Chemistry, Stanford University, Stanford, CA, USA; ²Department of Material Science and Engineering, Stanford University, Stanford, CA, USA; ³Sao Carlos Physics Institute, Sao Paulo University, Sao Carlos, Brazil

Q-6:IL18 A Nanoscale Interface Directs Alignment of a Cell-assembled Extracellular Matrix to Template Neurite Outgrowth

J. SCHWARTZ¹, S.B. BANDINI¹, G.M. HARRIS², L.S.F. ADLER¹, A.O. PARIKH¹, J. SPECHLER³, C.B. ARNOLD³, H. WANG⁴, J.E. SCHWARZBAUER², ¹Department of Chemistry, Princeton University, Princeton, NJ, USA; ²Department of Molecular Biology, Princeton University, Princeton, NJ, USA; ³Department of Mechanical and Aerospace Engineering, Princeton University, Princeton, NJ, USA; ⁴Department of Neurologic Surgery, Mayo Clinic, Rochester, MN, USA

Q-6:IL19 Narrowing the Physical Mismatch between Neural Implants and Neural Tissues

S.P. LACOUR, Laboratory for Soft Bioelectronics Interfaces, Centre for Neuroprosthetics, School of Engineering, EPFL, Lausanne, Switzerland

Q-6:IL20 Ultracompliant Electrodes for Next-generation Brain-machine Interfaces

C.J. BETTINGER, Carnegie Mellon University, Pittsburgh, PA, USA

Q-6:IL21 Combined Strategies to Aid Nerve Repair

S. THOMSON¹, F. GESELLCHEN¹, T. DEJARDIN¹, C. MARTIN¹, A. HART¹, A. BERNASSAU², P. KINGHAM³, D. CUMMING¹, **M. RIEHLE**¹, ¹University of Glasgow, Glasgow, UK; ²Herriot Watt University, Edinburgh, UK; ³University of Umeå, Sweden

Q-6:IL22 Organic Electronics for Interfacing with the Brain

G. MALLIARAS, Ecole des Mines, Gardanne, France

Q-6:IL23 SiC-based Neural Interfaces for the Central Nervous System

C.L. FREWIN, **S.E. SADDOW**, University of South Florida, Tampa, FL, USA

Poster Presentations**Q-6:P01 pHEMA Hydrogel Encapsulation of High-Selectivity-Micro-EcoG-Arrays for In-vivo Recording**

E. MAGGIOLINI¹, E. CASTAGNOLA¹, S. DE FAVERI¹, D. RICCI¹, L. FADIGA^{1,2}, ¹CTNS@UniFe, Istituto Italiano di Tecnologia, Ferrara, Italy; ²Section of Human Physiology, University of Ferrara, Ferrara, Italy

Q-6:P02 Biologically Integrated and Soft Neural Interfaces: A Progress toward the Long Term Acceptance of Microelectrodes by the Organism

S. DE FAVERI¹, E. CASTAGNOLA¹, E. MAGGIOLINI¹, L. CESERACCIU², F. BENFENATI³, D. RICCI¹, L. FADIGA^{1,4}, ¹CTNS@UniFe, Istituto Italiano di Tecnologia, Ferrara, Italy; ²Smart Materials, Istituto Italiano di Tecnologia, Genova, Italy; ³IIT@CBA, Genova, Italy; ⁴Section of Human Physiology, University of Ferrara, Ferrara, Italy

INFORMATION TO AUTHORS & PARTICIPANTS

LOCATION AND DATES

CIMTEC 2016-7th Forum on New Materials will be held on June 5-9, 2016 in Perugia, splendid chief town of Umbria region, placed in the middle of Central Italy. The city is about 170 km from Rome and is placed in a strategic position to reach the most interesting historical and tourist places in Umbria, such as Assisi, Orvieto, Spoleto, Todi, Spello, Gubbio, Montefalco, Trevi, Trasimeno Lake and several others.

CIMTEC 2016 includes the *5th International Conference "Smart and Multifunctional Materials, Structures and Systems"* and the *11th International Conference "Medical Applications of Novel Biomaterials and Nanotechnology"*.

CONFERENCE VENUE

**Centro Congressi Hotel Quattrotorri
at Best Western Hotel Quattrotorri Perugia
Via Corcianese 260
06074 Perugia - Italy**

Technical Sessions will start Monday June 6 morning and continue until Thursday June 9 afternoon.

The Conference Venue is about 8 km outside Perugia center. A complimentary transfer service between the Conference Hotels and the Conference Venue will be made available for Conference Members.

CONFERENCE SECRETARIAT

CIMTEC 2016
Corso Mazzini 52
48018 Faenza - Italy
Tel.: +39 0546 22461
Fax: +39 0546 664138
E-mail: congress@technagroup.it

REGISTRATION DESK AND SECRETARIAT

Registration desk and secretariat will be open at the **Congress Center** according to the following time schedule:

June 5	Sunday		15.00-19.00
June 6	Monday	8.00-13.00	14.15-19.00
June 7	Tuesday	8.00-13.00	14.15-19.00
June 8	Wednesday	8.00-13.00	14.15-19.00
June 9	Thursday	8.00-13.00	14.15-18.30

No credit cards are accepted at the registration desk. On site registration payments can be made only by cash

HOW TO REACH PERUGIA

Perugia is located in the Umbria District (Central Italy), about 170 Km from Rome.

By plane

The most suitable Italian airport for delegates coming from overseas countries is the Intercontinental Rome Airport (Aeroporto di Roma Fiumicino, "Leonardo da Vinci Airport").

Direct flights to Perugia are also scheduled. Flight details are available at <http://www.airport.umbria.it/>

To reach Perugia from Rome:

By plane

Direct flights from Rome International Airport to Umbria International Airport-Perugia, "San Francesco d'Assisi" are available. Perugia Airport is located about 12 Km from Perugia Center. Flight details are available at <https://www.adr.it/web/aeroporti-di-roma-en/-/pax-fco-destinations>

By car

From Rome, take the A1 Motorway and go out at the Orte exit. Then take the A14 Motorway to the Perugia exit.

By train

From the train station located inside the airport of Fiumicino, you can take the "Leonardo express" (departures every 30 minutes) to the Rome Central Railway Station (Roma Termini). From Roma Termini you find the trains to Perugia (departures about every hour, duration about 3 hours).

By bus

Sulga buses make direct connections from Rome Fiumicino Airport to Perugia. You can buy your ticket directly in the bus.

Departures from Fiumicino Airport: from the International Arrivals Terminal 3.

All days except Sunday: Departure 9.00 12.30 14.30 17.00

Arrival in Perugia: 12.45 16.15 18.15 20.45

On Sunday only two connections: Departure 12.30 and 16.30

Arrival in Perugia: 16.15 and 20.15

COURTESY TRANSFER SERVICE FROM ROME AND PERUGIA AIRPORTS FOR PARTICIPANTS LODGED IN "CONFERENCE HOTELS"

A complimentary bus transfer service will be provided by the Conference Hotels on Sunday June 5 from Fiumicino Rome Airport "Leonardo da Vinci" and from Perugia International Airport "San Francesco d'Assisi" to the respective hotels in Perugia reserved to CIMTEC attendees who booked their stay through the Hotel Booking Center Quattrotorri (Conference Hotels). Hotel Booking Center Quattrotorri staff will welcome participants at the exit of International Arrivals Terminal from 14.00 to 24.00 of June 5.

PERUGIA CONNECTION TO CONGRESS CENTER

By train

From Perugia (Central Railway Station) to Ellera station (100 meters from the Congress Center) about every hour from 6.00 to 21.30, train ride 10 min.

From Ellera Station to Perugia Central Railway Station about every hour from 7.00 to 22.00, train ride 10 min.

By bus

From the centre of Perugia to the Congress Center there are two lines, one every hour from 6.00 to 21.00, bus ride 40 min, the other every half an hour from 5.30 to 21.30, bus ride 45 min. (proper information may be asked at the hotels)

By car

From Perugia about 15-20 min in normal traffic.

By taxi

From Perugia centre about 15-20 min in normal traffic. Fare about 20 EUR.

CIMTEC daily shuttle connections to and from the Congress Center

A complimentary shuttle service will be available to delegates not lodged through the "Hotel Booking Center" to reach the Congress Center for the beginning of the Technical Sessions and come back at the end of the Technical Sessions. The service will be available from Monday 6 to Thursday 9. Departures and arrivals are from and to Piazza Partigiani (near the city center).

*Bus departures to Congress Center:
8.00 a.m. from Piazza Partigiani*

*Bus departures from Congress Center:
6.30 to 6.45 p.m. to Piazza Partigiani*

Complimentary shuttle bus connection to and from each "Conference Hotel" to the Congress Centre will be made available to delegates who booked their room through the "Hotel Booking Center". The service will be active as from the Registration day (June 5 afternoon) and during the whole conference. Time schedule will be available at each hotel.

REGISTRATION FEES

All those planning to attend CIMTEC 2016 must register and receive badges. Advanced and late registrations fees are offered as well as special student registration fees. All Registration Fees include 22% government taxes.

Registration rates are in EUR, but payments may be also performed in US\$ at the exchange rate of the day in which the payment is made.

Early (by April 20, 2016)	
Full Member*	710.00 EUR
Student**	430.00 EUR
Invited Lecturer***	355.00 EUR
Late and on site	
Full Member*	770.00 EUR
Student**	490.00 EUR
Invited Lecturer***	420.00 EUR

* authors of lectures (L), posters (P), other Participants

** evidence of student status must accompany the registration

*** and/or Member of International Advisory Boards

The fees include:

- General and secretariat costs
- Government taxes
- Admission to all technical sessions
- Lunch tickets
- Coffee tickets
- Participant bag and booklet of the Final Programme
- Free access to on-line Proceedings
- Admission to the Social Programme

Every attendee is requested to fill in and return the Registration Form unless the payment is made online by credit card.

Those members who make the payment on-line do not have to return the Registration Form.

PAYMENTS

All payments shall be made in EUR or US\$, **net of all charges**, by:

Bank transfer made payable to:

Techna Group Srl, Cassa di Risparmio di Cesena SpA, 505 Filiale Faenza 1

SWIFT: CECRIT2CXXX

IBAN: IT58 Q061 2023 705C C505 0002 852

DESCRIPTION: CIMTEC 2016 and Participant Name

(copy of the bank transfer to be attached to the Registration Form)

Credit cards cannot be charged directly by the Conference organization.

However on-line payment by credit card can be made:

ON-LINE PAYMENT

To make on-line payment please go at:

<http://2016.cimtec-congress.org/onlinepag>

a 3% commission is charged by the bank for on-line payment

Participants are encouraged to take advantage of the discounted rate, applicable only if both registration and payment are received by April 20.

PRESENTATION FORMATS

Oral Presentations

Electronic presentation (Power Point) facilities will be available including video projector, PC and laser pointer. Slide projectors will not be available. Cost for any special audio-visual request will be the responsibility of the individual speaker.

Allowed time for presentation:

- Invited Lectures 30 min including discussion

- Contributed Lectures 20 min including discussion

The timing for each lecture (day, and morning/afternoon sessions) may be read in the Session Timetable at page 7.

Poster Presentations

Poster board: 200 cm (vertical) x 100 cm (horizontal). Pins can be used to attach the poster. Authors are kindly requested to be present at their poster for discussion with attendees during the Poster Session. It is each author's responsibility to remove the poster immediately after the end of the session. The organisers do not assume any responsibility for posters left up after this time. Guidelines for Poster preparation are available at the Conference web site. Attendance by at least one of the authors is mandatory for poster presentation and publication in CIMTEC 2016 Proceedings.

FINAL PROGRAMME

The booklet of the Final Programme including titles and detailed timetable of Lectures, Posters and "HOT POSTERS" will be given at the registration desk. It also will be hopefully available on the conference web site approx. 10 days before the beginning of the conference.

ABSTRACTS

A book of abstracts of all Oral and Poster Presentations will be made available at the conference web site well in advance of the beginning of the conference.

WEATHER

The weather in Perugia at the beginning of June is usually fine with temperatures ranging from 22 to 27 °C during the day and 12 to 15 °C during the night. Clothing suitable for (early) summer is recommended.

PROCEEDINGS

Official Proceedings of the contributions (Oral/Posters) presented at CIMTEC 2016 will be published by Trans Tech Publications Ltd., Switzerland, in the Techna Group series "Advances in Science and Technology" as Volume 97 onwards. Attendance of the Presenting Author is requested for publication. Submission and uploading instructions are provided by Trans Tech Publications Ltd. to the **Presenting Author** of each paper. **Submission of the written text for the Proceedings is not mandatory.** Free access to the on-line edition is included in the registration fee.

CANCELLATION

Prepaid registration fees (conference, companions programme) are refundable, minus a 20% administration fee, if written notification of the cancellation is received before May 20, 2016. No refund can be made for cancellations received after May 20, 2016. However delegate substitution can be accepted. All refunds will be made after the Conference.

LANGUAGE

English will be the official language for the Conference.

SOCIAL PROGRAMME

Welcome Party

June 6, evening

Jazz Concert

June 8, evening

Conference Dinner

June 9, evening

OPTIONAL TOURS

Guided tour to Perugia and Deruta

June 6, full day

Guided tour to Orvieto and Todi

June 7, full day

Guided tour to Assisi and Spello

June 8, full day

Guided tour to Gubbio

June 9, morning

Registration and payment for optional tours is to be made on site by cash only. Subjected to availability of places.

CURRENCY, BANKING AND INSURANCE

Banks are generally open Monday to Friday from 8.30 a.m. to 1.30 p.m. and from 3.00 p.m. to 4.00 p.m. Banks are closed on Saturdays and Sundays. Major credit cards are accepted in most hotels, and in some restaurants and shops.

The Organizers do not assume any responsibility for participant's personal accidents, sickness, thefts or property damage.

HOTEL ACCOMMODATION

Rooms have been reserved by Hotel Booking Center Quattrotorri Perugia in a number of hotels (Conference Hotels). The prices agreed for CIMTEC 2016 members are reported in the Hotel Booking Form to be returned by April 20, 2016 to:

Hotel Booking Center Quattrotorri

Via Corcianese 260

06074 Perugia

Italy

Tel. +39 075 5171722

Fax +39 075 5171707

e-mail: Cimtec2016@hotelquattrotorriperugia.com

Shuttle bus connection to and from the Congress Center (which is located about 8 km from Perugia centre) will be made available by the Conference Hotels for the registration day (June 5 afternoon) and during the whole conference.

Buses departure for evening social events will be arranged from Conference Hotels.

COMPANIONS PROGRAMME

June 6

Full day: Guided tour to Perugia and Deruta

Evening: Welcome Party

June 7

Full day: Guided tour to Orvieto and Todi

June 8

Full day: Guided tour to Assisi and Spello

Evening: Jazz Concert

June 9

Morning: Guided tour to Gubbio

Evening: Conference Dinner

Appropriate booking space may be found in the Registration Form. On-line registration is also available.

Registration Fee: **270 EUR** - After April 20: **290 EUR**

On-site registration is subject to availability of places.

“HOT” POSTERS (Last-minute Posters)

Late-news papers will be accepted for poster presentation, provided the following mandatory conditions be verified:

- Only Poster submission from Presenting Authors who **do not** have oral or poster presentations already scheduled in the conference programme will be accepted.
- Only one “HOT POSTER” may be contributed by the same Presenting Author.
- Submission shall be accompanied by the payment of the registration fee.
- The submission deadline of **April 20, 2016** be strictly respected.

To submit go to:

**[http://2016.cimtec-congress.org/
abstract_submission](http://2016.cimtec-congress.org/abstract_submission)**

The Conference Secretariat will confirm receipt of the Hot Poster and will supply the Presenting Author with proper information about Poster Presentation.

Submission and uploading instructions for the preparation of the text for the Proceedings Volumes will be supplied by Trans Tech Publications Ltd. to the Presenting Author.

VISA ASSISTANCE

All travel, lodging and registration expenses will be responsibility of the individual participants. Special letters of invitation to be used for visa application will be provided upon written request by the participant to the conference organizers.

As the application for a visa may be a lengthy process, we recommend to start your visa application process in due advance. Those attendees who need a visa to entry in Europe are suggested to contact CIMTEC Secretariat as soon as possible indicating full mailing address, date and place of birth, passport number and date of expiration and any other information useful to obtain visa to: CIMTEC 2016 Secretariat, info@technagroup.it
All letter of invitations will be sent by airmail and PDF e-mail attachment or fax.

CIMTEC organisation is unable to contact Embassies in support of an individual attempting to gain entry to attend the Conference.

SUMMARY OF DEADLINES

April 20, 2016

Paper uploading for Proceedings Volumes

April 20, 2016

Registration at reduced rate

May 20, 2016

Conference Fees Cancellations (80% refund)

FURTHER INFORMATION

For scientific and organizational aspects of the conference (**until May 30**)

CIMTEC 2016
Ms Stefania Bianchedi
Corso Mazzini, 52
48018 FAENZA - ITALY
Tel. +39 0546 22461
Fax +39 0546 664138
e-mail: congress@technagroup.it

For aspects related to hotel accommodation (booking, schedule changes, cancellations, etc.)

Hotel Booking Center Quattrotorri
Via Corcianese, 260
06132 Perugia - Italy
Tel. +39 075 5171722
Fax +39 075 5171707
e-mail: Cimtec2016@hotelquattrotorriperugia.com

SOCIAL PROGRAMME

The Social Programme for Registered Members to CIMTEC 2016 will include:

Welcome Party - Chiostro di Santa Giuliana (Monday June 6, evening)

The St' Giuliana Cloister (Chiostro di Santa Giuliana) is part of the monumental complex of St' Giuliana erected around the year 1253 and now the seat of the School for Foreign Languages of the Italian Army. The splendid cloister by architect Matteo Gattapone constitutes one of highest examples of "circestence" architecture in Italy and is characterized by wide white arches supported by octagonal pillars with pink and white stripes, also including some capitals remnants of previous Roman building.

At the Welcome Party delegates will enjoy a variety of renowned Umbria traditional dishes and drinks in an elegant and friendly environment.

Entrance ticket for non-registered companions: 30.00 EUR



Jazz Concert - Teatro Morlacchi (Wednesday June 8, evening)

The jazz concert will be performed by the "Perugia Big Band" in the magnificent Teatro Morlacchi of Perugia. The musical performances of "Perugia Big Band", inspired to the great america's orchestras, offer an extremely enthralling repertoire, ranging from sang jazz to sans vocal rhythmic jazz; from the unique Duke Ellington sound swing, to some of the most renowned hits by Frank Sinatra to the fine arrangements by Bob Minster going through some of the big orchestras milestones by Count Basie, Herbie Hancock, Don Menza&Buddy Rich, Horace Silver by GRP All Star, Gordon Goodwin. Started at the beginning of the '80s, the "Perugia Big Band" numbers several hundreds performances in festivals, theaters and televisions in Italy and several European Countries.



Entrance ticket for non-registered companions: 20.00 EUR (subjected to place availability)

Conference Dinner - Carapace (Thursday June 9, evening)

The Closure Dinner of CIMTEC 2016 will take place in a truly unique wine cellar called "Carapace", created by one of the great masters of contemporary art Arnaldo Pomodoro, in the Montefalco area of the famous Sagrantino wine. The "Carapace", which challenges the confines between sculpture and architecture, is a unique work in which art and nature, sculpture and wine, come together to emphasize the importance of both the container and the contents.

Inaugurated in the year 2012 the "Carapace" appears as a large dome covered with copper, engraved with cracks that resemble the grooves of the land that embraces us. A sculptural element in the shape of a red arrow that pierces the ground emphasizes the work in the landscape. Entering the "Carapace" means going inside a sculpture by Pomodoro, as immediately signalled by his artistic alphabet, immediately recognizable in the interior vault. The winery elicits emotions, as testified by the building's creator, Arnaldo Pomodoro. He says: "For the first time in my life I had the thrill of walking, talking and drinking inside one of my works".

Entrance ticket for non-registered companions: 60.00 EUR (subjected to place availability)



OPTIONAL TOURS

PERUGIA & DERUTA (Monday June 6, full day)

Perugia (<https://en.wikipedia.org/wiki/Perugia>) is the capital city of the Umbria region in central Italy, crossed by the river Tiber. It is located about 170 km north of Rome, and 150 km south-east of Florence. It covers a high hilltop and part of the valleys around the area.

The history of Perugia goes back to the Etruscan period. Perugia was one of the main Etruscan cities. The city is also known as the universities town, with the University of Perugia founded in 1308 (about 34,000 students), the University for Foreigners (5,000 students), and some smaller colleges such the Academy of Fine Arts "Pietro Vannucci" (Italian: *Accademia di Belle Arti "Pietro Vannucci"*) public athenaeum founded in 1573, the Perugia University Institute of Linguistic Mediation for translators and interpreters, the Music Conservatory of Perugia, founded in 1788, and others Institutes. There are annual festivals and events: the Eurochocolate Festival (October), the Umbria Jazz Festival (July),



and the International Journalism Festival (April).

Perugia is a well-known cultural and artistic centre of Italy. The famous painter Pietro Vannucci, nicknamed Perugino, was a native of Città della Pieve near Perugia. He decorated the local *Sala del Cambio* with a beautiful series of frescoes; eight of his pictures can also be admired in the National Gallery of Umbria. Perugino was the teacher of Raphael, the great Renaissance artist who produced five paintings in Perugia (today no longer in the city) and one fresco. Another famous painter, Pinturicchio, lived in Perugia. Galeazzo Alessi is the most famous architect from Perugia. The city symbol is the griffin, which can be seen in the form of plaques and statues on buildings around the city.

The tour includes:

- Corso Vannucchi (main Perugia street)
- Historical buildings: Palazzo dei Priori and Sala dei Notari
- Cathedral
- Main Fountain (Fontana Maggiore)
- Etruscan Arch
- Medieval alleys and panoramic views

Lunch: Restaurant in Deruta

Deruta (<https://en.wikipedia.org/wiki/Deruta>) is a hill town and comune in the Province of Perugia. Long known as a center of refined maiolica manufacture, Deruta remains known for its ceramics, which are exported worldwide.

The production of ceramics, based on local clays, began in the Early Middle Ages, but found its artistic peak in the 15th and early 16th century, with highly characteristic local styles, such as the "Bella Donna" plates with conventional portraits of beauties, whose names appear on fluttering banderoles with flattering inscriptions. The lack of fuel enforced low firing temperatures, but from the beginning of the 16th century, Deruta compensated with its metallic lustre glazes in golds and ruby red. In the 16th century Deruta produced the so-called "Rafaellesque" ware, decorated with fine arabesques and *grotesche* on a fine white ground. The historic town center features the Gothic church of *San Francesco* built in 1388, and the Palazzetto Municipale (Town Hall), which dates



from about 1300, located on the Piazza dei Consoli (the "Square of the Consuls"). In addition to the usual governmental offices, the municipal hall houses a *Museum of Ceramics*, an art gallery (the Pinacoteca), and a capacious atrium in which one can view a variety of archaeological finds, some of which date to Neolithic times.

Meeting point: Conference Centre at 9.00 a.m. End of tour: 6.30 p.m. The participation fee (55 EUR) includes transportation, English speaking hostess and local guides, and lunch.

ORVIETO & TODI (Tuesday June 7, full day)

Orvieto, a city and municipality in the Province of Terni, southwestern Umbria, Italy, situated on the flat summit of an enormous butte of volcanic tuff, was founded by Etruscans about the VIII century AC. Orvieto features a large number of churches (among them the famous Cathedral), middle ages civil architectures and archaeological sites dating from the 5th Century BC (you may visit: <https://en.wikipedia.org/wiki/Orvieto>).



The tour includes:

- The Albornoz fortress (Rocca dell'Albornoz)
- Pozzo di San Patrizio (Well of St. Patrick)
- Belvedere Temple (Tempio del Belvedere)
- The Cathedral and Chapel
- San Andrea's Church
- Medieval public palaces
- Alleys, squares and panoramic views

Lunch: Restaurant in Orvieto

Todi (<https://en.wikipedia.org/wiki/Todi>) is a town and municipality of the province of Perugia. It is perched on a tall two-crested hill overlooking the east bank of the river Tiber, commanding distant views in every direction.

The austere and noble appearance of the town dates from the Middle Ages. The most appealing sites number the "Tempio della Consolazione", a Renaissance architectural masterpiece, the big Gothic church and the "San Fortunato" church. On the main square of the town, that occupies the space of the ancient Roman forum, there are the Middle Age public buildings ("Palazzo del Popolo", "Palazzo del Capitano", "Palazzo del Priore") and the Romanic Cathedral.



The tour includes:

- Tempio della Consolazione
- San Fortunato Church
- Jacopone da Todi tomb
- MiddleAge public buildings
- Cathedral
- Alleys, squares and panoramic views

Meeting point: entrance of the Congress Center at 9.00 a.m. Return to Perugia at about 7.00 p.m.

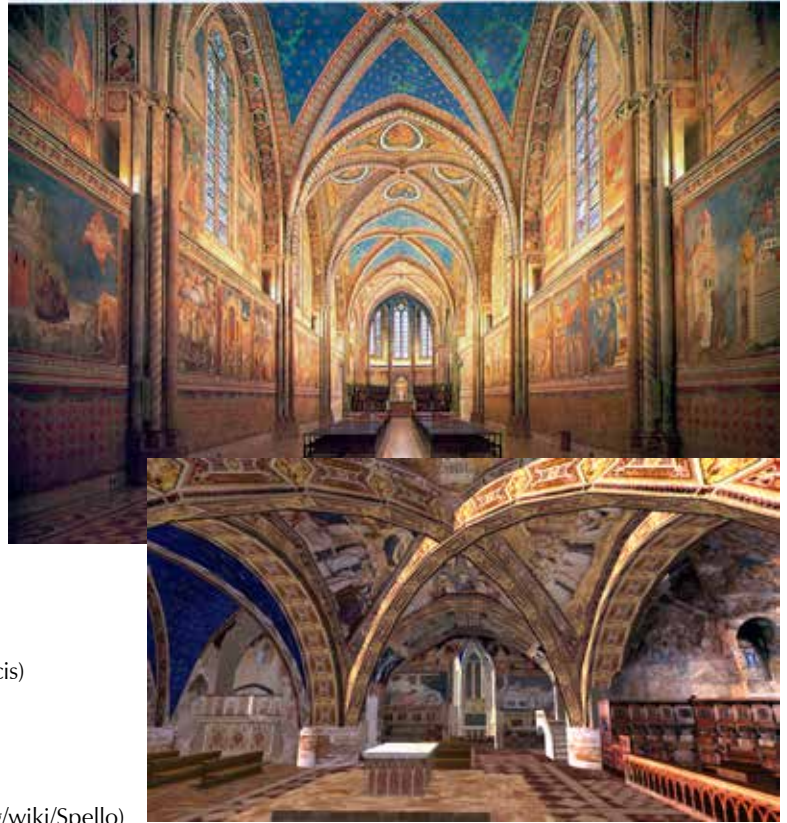
The participation fee (55.00 EUR) includes transportation, city entrance taxes, English speaking hostess and local guides, and lunch.



ASSISI & SPELLO (Wednesday June 8, full day)

Placed on the slope of Subasio Mountain (Monte Subasio), **Assisi** (<https://en.wikipedia.org/wiki/Assisi>) is without any doubt the most internationally renowned city from Umbria Region its fame mainly deriving from being the birth place of San Francis (San Francesco) the patron saint of Italy. UNESCO collectively designated the Franciscan structures of Assisi as a World Heritage Site in 2000. The city retains vestiges of the Roman age whereas the Middle Ages urban planning remains practically untouched.

The Basilica of San Francesco d'Assisi (St. Francis) is the major sight in Assisi. The Franciscan monastery, il Sacro Convento, and the lower and upper church (Italian: *Basilica inferiore* and *Basilica superiore*) of St Francis were begun in 1228, and completed in 1253. The lower church has frescoes by the late-medieval artists Cimabue and Giotto; the upper church houses frescoes of scenes in the life of St. Francis previously ascribed to Giotto, but now thought to be by artists of the circle of Pietro Cavallini from Rome.



The visit includes:

- Basilica di San Francesco (St. Francis Church)
- Piazza del Comune (Town Hall square)
- Tempio della Minerva (Minerva Temple)
- Chiesa Nuova (New Church built over the presumed parental home of St. Francis)
- Oratorio di San Francesco piccolino (Oratory of St. Francis)
- Basilica di Santa Chiara (Basilica of St. Clare)

Lunch: Restaurant in Assisi

Spello (in Antiquity: Hispellum) (<https://en.wikipedia.org/wiki/Spello>) is an ancient town placed on the lower southern flank of Mt. Subasio, about 6 km from Assisi. The old walled town lies on a regularly NW-SE sloping ridge that eventually meets the plain. From the top of the ridge, Spello commands a good view of the Umbrian plain towards Perugia; at the bottom of the ridge, the town spills out of its walls into a small modern section (or *Borgo*).

Spello remains four monumental gates and a long track of walls of Roman Age, besides the ruins of Roman amphitheatre and holy buildings. The Middle Ages town is one of the more fascinating of the Umbria Region.

The visit includes:

- Porta Urbica (Urbica Gate)
- Mura Romane (Roman Walls)
- Porta Consolare (Consular Gate)
- Chiesa Collegiata di Santa Maria Maggiore (Santa Maria Maggiore Church with Pinturicchio frescoes)
- Palazzo Comunale (Medioeval Tawn Hall)



- Palazzo Cruciali (Cruciali Palace)
- Belvedere (panoramic viewpoint)
- Porta Venere con Torri di Propezio (Venere Gate and Propezio Towers)

Meeting point: entrance of the Congress Center at 9.00 a.m. Return to Perugia at about 7.00 p.m.

The participation fee (55.00 EUR) includes transportation, city entrance taxes, English speaking hostess and local guides, and lunch.

GUBBIO (Thursday June 9, morning)

Gubbio (<https://en.wikipedia.org/wiki/Gubbio>), located on the lowest slope of Mt. Ingino, a small mountain of the Apennines, is among the best preserved splendid Middle Ages city of Umbria Region. The city's origins are very ancient. The hills above the town were already occupied in the Bronze Age, followed by Umbrian people and Roman conquest in the 2nd century BC. Gubbio became very powerful in the beginning of the Middle Ages and became part of the Papal States in 1631. The historical centre of Gubbio has a decidedly medieval aspect: the town is austere in appearance because of the dark grey stone, narrow streets, and Gothic architecture. Many houses in central Gubbio date to the 14th and 15th centuries, and were originally the dwellings of wealthy merchants. Among most important buildings and sites in the city are: Roman Theater and Roman Mausoleum, Palazzo dei Consoli, Duomo, Palazzo Ducale and several others.

The visit includes:

- Chiesa di San Francesco (St. Francis Church)
- Logge (Open galleries)
- Piazza Grande (Main Square)
- Palazzo dei Consoli e Palazzo del Podestà (Middle Ages public palaces)
- Cattedrale (Cathedral)
- Palazzo Ducale (Dukes Palace)
- Middle Ages alleys and panoramic views



Meeting point: entrance of the Congress Center at 9.00 a.m. Return to Perugia at about 1.00 p.m. The participation fee (25 EUR) includes transportation, city taxes, English speaking guide.

REGISTRATION FORM **Return by April 20, 2016 to:**

CIMTEC Corso Mazzini, 52 48018 FAENZA ITALY
Fax +39 0546 664138 - E-mail: congress@technagroup.it

PARTICIPANT for on-line registration and/or Hot Poster submission, please go to:
<http://2016.cimtec-congress.org/onlinereg>

Family Name First Name

INVOICING DETAILS:

Institute / Company

Full Address

Postal Code City Country

Phone Fax E-mail

VAT Number

Tax Code / Tax Identification Number

REGISTRATION FEES* (EUR)	Early (by April 20)	Late and On Site
Full Member**	<input type="checkbox"/> 710.00 EUR	<input type="checkbox"/> 770.00 EUR
Student***	<input type="checkbox"/> 430.00 EUR	<input type="checkbox"/> 490.00 EUR
Invited Lecturer (IL)****	<input type="checkbox"/> 355.00 EUR	<input type="checkbox"/> 420.00 EUR

* Payment can also be made in US\$ at the exchange rate of the day in which the payment is made

** Authors of Contributed Lectures (L) and Posters (P), other participants

*** Evidence of student status must accompany the registration

**** and/or Member of Advisory Boards

Early fee is applicable only if both registration and payment are received by April 20

I confirm attendance in the following complimentary socials (check please)

Welcome Party (June 6) Jazz Concert (June 8) Conference Dinner (June 9)

This section is to be filled-out ONLY if you are a **Presenting Author**

Please indicate below the code number of your presentation as assigned by the Conference Secretariat and reported in the Final Announcement **Code Number**

COMPANION/S

Family NameFirst Name.....

Family NameFirst Name.....

Family NameFirst Name.....

Companions Programme**Early***(by April 20)***Late and On Site***

Persons No. x 270.00 EUREUR No. x 290.00 EUREUR

* *On site registration is subject to availability of places*

Inscription to Companions Programme does not allow to attend technical sessions

SUMMARY OF FEES

Registration Fee (Full Member) EUR

Registration Fee (Student) EUR

Registration Fee Invited Lecturer or/and
CIMTEC 2016 Advisory Board Member EUR

Registration Fee (Companion/s) EUR

TOTAL EUR

PAYMENT (to be made **net of all charges** in EUR or equivalent in US\$)**Payment of EUR / US\$ is being made:** By bank transfer made payable to:**Techna Group Srl**, Cassa di Risparmio di Cesena SpA, 505 Filiale Faenza 1SWIFT: **CECRIT2CXXX**IBAN: **IT58 Q061 2023 705C C505 0002 852**DESCRIPTION: **CIMTEC 2016 and Participant Name***(please enclose copy of the bank transfer)* I will pay on-site (on-site payment to be made by cash only)

NOTE: USE A SEPARATE FORM FOR EACH INDIVIDUAL REGISTRATION

HOTEL BOOKING FORM **Return to:**

Hotel Booking Center Via Corcianese, 260 06132 Perugia - Italy

Tel. +39 075 5171722 Fax +39 075 5171707

Cimtec2016@hotelquattrotorriperugia.com

PARTICIPANT (please use block letters or type)

Family Name First Name

INVOICING DETAILS:

Institute / University

Full Address

Post Code City Country

Phone..... Fax..... E-mail.....

VAT Number (for invoicing)

Prices per Day per Person (EUR)

HOTEL CATEGORY	BB-Bed & Breakfast	
	DUS (Double Single Use)	Double (Per person)
5 star (Luxury)*	160.00	120.00
4 star	119.00	81.00
3 star super	89.00	60.00
3 star	75.00	55.00

*Only a limited number of rooms are available. Therefore the rooms will be assigned on first-come - first-served basis.

All rooms are with private bath or shower. Third occupancy with additional bed in double room: 30% discount on third occupancy. Children: 0-2 years old, no charge with no additional bed; 2-12 years old, 30% discount.

Prices include:

- Buffet breakfast,
- Service,
- All taxes exception being made for the city tax to be paid directly to the hotel (5 stars EUR 2.50 - 4 stars EUR 2.00 - 3 stars EUR 1.50 per day per person).
- Bus transfer to and from the Congress Center at the beginning and at the end of the Technical Sessions and shuttle bus connections Congress Center - Hotel during the day.

- A complimentary bus transfer on **Sunday June 5** (from 14.00 to 24.00) from Fiumicino Rome Airport "Leonardo da Vinci" and from Perugia International Airport "San Francesco d'Assisi" to the booked hotel in Perugia will be made available to hotels guests. Hotel staff will receive participants at the exit of International Arrivals Terminal from 14.00 to 24.00.

Please book No. DUS for No. nights

Please book No. Double No. Twin for No. nights

in a 5 star 4 star 3 star super 3 star hotel at the prices reported above

Arrival on Departure on

Arrival by: car train plane at Rome Airport Umbria/Perugia Airport

Rooms Booked**Deposit per Room******Total**

No. DUS B&B

.....EUR

.....EUR

No. Double B&B

.....EUR

.....EUR

GRAND TOTALEUR

**** First night deposit has to be forwarded for each booked room. The full amount of deposit received will be detracted from the final hotel bill.**

The payment has been effected by **bank transfer free of charge** to:
Golf Hotel Quattrotorri Srl - IBAN: IT 03 J 02008 38402 000040624671
BIC/SWIFT UNCRITM1J04
DESCRIPTION: CIMTEC 2016 and Participant Name

The payment has been effected by **telegraphic money-order** to:
Golf Hotel Quattrotorri Srl
DESCRIPTION: CIMTEC 2016 and Participant Name

NOTES

 PAYMENT BY CREDIT CARD

I authorise "Hotel Booking Center Quattrotorri Perugia" to charge the indicated GRAND TOTAL amount for hotel reservation

Please charge my credit card VISA AMERICAN EXPRESS JCB MAESTRO

Credit card number..... Expiration date.....

Credit card holder.....

for the total payment (subject to verification) of EUR

.....
Signature (binding)

REMARKS

- You will be informed by Hotel Booking Center Quattrotorri about available accommodation giving the name of the hotel, the price and confirming receipt of the first night deposit. Balance will be made to hotel by each individual participant.
- In case of no-show of the first night, room(s) availability or refund of the deposit will not be possible.
- 1st night deposit is not refundable. However delegate substitution is admitted.

Please send this form to Hotel Booking Center Quattrotorri:
by mail: Hotel Booking Center Quattrotorri Via Corcianese, 260 06132 Perugia - Italy
or by e-mail: Cimtec2016@hotelquattrotorriperugia.com
or by fax: +39 075 5171707

NO RESERVATION WILL BE MADE WITHOUT PAYMENT OF THE HOTEL DEPOSIT
AFTER APRIL 20th ROOM RESERVATION CANNOT BE GUARANTEED



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