



**NDNC 2016**

# **Oral Program**

## Sunday, 22 May 2016

14:00-19:00 Registration

## Monday, 23 May 2016

8:00-18:00 Registration

8:30-8:45 Opening Ceremony

### Plenary Speaking\_1 (Grand BallRoom A)

Chair: Hong-Xing Wang (Xi'an Jiaotong University)

8:45-9:30 **Wide bandgap III-nitride and diamond materials and devices**  
Yasuo Koide (National Institute of Material Science, Japan)

### Session 1: Keynote\_1 (Grand BallRoom A)

Chair: Hong-Xing Wang (Xi'an Jiaotong University)

1-1 9:30-10:00 **Creating quantum technologies with spins in semiconductors**  
David Awschalom (University of Chicago, USA)

1-2 10:00-10:30 **Diamond as Power Electronics Platform**  
H. Kawarada<sup>1,2</sup>, Y. Kitabayashi<sup>1</sup>, M. Shibata<sup>1</sup>, D. Matsumura<sup>1</sup>, T. Saito<sup>1</sup>, T. Kudo<sup>1</sup>, T. Muta, M. Inaba<sup>1</sup>, A. Hiraiwa<sup>3</sup> (<sup>1</sup>Faculty of Science and Engineering, <sup>2</sup>The Kagami Memorial Laboratory for Materials Science and Technology, <sup>3</sup>Research Organization for Nano & Life Innovation, Waseda University, Japan)

1-3 10:30-11:00 **Carbon dots for environmental and energy applications: challenges and promises**  
Zhenghui Kang and Shuit-Tong Lee (Soochow University, China)

### Session 2: Keynote\_2 (Grand BallRoom A)

Chair: Robert J. Nemanich (Arizona State University, USA)

2-1 11:15-11:45 **Photoelectron emission from diamond into water: new applications in photoelectrochemistry**  
Robert Harmers (University of Wisconsin-Madison, USA)

2-2 11:45-12:15 **Quantum control of spins in diamonds and its applications**  
Jiangfeng Du (University of Science and Technology of China, China)

2-3 12:15-12:45 **Learning from nature: graphene "eyes" with high sensitivity**  
S. Ravi P. Silva<sup>1</sup>, Jos é V. Anguita<sup>1</sup>, Muhammad Ahmad<sup>1</sup>, Jeremy Allam<sup>1</sup> and Sajad Haq<sup>2</sup> (<sup>1</sup>University of Surrey, <sup>2</sup>QinetiQ, UK)

### Session 3: Diamond Synthesis (Grand BallRoom A)

Chair: Meiyong Liao (National Institute of Material Science, Japan)

3-1 14:00-14:20 **High quality and high purity homoepitaxial diamond film growth by**

**chemical vapor deposition for high-performance devices (Invited)**  
Tokuyuki Teraji (National Institute of Material Science, Japan)

- 3-2    14:20-14:40    **Diamond composite films: synthesis, properties and applications (Invited)**  
Xin Jiang ( University of Siegen, Germany)
- 3-3    14:40-14:55    **Colorless to near colorless melee-sized HPHT synthetic gem diamonds**  
Hiroshi Kitawaki, Mio Hisanaga, Masahiro Yamamoto, Makoto Okano and Kentaro Emori (Central Gem Laboratory, Japan)
- 3-4    14:55-15:10    **Chemical nucleation of diamond films**  
Soumen Mandal<sup>1</sup>, Evan L H Thomas<sup>1</sup>, Titus A Jenny<sup>2</sup>, and Oliver A Williams<sup>1</sup> (<sup>1</sup>Cardiff University, UK, <sup>2</sup>University of Fribourg, Switzerland)
- 3-5    15:10-15:25    **Growth of diamond nanorods using antenna-edge-type microwave plasma-assisted chemical vapor deposition**  
W. Fei<sup>1</sup>, M.Inaba<sup>1</sup>, Y.Hirano<sup>1</sup>, H.Masuda<sup>2</sup>, H.Kawarada<sup>1,3</sup> (<sup>1</sup>Waseda University, <sup>2</sup>Tokyo Metropolitan University, <sup>3</sup>Kagami Memorial Laboratory for Materials Science and Technology, Japan)
- 3-6    15:25-15:40    **Growth of nanocrystalline diamond by radio frequency inductively coupled plasma jet CVD**  
Yong-gang Zuo, Jia-Jun Li, Yang Bai, Hao Liu, Guang-chao Chen (University of Chinese Academic of Science, China)

#### **Session 4: Graphene\_1 (Yongning Hall)**

**Chair: Rodney S. Ruoff (Ulsan National Institute of Science and Technology, Korea)**

- 4-1    14:00-14:20    **Highly selective detection of volatile organic compounds by Graphene Graphene Oxide gas sensor: Insights from density functional calculations (Invited)**  
PingCui<sup>1</sup>, Xin Li<sup>1</sup>, Shixi Guo<sup>1</sup>, Weihua Liu<sup>1</sup> and Xiaoli Wang<sup>2</sup> (<sup>1</sup>School of Electronics and Information Engineering, Xi'an Jiaotong University, <sup>2</sup>School of Science, Xi'an Jiaotong University, China)
- 4-2    14:20-14:40    **Graphene and graphene quantum dots: novel preparation techniques and commercialization (Invited)**  
Jingquan Liu (Qingdao University, China)
- 4-3    14:40-14:55    **Interlayer coupling in multilayer graphenes probed by ultralow frequency Raman spectroscopy**  
Jiang-Bin Wu<sup>1,\*</sup>, Ping-Heng Tan<sup>1</sup> (1State Key Laboratory of Superlattices and Microstructures, Institute of Semiconductors, Chinese Academy of Sciences, China)
- 4-4    14:55-15:10    **CVD self-assembly of 3d mesoporous graphene on porous oxide templates**  
Jia-Le Shi<sup>1</sup>, Cheng Tang<sup>1</sup>, Hong-Jie Peng<sup>1</sup>, Lin Zhu<sup>1,2</sup>, Xin-Bing Cheng<sup>1</sup>,

Jia-Qi Huang<sup>1</sup>, Wancheng Zhu<sup>2</sup>, Qiang Zhang<sup>1</sup> (<sup>1</sup>Tsinghua University, <sup>2</sup>Qufu Normal University, China)

- 4-5 15:10-15:25 **Real-time, in-situ imaging of graphene growth over selected areas**  
Jos éV. Anguita, Muhammad Ahmad, Thomas Pozegic and S. Ravi P. Silva  
(University of Surrey, UK)
- 4-6 15:25-15:40 **CVD growth of porous graphene on metal oxide templates for electrochemical energy storage**  
Cheng Tang, Bo-Quan Li, Qiang Zhang, Lin Zhu, Hao-Fan Wang, Jia-Le Shi, Fei Wei (Tsinghua University, China)

### Session 5: Biological and Biomedical\_1 (Grand BallRoom A)

Chair: Nianjun Yang (University of Siegen, Germany)

- 5-1 16:00-16:20 **Cultivation of human induced pluripotent stem cells on CVD diamond substrates for the study of neuronal circuit activity (Invited)**  
Paul W. May<sup>1</sup>, Paul A. Nistor<sup>2</sup> and Maeve A. Caldwell<sup>3</sup> (<sup>1</sup>University of Bristol, UK, <sup>2</sup>University of Bristol, UK, <sup>3</sup>Trinity College, Ireland)
- 5-2 16:20-16:40 **Carbon nanomaterials for biomedical applications: cancer theranostics (Invited)**  
Zhuang Liu (Soochow University, China)
- 5-3 16:40-16:55 **Highly reliable vacuum-sealed digital X-ray tubes with carbon nanotube electron field emitters for medical diagnoses**  
Yoon-Ho Song<sup>1,2</sup>, Jin-Woo Jeong<sup>1</sup>, Young Chul Choi<sup>1</sup>, Jun-Tae Kang<sup>1</sup>, Jae-Woo Kim<sup>1</sup>, Sora Park<sup>1</sup>, Hyojin Jeon<sup>1,2</sup>, Min-Sik Shin<sup>1,2</sup>, Eunsol Go<sup>1,2</sup>, Ji-Hwan Yeon<sup>1</sup>, and Sunghee Kim<sup>1</sup> (<sup>1</sup>Electronics and Telecommunications Research Institute, <sup>2</sup>University of Science and Technology, Korea)
- 5-4 16:55-17:10 **Smart pH-responsive and high doxorubicin loading nanodiamond for in vivo selective targeting, imaging, and enhancement of anticancer therapy**  
Lin Li, Lu Tian, Yingqi Li, Binsheng Yang (Shanxi University, China)
- 5-5 17:10-17:25 **Amine termination of nanocrystalline diamond surface by nitrogen radical beam (NRB) for biosensing application**  
Evi Suaebah<sup>1</sup>, Yuji Seshimo<sup>1</sup>, Takuro Naramura<sup>1</sup>, Masataka Hasegawa<sup>2</sup>, Hiroshi Kawarada<sup>1,3</sup> (<sup>1</sup>Waseda University, <sup>2</sup>TASC, <sup>3</sup>Kagami Memorial Research Institute for material Science and Technology, Japan)
- 5-6 17:25-17:40 **Nanodiamonds drug delivery systems for enhanced targeting therapy investigated by Raman imaging**  
Dandan Li<sup>1,2</sup>, Xin Chen<sup>1,2,3</sup>, Hong Wang<sup>3</sup>, Yuan Yu<sup>1</sup> and Jinfang Zhi<sup>1</sup> (<sup>1</sup>Chinese Academy of Science, <sup>2</sup>University of Chinese Academy of Sciences, <sup>3</sup>Peking University, China)
- 5-7 17:40-17:55 **Influence of PEGylation in photothermal response and *in-vitro***

**photothermal therapy of carbon nanotubes**

Sweejiang Yoo<sup>1</sup>, Jin Hou<sup>2</sup>, Wenhui Yi<sup>1</sup>, Weiping Chen<sup>2</sup>, Yingchun Li<sup>1</sup>  
(<sup>1</sup>Xi'an Jiaotong University, <sup>2</sup>Xi'an Medical College, China)

**Session 6: Graphene\_2 (Yongning Hall)**

**Chair: Yi Shi (Nanjing University, China)**

- 6-1 16:00-16:20 Surface and interface engineering of graphene oxide film by controllable photoreduction (Invited)**  
Y. L. Zhang (Jilin University, China)
- 6-2 16:20-16:35 Concerted interplay between pressure and surface chemistry as a way for the conversion of few graphene layers into nanodiamond**  
Yevhen Horbatenko<sup>1</sup>, Masood Yousaf<sup>1</sup>, Rodney S. Ruoff<sup>1,2</sup>, Jihyung Lee<sup>3</sup>, Tae Hoon Choi<sup>3\*</sup> and Noejung Park<sup>1,4\*</sup> (<sup>1</sup>IBS Center for Multidimensional Carbon Materials, <sup>2</sup>Department of Chemistry, <sup>4</sup>Department of Physics, Ulsan National Institute of Science and Technology; <sup>3</sup>Department of Chemical Engineering Education, Chungnam National University, Korea)
- 6-3 16:35-16:50 The stacking sequence of graphene revealed by in-situ SEM observation of CVD growth and hydrogen etching.**  
Zhu-Jun Wang<sup>1</sup>, Feng Ding<sup>2</sup>, Gyula Eres<sup>3</sup>, Robert Schlögl<sup>1</sup> and Marc-Georg Willinger<sup>1</sup> (<sup>1</sup>Fritz Haber Institute of the Max Planck Society, Germany, <sup>2</sup>Hong Kong Polytechnic University, China, <sup>3</sup>Oak Ridge National Laboratory, USA)
- 6-4 16:50-17:05 Remarkable mechanical and thermal increments of epoxy composites by graphene nanosheets and carbon nanotubes synergetic reinforcement**  
Ran-Ran Yao, Dong-Dong Zhang, Dong-Lin Zhao, and Xia-Jun Wang (Beijing University of Chemical Technology, China)
- 6-5 17:05-17:20 Charge transport through single molecule using hybrid graphene-gold nanogap electrodes**  
L. Yang<sup>1\*</sup>, Q. Zhang<sup>1</sup>, C. Wang<sup>1</sup>, C. Zhou<sup>2</sup> and R.J. Nichols<sup>3</sup> (<sup>1</sup>Department of Chemistry, <sup>2</sup>Department of Electrical and Electronic Engineering, Xi'an-Jiaotong Liverpool University, China, <sup>3</sup>Department of Chemistry, University of Liverpool, UK)
- 6-6 17:20-17:35 Engineered three dimensional graphene-Ni(OH)<sub>2</sub> structures with van der waals hetero-interfaces**  
Jing Ning, Jincheng Zhang, Dong Wang, Qin Lu, Meishan Mu, Yue Hao (Xidian University, China)
- 6-7 17:35-17:50 Field emission characteristic study on vertical few-layer graphite/diamond composite film**  
Po-Tang Tseng, Ping-Huan Tsai, Anvert Lu, Jiang-Liang Hou, and Hung-Yin Tsai (National Tsing Hua University, Taiwan)

## Tuesday, 24 May 2016

### Session 7: Diamond Surface\_1 (Grand BallRoom A)

Chair: Hiroshi Kawarada (Waseda University, Japan)

- 8:30-18:00 Registration**
- 7-1 **9:00-9:20 High resolution electron energy loss spectroscopy studies of hydrogenated polycrystalline diamond film surfaces with grain size varying from the nano-meter to micro-meter range (Invited)**  
A. Hoffman (Schulich Faculty of Chemistry, Israel)
- 7-2 **9:20-9:40 Diamond film surface nanostructures: morphology control, formation mechanism, and applications (Invited)**  
Wenjun Zhang (City University of Hong Kong, China)
- 7-3 **9:40-9:55 Nitrogen terminated single crystal (100) diamond surface: Bonding configuration and thermal stability studies by in-situ XPS, UPS and HREELS**  
Maneesh Chandran, Shaul Michaelson and Alon Hoffman (Technion-Israel Institute of Technology, Israel)
- 7-4 **9:55-10:10 Ultra smooth surface of diamonds, the way to reach Å scale roughness of the (111) orientation**  
T.N. Tran Thi<sup>1</sup>, S. Connell<sup>2, 3</sup>, J. Morse<sup>1</sup>, B. Fernandez<sup>4</sup>, J. Härtwig<sup>1, 2</sup>  
(<sup>1</sup>ESRF, France, <sup>2</sup>University of Johannesburg, South Africa, <sup>3</sup>Ithemba Lab, South Africa, <sup>4</sup>Institut Néel, France)
- 7-5 **10:10-10:25 Barrier heights of gold on diamond (100) surface with different terminal types**  
F.N. Li, J.W. Zhang, X.L. Wang, W. Wang, Z.C. Liu, H.X. Wang (Xi'an Jiaotong University, China)
- 7-6 **10:25-10:40 Band-edge optical property of MPCVD-grown single crystal diamond studied by cathodo- and photo-luminescence**  
Yali Liu, Peng Jin, Fangbin Fu, Meng Gong, and Zhanguo Wang (Chinese Academy of Sciences, China)

### Session 8: Carbon\_1 (Yongning Hall)

Chair: Bingbing Liu (Jilin University, China), Jin Zhang (Peking University, China)

- 8-1 **9:00-9:20 Carbon research at the CMCM: an update (Invited)**  
Rodney S. Ruoff<sup>1, 2, 3</sup> (<sup>1</sup>Institute for Basic Science, <sup>2</sup>Ulsan National Institute of Science and Technology, <sup>3</sup>School of Materials Science and Engineering, UNIST, Republic of Korea)
- 8-2 **9:20-9:40 Enhanced electron emission from boron nitride nanowall-nanocrystalline diamond heterostructures (Invited)**  
K.J. Sankaran<sup>1, 2</sup>, **aphene** D.Q. Hoang<sup>1, 2</sup>, K. Srinivasu<sup>3</sup>, S. Turner<sup>4</sup>, P.T. Joseph<sup>5</sup>, P. Pobedinskas<sup>1, 2</sup>, S. Drijkoningen<sup>1, 2</sup>, J. Verbeeck<sup>4</sup>, J. D'Haen<sup>1, 2</sup>,

K.C. Leou<sup>3</sup>, K.T. Leung<sup>5</sup>, I.N. Lin<sup>6</sup>, K. Haenen<sup>1,2</sup> (<sup>1</sup>Hasselt University, Belgium, <sup>2</sup>IMOMECA, Belgium, <sup>3</sup>National Tsing Hua University, Taiwan, <sup>4</sup>University of Antwerp, Belgium, <sup>5</sup>University of Waterloo, Canada, <sup>6</sup>Tamkang University, Taiwan)

- 8-3    9:40-10:00    **A new carbon phase constructed by long-range ordered amorphous carbon clusters from compressing fullerene solvates (Invited)**  
Bingbing Liu (Jilin University, China)
- 8-4    10:00-10:15    **Holley graphitic carbon derived from covalent organic polymers for energy conversion**  
Zhonghua Xiang (Beijing University of Chemical Technology, China)
- 8-5    10:15-10:30    **Synthesis of ultra-nano-carbon composite materials with extremely high conductivity by plasma post-treatment process of ultrananocrystalline diamond films**  
Chien-Jui Yeh<sup>1</sup>, Divinah Manoharan<sup>2</sup>, Hsin-Tzer Chang<sup>2</sup>, Keh-Chyang Leou<sup>1</sup> and I-Nan Lin<sup>2</sup> (<sup>1</sup>National Tsing Hua University, <sup>2</sup>Tamkang University, Taiwan)
- 8-6    10:30-10:45    **Bulk-limited electrical behaviors in the metal/semiconductor /metal devices with hydrogenated diamond-like carbon fabricated by linear ion beam**  
Peng Guo, Rende Chen, Xiaowei Li, Peiling Ke, Aiyang Wang and Qunji Xue (Key Chinese Academy of Sciences, China)

#### Session 9: Diamond Device\_1 (Grand BallRoom A)

Chair: Julien Pernot (Université Joseph Fourier-Institut Néel, France)

- 9-1    11:00-11:20    **Potential application of diamond SBDs and MESFETs (Invited)**  
H. Umezawa<sup>1,2</sup> (<sup>1</sup> AIST, Japan, <sup>2</sup> Inst. Néel/CNRS, France)
- 9-2    11:20-11:40    **2D and 3D diamond detectors with laser-induced carbon electrodes (Invited)**  
Conte Gennaro<sup>1</sup>, Salvatori Stefano<sup>2</sup>, Kononenko Taras<sup>3</sup>, Bolshakov Andrey<sup>3</sup>, Ralchenko Victor<sup>4,3</sup> and Konov Vitaly<sup>3</sup> (<sup>1</sup>university Roma Tre, Italy, <sup>2</sup>university Niccolò Cusano, Italy, <sup>3</sup>A.M.Prokhorov General Physics Institute, Russia, <sup>4</sup>harbin Institute Of Technology, p.r. China)
- 9-3    11:40-11:55    **Evaluation of p+ HPHT diamond substrate for power device application**  
S.Shikata, Y.Tsuchida, E.Kamei, K.Yamaguchi, D.Fukunaga, Y.Tabuchi and N.Ohtani (Kwansei Gakuin University, Japan)
- 9-4    11:55-12:10    **Single crystal diamond micromechanical and nanomechanical resonators**  
M.Y. Liao<sup>1</sup>, M. Toda<sup>2</sup>, L.W Sang<sup>1</sup>, M. Imura<sup>1</sup>, S. Hishita<sup>1</sup>, S. Tanaka<sup>2</sup>, Y. Koide<sup>1</sup> (<sup>1</sup>National Institute for Materials Science, <sup>2</sup>Tohoku University, Japan)

- 9-5      12:10-12:25      **100 mW/mm output power of single crystal diamond FETs**  
 Jing. Jing. Wang<sup>1</sup>, Ze. Zhao. He<sup>1, 3</sup>, Cui.Yu<sup>1</sup>, Xu. Bo. Song<sup>1</sup>, Hongxing Wang<sup>2</sup>, Fang Lin<sup>2</sup>, Shu. Jun. Cai<sup>1</sup> and Zhi. Hong. Feng<sup>1</sup> (<sup>1</sup>Hebei Semiconductor Research Institute, <sup>2</sup>Xi'an Jiaotong University, <sup>3</sup>Hebei University of Technology, China)
- 9-6      12:25-12:40      **pH Induced Self-assemblies of Micro/Nano Wires using Chemically Synthesized Fluorescent Diamond Nanoparticles**  
 S. Muthaiah<sup>1</sup> and K.W. Sun<sup>1, 2,\*</sup> (<sup>1</sup>Department of Applied Chemistry, <sup>2</sup>Department of Electronics Engineering, National Chiao Tung University, Taiwan)

### Session 10: Biological and Biomedical\_2 (Yongning Hall)

Chair: Paul W. May (University of Bristol, UK)

- 10-1      11:00-11:20      **Nanodiamond modification for biomedical applications (Invited)**  
 Vadym N. Mochalin (Missouri University of Science & Technology, USA)
- 10-2      11:20-11:40      **Visualization of specific cancer cell targeting process by confocal raman mapping using EGF modified nanodiamonds as probes (Invited)**  
 Dandan Li<sup>1</sup>, Xin Chen<sup>1,2</sup>, Hong Wang<sup>2</sup> and Jinfang Zhi<sup>1\*</sup> (<sup>1</sup>Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, China. <sup>2</sup>Department of Pharmaceutical Analysis, School of Pharmaceutical Sciences, China)
- 10-3      11:40-11:55      **Magnetic-modified nanodiamond for bio-applications**  
 SONG Chang-You<sup>1</sup>, PEROV Nikolai<sup>2</sup>, SAMSONOVA Valentina<sup>2</sup>, NORINA Svetlana<sup>2</sup>, LIU Li-Chi<sup>1</sup>, LIN Zhe-Rui<sup>1</sup>, LIN Yu-Chung<sup>1</sup>, CHIU Wei-Cheng<sup>1</sup>, ASHEK-I-Ahmed<sup>1</sup>, KARMENYAN Artashes<sup>1</sup>, LEVINSON Olga<sup>3</sup>, ZOUSMAN Boris<sup>3</sup>, PEREVEDENTSEVA Elena<sup>1</sup>, CHENG Chia-Liang<sup>1</sup> (<sup>1</sup>National Dong Hwa University, Taiwan, <sup>2</sup>Moscow State University, Russia, <sup>3</sup>Ray Techniques Ltd., Israel)
- 10-4      11:55-12:10      **Synthesis of well-dispersible polyglycerol-functionalized nanodiamond and its application to carrier of verteporfin in cancer therapy**  
 Hongmei Qin and Naoki Komatsu (Kyoto University, Japan)
- 10-5      12:10-12:25      **Synthesis of carbon onion at low annealing temperatures for drug delivery applications**  
 N.Miriyala<sup>1</sup>, H. Ye<sup>2</sup>, D. Ouyang<sup>3</sup>, D. Lowry<sup>1</sup> and D. Kirby<sup>1</sup> (<sup>1,2</sup>Aston University, UK, <sup>3</sup>University of Macau, China)
- 10-6      12:25-12:40      **New Advances in Cutting, Slicing, Drilling & Shaping of Diamonds with a Water Jet guided Laser**  
 P. J. Heath<sup>1</sup> and B. Richerzhagen<sup>1\*</sup> (<sup>1</sup>Synova S.A. Chemin de la Dent



d'Oche 1B, Switzerland)

**Poster session\_1 (Poster Room): 14:00-16:00**

**Session 11: NV Center/Quantum (Grand BallRoom A)**

**Chair: Igor Aharonovich (University of Technology Sydney,AU)**

- 11-1 16:00-16:20 Materials issues considering quantum applications of diamond films and particles (Invited)**  
Oliver. Williams (Cardiff University, UK)
- 11-2 16:20-16:40 Nanodiamond color centers for bio-imaging (Invited)**  
Y.-C. Lin<sup>1</sup>, L.-W. Tsai<sup>1</sup>, E. Perevedentseva<sup>1, 2</sup>, C.-L. Cheng<sup>1</sup> (<sup>1</sup>National Dong Hwa University, Taiwan, <sup>2</sup>Rus. Acad. Sci., Russia)
- 11-3 16:40-17:00 Electrical on-chip diamond NV centre magnetic resonance readout and magnetometry (Invited)**  
E. Bourgeois<sup>1,2</sup>, K. Buczak<sup>3</sup>, J. Hruby<sup>1</sup>, M. Trupke<sup>3</sup> & M. Nesladek<sup>1,2</sup> (<sup>1</sup>Hasselt University, Belgium, <sup>2</sup>IMOMEC division, Belgium, <sup>3</sup>Vienna Center for Quantum Science and Technology, Austria)
- 11-4 17:00-17:15 Stimulated emission from nitrogen-vacancy colour centres in diamond and application to high-sensitivity laser-based magnetometry**  
Jan Jeske<sup>1</sup>, Desmond W. M. Lau<sup>2</sup>, Liam P McGuinness<sup>3</sup>, Philip Reineck<sup>2</sup>, Brett C. Johnson<sup>4</sup>, Jeffrey C. McCallum<sup>4</sup>, Thomas Volz<sup>5</sup>, Brian C. Wilson<sup>6</sup>, Jared H. Cole<sup>1</sup>, Brant C. Gibson<sup>2</sup>, and Andrew D. Greentree<sup>2</sup> (<sup>1,2</sup>RMIT University, Australia, <sup>3</sup>Universität Ulm, Ulm, <sup>4</sup>University of Melbourne, Australia, <sup>5</sup>Macquarie University, Australia, <sup>6</sup> University of Toronto, Canada)
- 11-5 17:15-17:30 Distribution of [Si-V] defect in diamonds**  
Wuyi Wang, Paul Johnson, Ulrika D'Haenens-Johansson, Lorne Loudin (Gemological Institute of America, USA)
- 11-6 17:30-17:45 Strong silicon-vacancy photoluminescent particles composed of ultrananocrystalline diamond grains**  
Zongchun Yang, Xiaojun Hu ( Zhejiang University of Technology, China)
- 11-7 17:45-18:00 Intensity noise correlation and squeezing of SP-FWM in NV center crystal at room temperature**  
Zongchen Liu, Hong-Xing Wang, Shuwei Fan, Yanpeng Zhang\* (Key Laboratory for Physical Electronics and Devices of the Ministry of Education & Shaanxi Key Lab of Information Photonic Technique, Xi'an Jiaotong University, China)
- 11-8 18:00-18:15 Fabrication and surface plasmon of Au-nanoparticle/diamond-pit**  
Shaoheng Cheng, Hongdong Li\* (State Key Laboratory of Superhard Materials, Jilin University, China)

**Session 12: Carbon Nanotube\_1 (Yongning Hall)**

**Chair: Chang Liu (IMR CAS, China)**

- 12-1    16:00-16:20    **CVD growth of single-walled carbon nanotubes with controlled structures for nanodevice applications (Invited)**  
Jin ZHANG (Peking University, China)
- 12-2    16:20-16:40    **High throughput imaging methods for identifying single walled carbon nanotubes (Invited)**  
K. L. Jiang (Tsinghua University, China)
- 12-3    16:40-17:00    **Gas phase manufacturing of single walled carbon nanotube thin films for flexible electronics applications (Invited)**  
Esko I. Kauppinen (Aalto University, Finland)
- 12-4    17:00-17:15    **Large-scale preparation of high purity semiconducting carbon nanotube inks and application for printed thin film transistors and circuits**  
Jianwen Zhao, Xiang Zhang, Wenya Xu, Zheng Cui ( Chinese Academy of Sciences, China)
- 12-5    17:15-17:30    **Multifunctional CNT-glass fiber composites**  
Jie Zhang<sup>1</sup>, Shanglin Gao<sup>2</sup> and Zuoguang Ye<sup>3</sup> (<sup>1</sup>Xi'an Jiaotong University, China,<sup>2</sup>Leibniz-Institut für Polymerforschung Dresden, Germany, <sup>3</sup>Simon Fraser University, Canada)
- 12-6    17:30-17:45    **MWCNT/NiCo<sub>2</sub>S<sub>4</sub> as core/shell hybrid structure for high performance supercapcitor**  
Lemu Girma Beka, Xin Li, Xianjun Xia, and Weihua Liu (Xi'an Jiaotong University, China)
- 12-7    17:45-18:00    **Mist Flow Chemical Vapor Deposition: An Effective Technique for Diameter-Controlled Growth of Single-Wall Carbon Nanotubes**  
Y. Sun<sup>1,2,\*</sup>, R. Kitaura<sup>2</sup>, J. Y. Zhang<sup>3</sup>, T. Nakayama<sup>2</sup>, H. Yoshikawa<sup>2</sup>, Y. Miyata<sup>2</sup> and H. Shinohara<sup>2</sup>, (<sup>1</sup>Institute of Metal Research, Chinese Academy of Science, China, <sup>2</sup>Department of Chemistry & Institute Advanced Research, Nagoya University, Japan, <sup>3</sup>Center of Nanomaterials for Renewable Energy, School of Electrical Engineering, Xi'an Jiaotong University, China)

## Wednesday, 25 May 2016

### Session 13: Diamond Surface\_2 /Applications (Grand BallRoom A)

Chair: Guangchao Chen (University of CAS, China)

- 8:30-18:00 Registration**
- 13-1 9:00-9:20 Magneto-transport through surface conductive channel of hydrogenated diamond (Invited)**  
Yamaguchi Takahide<sup>1,2</sup>, Yosuke Sasama<sup>1,2</sup>, Hiroyuki Takeya<sup>1</sup>, Yoshihiko Takano<sup>1,2</sup>, Taisuke Kageura<sup>3</sup>, Hiroshi Kawarada<sup>3</sup> (<sup>1</sup>NIMS, <sup>2</sup>University of Tsukuba, <sup>3</sup>Waseda University, Japan)
- 13-2 9:20-9:35 Electric properties of Au ohmic-contact on hydrogen-terminated surface-conductive diamond (001)**  
Shozo Kono, Masafumi Inaba, Atsushi Hiraiwa, and Hiroshi Kawarada (Waseda University, Japan)
- 13-3 9:35-9:50 Electron affinity of doped diamond surfaces with vanadium-oxide-termination**  
Tianyin Sun<sup>1</sup>, Manpuneet Kaur<sup>2</sup>, Muhammad Zamir Othman<sup>3</sup>, Jialing Yang<sup>1</sup>, Franz A.M. Koeck<sup>1</sup>, Paul W. May<sup>3</sup>, and Robert J. Nemanich<sup>1</sup> (<sup>1,2</sup>Arizona State University, USA, <sup>3</sup>University of Bristol, UK)
- 13-4 9:50-10:05 Spectroscopic impedance studies of diamond-based materials and nanostructures**  
D. Coathup<sup>1</sup>, V. Kundráč<sup>1</sup>, B. Shi<sup>1</sup>, J. L. Sullivan<sup>1</sup>, M. Liao<sup>2</sup>, Y. Koide<sup>2</sup> and H. Ye<sup>1</sup> (<sup>1</sup>Aston University, UK, <sup>2</sup>NIMS, Japan)
- 13-5 10:05-10:20 Diamond Raman laser performance with high pulse energy at 1240 nm and 1485 nm**  
V. Pashinin<sup>1</sup>, V. Ralchenko<sup>2,1,3</sup>, A. Bolshakov<sup>1,3</sup>, E. Ashkinazi<sup>1,3</sup>, Maria Gorbashova<sup>3</sup>, A.A. Khomich<sup>1,4</sup> (<sup>1</sup>General Physics Institute RAS, Russia, <sup>2</sup>Harbin Institute of Technology, P.R. China, <sup>3</sup>National Research Nuclear University MEPhI, Russia, <sup>4</sup>Institute of Radio Engineering and Electronics RAS, Russia)
- 13-6 10:20-10:35 The full spectrum in advanced diamond synthesis solutions**  
(CORNES Technologies Ltd.)

### Session 14: Graphene\_3 (Yongning Hall)

Chair: Yonhua Tzeng (National Cheng Kung University, Taiwan)

- 14-1 9:00-9:20 Epitaxial ultrathin organic molecular crystals on graphene and applications (Invited)**  
Yi Shi, Daowei He, Xiaolong Liu and Xinran Wang (Nanjing University, China)
- 14-2 9:20-9:40 Photonics of two-dimensional materials: graphene and beyond (Invited)**

Qiaoliang Bao\*, Haoran Mu, Shaojuan Li (FUNSOM and Collaborative Innovation Center of Suzhou Nano Science and Technology, Soochow University, China)

- 14-3 9:40-9:55 Diamond and graphene coated long-life silicon and graphite anodes for lithium ion batteries**  
Yen-ting Pan, Cheng-lung Chung, Chien-an Chi and Yonhua Tzeng (National Cheng Kung University, Taiwan)
- 14-4 9:55-10:10 Electric doping tuned gas sensing behavior of graphene channel**  
Guiming Cao, Quanfu Li, Weihua Liu, Xin Li and Xiaoli Wang (Xi'an Jiaotong University, China)
- 14-5 10:10-10:25 Development of solid-state electrochemiluminescence sensors on paper-based chips assisted by graphene nanomaterials**  
Yuanhong Xu, Jingquan Liu (Qingdao University, China)
- 14-6 10:25-10:40 Opening of new paths for kinetically limited chemical processes using resonating e-field**  
Masood Yousaf<sup>1</sup>, Dongbin Shin<sup>2</sup>, Rodney Ruoff<sup>3</sup>, Noejung Park<sup>2</sup> (<sup>1</sup>IBS, <sup>2,3</sup>UNIST, Republic of Korea)

#### **Session 15: Diamond Synthesis\_2 (Grand BallRoom A)**

**Chair: Yasuo Koide (National Institute of Material Science, Japan)**

- 15-1 11:00-11:20 Techniques for large single crystal diamond wafers (Invited)**  
Hideaki Yamada (AIST-Kansai, Japan)
- 15-2 11:20-11:40 Improvement of charge carriers' transport properties in self-standing CVD diamond single crystals fabricated by productive lift-off method (Invited)**  
Junichi H. Kaneko<sup>1</sup>, Takehiro Shimaoka<sup>1</sup>, Hideyuki Watanabe<sup>2</sup>, Masakatsu Tsubota<sup>1</sup>, Hiroaki Shimmyo<sup>1</sup>, Akiyoshi Chayahara<sup>3</sup>, Hitoshi Umezawa<sup>3</sup>, Shin-ichi Shikata<sup>3</sup> (<sup>1</sup>Hokkaido University, Japan, <sup>2</sup>AIST, Ibaraki, Japan, <sup>3</sup>AIST, Ikeda, Japan)
- 15-3 11:40-11:55 Synthesis of polymer precursors for sp<sup>3</sup>-bonded carbon materials**  
Sun Hwa Lee<sup>1</sup>, Xiong Chen<sup>1</sup>, Rodney S. Ruoff<sup>1,2</sup> (<sup>1</sup>IBS, <sup>2</sup>UNIST, Republic of Korea)
- 15-4 11:55-12:10 Incorporation of Eu-based luminescent nanoparticles into CVD diamond films**  
Vadim Sedov<sup>1,2</sup>, Sergey Kuznetsov<sup>1</sup>, Victor Ralchenko<sup>3,1,2</sup>, Andrew Khomich<sup>1</sup>, Maria Mayakova<sup>1</sup> And Vitaly Konov<sup>1,2</sup> (<sup>1</sup>General Physics Institute RAS, Russia, <sup>2</sup>National Research Nuclear University MEPhI, Russia, <sup>3</sup>Harbin Institute of Technology, P.R. China)
- 15-5 12:10-12:25 Effect of relative humidity and temperature on the tribology of multilayer micro/nanocrystalline CVD diamond coatings**

Shabani M.<sup>1</sup>, Abreu C.S.<sup>2,3</sup>, Gomes J.R.<sup>3,4</sup>, Silva R.F.<sup>1</sup>, Oliveira F.J.<sup>1</sup>  
(<sup>1</sup>University of Aveiro, <sup>2</sup>Polytechnic Institute of Porto, <sup>3,4</sup>University of Minho, Portugal)

- 15-6 12:25-12:40 **Versatility and advantages of Microwaves and their wide range of applications**  
Oliver Eckstein (MUEGGE GmbH, Germany)

**Session 16: Carbon Nanotube\_2 (Yongning Hall)**

**Chair: Esko I. Kauppinen (Aalto University, Finland)**

- 16-1 11:00-11:20 **New materials based on doped single-wall carbon nanotubes or graphene (Invited)**  
E.D. Obraztsova<sup>1\*</sup>, A.A.Tonkikh<sup>1</sup>, V.I. Tsebro<sup>2</sup>, D.V. Rybkovskiy<sup>1</sup>, M.G. Rybin<sup>1</sup>, E.A. Obraztsova<sup>1,3</sup>, E.I. Kauppinen<sup>4</sup>, A.S. Orekhov<sup>1</sup>, A.L. Chuvilin<sup>5</sup> (<sup>1</sup>A.M. Prokhorov General Physics Institute, RAS, , Russia, <sup>2</sup>P.N. Lebedev Physical Institute, RAS, Russia, <sup>3</sup>M.M. Shemyakin and Yu.A. Ovchinnikov Institute of Bioorganic Chemistry, RAS, Moscow, Russia, <sup>4</sup>Dep. of Appl. Physics, Aalto University, Finland, <sup>5</sup>CIC NanoGUNE Consolider, Spain)
- 16-2 11:20-11:40 **Integrating carbon nanotube with layered TMOs for high efficient catalysis (Invited)**  
Qin Liu<sup>1</sup>, Daobin Liu<sup>1</sup>, Qun He<sup>1</sup>, Adnan Khalil<sup>1</sup>, Ting Xiang<sup>1</sup>, Qi Fang<sup>1</sup>, Sishen Xie<sup>2</sup>, P.M. Ajayan<sup>3</sup>, Li Song<sup>1</sup> (<sup>1</sup>University of Science and Technology of China, China, <sup>2</sup>Chinese Academy of Sciences, China, <sup>3</sup>Rice University, USA)
- 16-3 11:40-12:00 **Selective growth of semiconducting and metallic single-wall carbon nanotubes (Invited)**  
Chang Liu (IMR CAS, China)
- 16-4 12:00-12:20 **Carbon-based FET technologies for RF application (Invited)**  
Yuechan Kong<sup>1,\*</sup>, Yang Yang<sup>1</sup>, and Yun Wu<sup>1</sup>, (1Science and Technology on Monolithic Integrated Circuits and Modules Laboratory, Nanjing Electronic Devices Institute, China)
- 16-5 12:20-12:35 **Superconducting fibers of fullerene-based materials**  
Hiroyuki Takeya, Toshio Konno, Chika Hirata, Takatsugu Wakahara, Masashi Tanaka, Kunichi Miyazawa, Takahide Yamaguchi, Yoshihiko Takano (NIMS, Japan)
- 16-6 12:35-12:50 **Nitrogen doping and nano exfoliation of polymeric graphitic carbon nitrides for highly efficient hydrogen production from water under visible light**  
Huiqing Fan\*, Longtao Ma, Jiawen Fang and Yuwei Zhao (Northwestern Polytechnical University, China)

**Poster session\_2 (Poster Room): 14:00-16:00**

**Session 17: Diamond Device\_2 (Grand BallRoom A)**

**Chair: I-Nan Lin (TamKang University, Taiwan)**

- 17-1 16:00-16:20 Enhanced doping of hydrogen-terminated diamond using transition metal oxides for improved field effect transistor operation (Invited)**  
Kevin G. Crawford<sup>1</sup>, Liang Cao<sup>2</sup>, Dongchen Qi<sup>3</sup>, Alexandre Tallaire<sup>4</sup>, E. Limiti<sup>5</sup>, C. Verona<sup>5</sup>, Andrew T. S. Wee<sup>2</sup>, and David A. J. Moran<sup>1</sup>  
(<sup>1</sup>University of Glasgow, UK, <sup>2</sup>University of Singapore, Singapore, <sup>3</sup>La Trobe University, Australia, <sup>4</sup>Universite Paris, France, <sup>5</sup>“Tor Vergata” University, Italy)
- 17-2 16:20-16:40 Metal oxide O-diamond capacitor for next generation of power electronic devices (Invited)**  
J. Pernot<sup>1,2,3\*</sup>, T. T. Pham<sup>1,2,4</sup>, A. Maréchal<sup>1,2,4</sup>, N. Rouger<sup>1,4</sup>, D. Eon<sup>1,2</sup>, P. Muret<sup>1,2</sup>, E. Gheeraert<sup>1,2</sup> (<sup>1</sup>Université Grenoble Alpes, France, <sup>2</sup>CNRS, France, <sup>3</sup>Institut Universitaire de France, France, <sup>4</sup>Univ. Grenoble Alpes, France)
- 17-3 16:40-16:55 Diamond based electrochemical double layer capacitors and pseudosupercapacitors**  
Siyu Yu<sup>1</sup>, Jing Xu<sup>1</sup>, Hao Zhuang<sup>1</sup>, Nianjun Yang<sup>1</sup>, Soumen Mandal<sup>2</sup>, Oliver A. Williams<sup>2</sup> and Xin Jiang<sup>1</sup> (<sup>1</sup>University of Siegen, Germany, <sup>2</sup>Cardiff University, UK)
- 17-4 16:55-17:10 High-*k* TiO<sub>2</sub> on diamond for electronic devices: capacitor, field-effect transistor, and logic inverter**  
Jiangwei Liu<sup>1</sup>, Meiyong Liao<sup>2</sup>, Masataka Imura<sup>2</sup>, Ryan G. Banal<sup>2</sup>, Yasuo Koide<sup>2</sup> (<sup>1,2</sup>NIMS, Japan)

**Session 18: Graphene\_4 (Yongning Hall)**

**Chair: Zhenhui Kang (Soochow University, China)**

- 18-1 16:00-16:20 Graphene FETs and MMIC fabricated on SiC substrates (Invited)**  
C. Yu, Z.Z. He, Q.B. Liu, X.B. Song, J. Li, P. Xu, T.T. Han, J.J. Wang, S.J. Cai, and Z.H. Feng\* (National Key Laboratory of ASIC, Hebei Semiconductor Research Institute, China)
- 18-2 16:20-16:35 Integration of conductive reduced graphene oxide into microstructured optical fibres for optoelectronics applications**  
Yinlan Ruan<sup>1,2\*</sup>, Liyun Ding<sup>3</sup>, Jingjing Duan<sup>4</sup>, Heike Ebendorff-Heidepriem<sup>1,2</sup>, Tanya M. Monro<sup>1,2,5</sup> (<sup>1</sup>ARC Centre of Excellence for Nanoscale BioPhotonics, <sup>2</sup>The University of Adelaide, Australia, <sup>3</sup>Wuhan University of Technology, China, <sup>4</sup>The University of Adelaide, <sup>5</sup>University of South Australia, Australia)
- 18-3 16:35-16:50 Mechanical behavior of three-dimensional graphene foam**  
Yarjan Samad, Shaohong Luo, Yuanqing Li, Andreas Schiffer, Kin Liao

(Khalifa University of Science, Technology and Research, Abu Dhabi)

**18-4 16:50-17:05 Nitrogen functionalized bi-layer graphene for spintronic application**  
Sekhar C. Ray<sup>1</sup>, N. Soin<sup>2</sup>, S. S. Roy<sup>3</sup>, W. F. Pong<sup>4</sup> and A. M. Strydom<sup>5</sup>  
(<sup>1</sup>University of South Africa, South Africa, <sup>2</sup>University of Bolton, UK,  
<sup>3</sup>Shiv Nadar University, India, <sup>4</sup>Tamkang University, Taiwan, <sup>5</sup>University  
of Johannesburg, South Africa)

**Plenary Speaking\_2 (Grand BallRoom A)**

**Chair: Hong-Xing Wang (Xi'an Jiaotong University)**

**17:20-18:05 TEM Characterization of Nano-structured Materials**  
Sumio Iijima (Graduate School of Science and Technology, Meijo  
University, NEC Corporation, Japan)

## Thursday, 26 May 2016

### Session 19: Diamond Application (Grand BallRoom A)

Chair: Haitao Ye (Aston University, UK)

- 8:30-18:00 Registration**
- 19-1 9:00-9:20 The development of high conductivity ultrananocrystalline diamond films with superior electron field emission behavior and their potential applications (Invited)**  
I-Nan Lin (Tamkang University, Taiwan)
- 19-2 9:20-9:40 Strategies for improving nanodiamond adhesion and application to HS-AFM probes (Invited)**  
S. Saada, M. Couty, H.A. Girard (Diamond Sensors Laboratory,CEA LIST,France)
- 19-3 9:40-10:00 Applications of hybrid diamond photonic materials (Invited)**  
Brant Gibson (RMIT University, Australia)
- 19-4 10:00-10:15 Dielectric properties of artificial-grown polycrystalline diamond for microwave applications**  
Sabine Schreck, Gaetano Aiello , Giovanni Grossetti, Francesco Mazzocchi, Andreas Meier, Peter Spaeh, Dirk Strauss, Alessandro Vaccaro and Theo Scherer (Institute of Applied Materials, Germany)
- 19-5 10:15-10:30 Double-disc diamond windows for high-power mm-waves applications**  
Alessandro Vaccaro<sup>1</sup>, Gaetano Aiello<sup>1</sup>, Giovanni Grossetti<sup>1</sup>, Francesco Mazzocchi<sup>1</sup>, Andreas Meier<sup>1</sup>, Sabine Schreck<sup>1</sup>, Peter Spaeh<sup>1</sup>, Jörg Stober<sup>2</sup>, Dirk Strauß<sup>1</sup>, Dietmar Wagner<sup>2</sup>, Theo Scherer<sup>1</sup> (<sup>1</sup>Karlsruhe Institute of Technology, <sup>2</sup>Max-Planck-Institut für Plasmaphysik, Germany)
- 19-6 10:30-10:45 Ordered opal structures embedded in single crystal diamond for optical applications**  
Guoyang Shu<sup>1</sup>, Bing Dai<sup>1</sup>, V. Ralchenko<sup>1,2,3</sup>, Yueye Lu<sup>1</sup>, A. Bolshakov<sup>2,3</sup>, D. Sovyk<sup>2,3</sup>, A.A. Khomich<sup>2,4</sup>, Jiaqi Zhu<sup>1</sup>, Jiecai Han<sup>1</sup> (<sup>1</sup>Harbin Institute of Technology, China, <sup>2</sup>General Physics Institute RAS, Russia, <sup>3</sup>National Research Nuclear University MEPHI, Russia, <sup>4</sup>Institute of Radio Engineering and Electronics RAS, Russia)

### Session 20: Carbon\_2 (Yongning Hall)

Chair: Huiqing Fan (Northwestern Polytechnical University)

- 20-1 9:00-9:20 sp<sup>3</sup>/sp<sup>2</sup> structural analysis of diamond-like carbon and related materials using NEXAFS and ellipsometry (Invited)**  
Hidetoshi Saitoh<sup>1</sup>, Satoru Arakawa<sup>1</sup>, Sarayut Tunmee<sup>1</sup>, Keiji Komatsu<sup>1</sup>, Kazuhiro Kanda<sup>2</sup>, Pat Photongkam<sup>3</sup>, Nichada Jeeranaikun<sup>3</sup>, Ratchadaporn Supruangnet<sup>3</sup> and Hideki Nakajima<sup>3</sup> (1Nagaoka University of Technology, Japan, <sup>2</sup>LASTI, University of Hyogo, Japan, <sup>3</sup>Synchrotron Light Research Institute, Thailand)



- 20-2 9:20-9:40 **Advanced hybrid carbons (Invited)**  
Zhisheng Zhao (Yanshan University, China)
- 20-3 9:40-9:55 **Nanostructured carbon materials for supercapacitors**  
Ralph Jennings-Moors, Joseph Welch, Richard B. Jackman (University College London, UK)
- 20-4 9:55-10:10 **An amorphous carbon between graphite and diamond in the carbon phase diagram**  
Meng Hu, Julong He, Lingyu Liu, Dongli Yu, Yongjun Tian, Zhisheng Zhao (Yanshan University, China)
- 20-5 10:10-10:25 **An effect of structural and chemical modified RGO electrode on its electrochemical performance for hybrid supercapacitor**  
Sun Min Lee and Yun-Hwa Hwang (Gwangju Institute of Science and Technology, South Korea)
- 20-6 10:25-10:40 **Electrospun carbon nanofibers with Co<sub>3</sub>O<sub>4</sub> nanoparticles embedded as high-performance anode material for lithium ion batteries**  
Tao Dong, Ping Yang (University of Jinan, China)

**Session 21: Diamond/GaN Session\_1 (Grand BallRoom B)**

**Chair: Ke Xu (SINANO, CAS China)**

- 21-1 9:00-9:20 **InGaAlN multi-wavelength LED's (Invited)**  
Shiro Sakai (The University of Tokushima, Japan)
- 21-2 9:20-9:40 **Epitaxial growth of GaN-based heterostructures on Si substrates using a large lattice-mismatch induced stress control technology (Invited)**  
J.P. Chen, X.L. Yang, J. Zhang, F.J. Xu, and B. Shen\* (State Key Laboratory of Artificial Microstructure and Mesoscopic Physics, School of Physics, Peking University, China)
- 21-3 9:40-10:00 **Graphitic carbon nitride based heterostructures: preparation, properties and application (Invited)**  
Ping Yang, Gang Wang, Yumeng Liu, Simin LU, Tao Dong, Xueling Song (University of Jinan, P.R. China)
- 21-4 10:00-10:15 **Thermal simulation of high power GaN-on-diamond substrate for HEMT applications**  
Huaixin Guo, Yuecan Kong and Tangsheng Chen (Nanjing Electronic Devices Institute, China)
- 21-5 10:15-10:30 **Effect of oxidation treatment on threshold voltage of GaN MOSFETs fabricated on AlGaN/GaN heterostructure**  
Tao Fei Pu, Fu Zhe Zhang, and Jin-Ping Ao (Tokushima University, Japan)
- 21-6 10:30-10:45 **Luminescence characteristics and related damage evolution of carbon**

### **ion implanted GaN**

J.L. Liu<sup>1</sup>, L.X. Chen<sup>1</sup>, J.J. Wei<sup>1</sup>, L.F. Hei<sup>1</sup>, X. Zhang<sup>2</sup>, C.M. Li<sup>1</sup> (<sup>1</sup>University of Science and Technology Beijing, <sup>2</sup>Beijing Normal University, P.R. China)

### **Session 22: Doping/Engineering (Grand BallRoom A)**

**Chair: Ken Haenen (Hasselt University & IMEC, Belgium)**

- 22-1 11:00-11:20 Detonation nanodiamond. A new approach for doping of single crystal diamond (Invited)**  
A.Vul, S.V.Kidalov, F.M.Shakhov, A.E.Alexenskii, V.Yu.Osipov, A.T.Dideikin, M.V. Zamoryanskaya (Ioffe Physical-Technical Institute, Russia)
- 22-2 11:20-11:40 Electron beam induced etching and restructuring of diamond (Invited)**  
Milos Toth<sup>1</sup>, AidenMartin<sup>1,2</sup>, Alan Bahm<sup>3</sup>, Toby Shanley<sup>1</sup>, James Bishop<sup>1</sup>, and Igor Aharonovich<sup>1</sup> (<sup>1</sup>New York Yankees,USA, <sup>1</sup>University of Technology Sydney, Australia, <sup>2</sup>Lawrence Livermore National Laboratory, USA, <sup>3</sup>FEI Company,USA)
- 22-3 11:40-11:55 Manipulations of diamond nanoparticles using an electrically charged SPM probe**  
Vadim D. Frolov, Igor I. Vlasov (A.M. Prokhorov General Physics Institute of RAS, Russia)
- 22-4 11:55-12:10 Finally reaching diamond electronics high mobility and high carrier concentration in  $\delta$ -doped diamond layers**  
Alex Pakpour-Tabrizi<sup>1</sup>, Marie-Laue Hicks<sup>1</sup>, A.L. Vikharev<sup>2</sup>, A.M. Gorbachev<sup>2</sup>, M.A. Lobaev<sup>2</sup>, A.B. Muchnikov<sup>2</sup>, D.B.Radishev<sup>2</sup>, V.A.Isaev<sup>2</sup>, V.V. Chernov<sup>2</sup>, S.A.Bogdanov<sup>2</sup>, M.N. Drozdov<sup>2</sup>, Richard B. Jackman<sup>1</sup> and James E. Butler<sup>2</sup> (<sup>1</sup>University College London, UK, <sup>2</sup>Russian Academy of Sciences, Russia)
- 22-5 12:10-12:25 The effects of boron doping on internal stress of HFCVD diamond film for MEMS applications**  
Tianqi Zhao, Fanghong Sun (Shanghai Jiao Tong University, China)
- 22-6 12:25-12:40 Near hemispherical diamond micro-lens arrays fabricated by plasma etching**  
Yunxiao Li, Yanfeng Zhang, Yujie Chen, Lin Liu, Chunchuan Yang, and Siyuan Yu (Sun Yat-sen University, China)

### **Session 23: Carbon\_3 (Yongning Hall)**

**Chair: Elena Obraztsova (General Physics Institute RAS, Russia)**

- 23-1 11:00-11:20 Levitating nanodiamonds in vacuum to probe the limits of quantum mechanics, and high resolution electron paramagnetic resonance of N@C60 **(Invited)**  
Gavin Morley (University of Warwick,UK)
- 23-2 11:20-11:40 **Carbon-based dots for sensing applications (Invited)**  
Y. Chi\*, Y. Dong (Fuzhou University, China)
- 23-3 11:40-11:55 **New superhard carbon phases constructed by amorphous carbon by compression**  
Mingguang Yao, Bingbing Liu (Jilin University, China)
- 23-4 11:55-12:10 **Hierarchical carbon nanocages confining high-loading sulfur for high-rate Li-S batteries**  
Xizhang Wang, Zhiyang Lyu, Qiang Wu, Zheng Hu (Nanjing University, China)
- 23-5 12:10-12:25 **Science and technology of electrically conductive ultrananocrystalline diamond-coated natural graphite-copper anode for new long life lithium ion battery**  
Yin-Wei Cheng<sup>1</sup>, Chi-Kai Lin<sup>2</sup>, Yueh-Chieh Chu<sup>3</sup>, Ali Abouimrane<sup>2</sup>, Zonghai Chen<sup>2</sup>, Yang Ren<sup>4</sup>, Chuan-Pu Liu<sup>1</sup>, and Yonhua Tzeng<sup>3</sup>, and Orlando Auciello<sup>5</sup> (<sup>1</sup>National Cheng Kung University, Taiwan, <sup>2</sup>Chemical Sciences and Engineering Division, Argonne National Laboratory, USA, <sup>3</sup>National Cheng Kung University, Taiwan, <sup>4</sup>Argonne National Laboratory, USA, <sup>5</sup>University of Texas-Dallas, USA)
- 23-6 12:25-12:40 **Surface restoration effect from diamond like carbon induced by advanced silicate based lubricant additive**  
Jing Zhang (Indiana University – Purdue University Indianapolis, USA)

#### Session 24: Diamond/GaN Session\_2 (Grand BallRoom B)

Chair: Jinping Ao (The University of Tokushima, Japan)

- 24-1 11:00-11:20 **Bulk GaN Growth by Hydride Vapor Phase Epitaxy (Invited)**  
G.Q. Ren, Y. Xu, Y.M. Zhang, D.M. Cai, M.Y. Wang, J.F. Wang and K. Xu (Suzhou Institute of Nano-tech and Nano-bionics, CAS, Suzhou Nanowin Science and Technology Co., Ltd., China)
- 24-2 11:20-11:40 **High switching speed GaN-based Schottky diode using diamond-like carbon anode design (Invited)**  
Hsien-Chin Chiu<sup>1</sup>, Li-Yi Peng<sup>1</sup>, Hou-Yu Wang<sup>1</sup>, Hsiang-Chun Wang<sup>1</sup>, Hsuan-Ling Kao<sup>1</sup>, G.-Y. Lee<sup>2</sup> and Jen-Inn Chyi<sup>2</sup> (<sup>1</sup>Chang Gung University, Taiwan, <sup>2</sup>National Central University, Taiwan)
- 24-3 11:40-11:55 **1200 V GaN Schottky barrier diode on 2" free-standing wafer using a CMOS-Compatible gold-free process**  
Xinke Liu<sup>1</sup> \*, Jin-ping Ao<sup>2</sup>, Jiazhu He<sup>1</sup>, Jianfeng Wang<sup>3</sup>, Wenjie Yu<sup>4</sup>, and

Ke Xu<sup>3</sup> (<sup>1</sup>Shenzhen University, China, <sup>2</sup>The University of Tokushima, Japan, <sup>3,4</sup>CAS, China)

- 24-4 11:55-12:10 Graphene covered ZnO/Si structure SAW UV Sensor**  
X.M.Qi<sup>1</sup>, and Y.N.He<sup>1</sup> (Xi'an Jiaotong University, China)
- 24-5 12:10-12:25 Defect- induced the growth mechanism in 3C-SiC nanowires and films**  
Bing Yang<sup>1</sup>, Hao Zhuang<sup>2</sup>, Baodan Liu<sup>1</sup> and Xin Jiang<sup>1,2</sup> (<sup>1</sup>Chinese Academy of Sciences, China, <sup>2</sup>University of Siegen, Germany)
- 12:45- Summary of NDNC 2016**  
**Introduction to NDNC2017 (Grand BallRoom A)**