

<b>TIMES</b>	<b>ROOMS</b>	<b>MONDAY</b>	<b>TUESDAY</b>	<b>WEDNESDAY</b>	<b>THURSDAY</b>	<b>FRIDAY</b>
08:30-09:40	DH,108,206, 207,208	<i>Opening</i> Plenary <b>Ferrari</b>	Orals #5 S4,S5,S6,S8,S10	Orals #9 S5,S6,S7,S8,S10	Orals 13 S3,S5,S8,S9,S10	<i>Closing</i> <sup>3</sup> Plenary <b>Zhao</b>
09:40-10:00	PH <sup>1</sup>	Snacks	Snacks	Snacks	Snacks	Snacks
10:05-11:15	DH,108,206, 207,208	Orals #1 S1,S2,S4,S5,S6	Plenary <b>Dahn</b>	Plenary <b>Novoselov</b>	Plenary <b>Strano</b>	Orals #17 S3,S5,S7,S10
11:20-12:40	DH,108,206, 207,208	Orals #2 S1,S2,S4,S5,S6	Orals #6 S5,S6,S8,S9,S10	Orals #10 S3,S5,S7,S8,S10	Orals #14 S3,S5,S8,S9,S10	Orals #18 S3,S5,S7,S9,S10
12:45-14:00	PH	Lunch	Lunch	Lunch	Lunch <sup>2</sup>	Lunch
14:05-15:35	DH,108,206, 207, 208	Orals #3 S1,S2,S4,S5,S6	Orals #7 S3,S5,S6,S8,S10	Orals #11 S3,S5,S7,S8,S10	Orals #15 S3,S5,S7,S8,S10	
15:40-16:40	DH,108,206, 207, 208	Orals #4 S1,S4,S5,S6,S10	Orals #8 S3,S5,S6,S8,S10	Orals #12 S3,S5,S7,S8,S10	Orals #16 S3,S5,S7,S8,S10	
16:40-18:40	PH/DH	Posters #1 & snacks	Posters #2 & appetizers	<i>Medalists</i> <i>Roundtable</i> *	Posters #4 & appetizers	
19:00-21:00	(Various)	Student mixer	Picnic PSU Arboretum	Posters #3 & snacks	Banquet (19:00-22:00)	

<sup>1</sup>In PH/DH pre-function area (including viewing of posters on Monday-Thursday).

<sup>2</sup>including American Carbon Society business meeting.

<sup>3</sup>including passing of the 'torch' to *CARBON 2017* organizers (Melbourne, Australia).

PH = Presidents' Hall

DH = Deans' Hall

**\*Donald Bethune, Robert Curl, Mildred Dresselhaus, Morinobu Endo, Konstantin Novoselov**

(moderated by Peter Thrower, *Editor-Emeritus of CARBON* and Robert Hurt, *Editor-in-Chief of CARBON*)

**S1:** Carbons for Health and Medicine

**S2:** Carbon Blacks and Flame-Formed Carbons

**S3:** Catalysts and Electrocatalysts

**S4:** Cokes and Graphite

**S5:** Electrochemical Carbons

**S6:** Fibers and Composites

**S7:** Fullerenes, Nanotubes and Other Curved Nanostructures

**S8:** Graphene

**S9:** Modeling and Simulation

**S10:** Porous Carbons

## **S1: Carbons for Health and Medicine - 1**

(R Hurt, presiding)

### ***O1-1 (Keynote)***

#### **HOW THE LESSONS OF CARBON NANOTUBE SAFETY ASSESSMENT MAY APPLY TO THE EXPANDING GRAPHENE ENTERPRISE**

André Nel

*Division of NanoMedicine, David Geffen School of Medicine and the California NanoSystems Institute, UCLA, Los Angeles, USA.*

### ***O1-2***

#### **BIODEGRADATION OF GRAPHENE AND 2D CRYSTALS**

Alberto Bianco

*CNRS, Institut de Biologie Moléculaire et Cellulaire, Laboratoire d'Immunopathologie et Chimie Thérapeutique, 15 Rue René Descartes, 67084 Strasbourg, France.*

### ***O1-3***

#### **EFFECT OF GRAPHENE AND GRAPHENE OXIDE ON SKIN KERATINOCYTES: CYTOXOCITY AND MEMBRANE DAMAGE**

Marco Pelin<sup>1</sup>, Laura Fusco<sup>1</sup>, Alejandro Criado<sup>2</sup>, Veronica León<sup>3</sup>, Ester Vázquez<sup>3</sup>, Maurizio Prato<sup>2</sup>, Aurelia Tubaro<sup>1</sup>

<sup>1</sup>*Department of Life Sciences, University of Trieste, 34127 Trieste, Italy*

<sup>2</sup>*Department of Chemical and Pharmaceutical Sciences, University of Trieste, 34127 Trieste, Italy*

<sup>3</sup>*Department of Organic Chemistry, University of Castilla-La Mancha, 13071 Ciudad Real, Spain.*

## **S1: Carbons for Health and Medicine - 2**

(A Bianco, presiding)

### ***O2-1***

#### **CARBON NANOTUBES AS pH CONTROLLED DRUG NANOCONTAINERS. INSIGHTS FROM MOLECULAR DYNAMICS SIMULATIONS**

Tomasz Panczyk, Lukasz Konczak, and Pawel Wolski

*Jerzy Haber Institute of Catalysis and Surface Chemistry Polish Academy of Sciences ul. Niezapominajek 8 30239 Krakow, Poland.*

### ***O2-2***

#### **FUNCTIONALIZED CARBON NANO-ONIONS AS IMAGING PROBES FOR CANCER CELLS**

Silvia Giordani<sup>1</sup>, Marco Frasconi<sup>1</sup> and Roberto Marotta<sup>2</sup>

<sup>1</sup>*Nano Carbon Materials and* <sup>2</sup>*Electron Microscopy Laboratory, Nanochemistry Department,*

<sup>2</sup>*Istituto Italiano di Tecnologia (IIT), Via Morego 30, 16163 Genova, Italy.*

### ***O2-3***

#### **ORIENTATION CONTROL OF LACCASE IMMOBILIZED IN A CARBON-COATED ANODIC ALUMINA OXIDE FILM FOR ENHANCING ELECTROCATALYTIC ACTIVITY**

Yasuto Hoshikawa<sup>1</sup>, Castro-Muñiz Alberto<sup>1</sup>, Hanako Tawata<sup>1</sup>, Takashi Kyotani<sup>1</sup>, Kouichi Nozaki<sup>2</sup>, Shohei Yamane<sup>2</sup>, Tetsuji Itoh<sup>3</sup>

<sup>1</sup>*IMRAM, Tohoku University, 2-1-1 Katahira, Aoba-ku, Sendai, 980-8577, Japan*

<sup>2</sup>*Department of Chemistry and Material Engineering, Shinshu University, 4-17-1, Wakasato, Nagano, 380-8553, Japan*

<sup>3</sup>*AIST, Nigatake 4-2-1, Miyagino-ku, Sendai 983-8551, Japan*

## **O2-4**

### **A CARBON NANOTUBE MICRODEVICE FOR VIRUS CAPTURE**

Yin-Ting Yeh<sup>1,3</sup>, Yi Tang<sup>2</sup>, Nestor Perea-López<sup>1</sup>, Huaguang Lu<sup>2</sup>, Si-Yang Zheng<sup>3</sup>, and Mauricio Terrones<sup>1</sup>  
<sup>1</sup>*Department of Physics, <sup>2</sup>Department of Veterinary and Biomedical Sciences, and <sup>3</sup>Department of Biomedical Engineering,*  
*The Pennsylvania State University, University Park, PA 16802, USA.*

## **S1: Carbons for Health and Medicine - 3**

(S Mikhalovsky, presiding)

### **O3-1 (Keynote)**

#### **HEALTH EFFECTS OF CARBONACEOUS NANOMATERIALS: WHAT WE KNOW AND DON'T. FROM MECHANISMS TO REGULATORY CONSEQUENCES**

Anna Shvedova

*Exposure Assessment Branch/HELD/NIOSH/CDC, Department of Physiology and Pharmacology, WVU, Morgantown, WV, USA.*

### **O3-2**

#### **EFFECT OF OXYGEN FUNCTIONALIZATION ON THE ELECTROCHEMICAL AND ANTIMICROBIAL ACTIVITY OF CARBON NANOMATERIALS: ISOLATING THE ROLE OF SURFACE CHEMISTRY**

Yan Wang<sup>1</sup>, Julie B. Zimmerman<sup>2,3</sup>, and Leanne M. Gilbertson<sup>1</sup>

<sup>1</sup>*Department of Civil and Environmental Engineering, University of Pittsburgh, Pittsburgh, PA 15261, USA*

<sup>2</sup>*Department of Chemical and Environmental Engineering, Yale University, New Haven, CT 06520, USA*

<sup>3</sup>*School of Forestry and Environmental Studies, Yale University, New Haven, CT 06520, USA.*

### **O3-3**

#### **ENGINEERED MESOPOROUS CARBON SPHERES: FACILE SYNTHESIS, BLOOD COMPATIBILITY AND HEMOPERFUSION APPLICATIONS**

Yanping Chong, Mingqi Chen, Donghui Long, Jitong Wang, Wenming Qiao, Licheng Ling

*State Key Laboratory of Chemical Engineering, East China University of Science and Technology, Shanghai 200237, China.*

### **O3-4**

#### **EFFECT OF POLYMER SURFACE ADSORPTION ON GRAPHENE NANOPATELET BIOCOMPATIBILITY**

Artur M. Pinto<sup>1,2,3</sup>, J. Agostinho Moreira<sup>4</sup>, Fernão D. Magalhães<sup>1</sup>, Inês C. Gonçalves<sup>2,3</sup>

<sup>1</sup>*LEPABE, Faculdade de Engenharia, Universidade do Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal*

<sup>2</sup>*INEB - Instituto de Engenharia Biomédica, Universidade do Porto, Rua do Campo Alegre, 823, 4150-180 Porto, Portugal*

<sup>3</sup>*Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Portugal*

<sup>4</sup>*IFIMUP and IN – Institute of Nanoscience and Nanotechnology, Departamento de Física e Astronomia, Faculdade de Ciências, Universidade do Porto, Rua do Campo Alegre 687, 4169-007, Porto, Portugal.*

## **S1: Carbons for Health and Medicine - 4**

(S Giordani, presiding)

### **04-1**

#### **CARBON MATERIALS FOR EXTRACORPOREAL TREATMENT: IS IT JUST ADSORPTION OR ANYTHING ELSE?**

Sergey Mikhailovsky

*University of Brighton, Brighton, BN2 4GJ, UK, and Nazarbayev University, 53 Kabanbay Batyr Avenue, Astana 010000, Kazakhstan.*

### **04-2**

#### **FORMATION OF HYBRID MATERIALS BASED ON CALCIUM PHOSPHATE DEPOSITS ON CARBON FIBERS SCAFFOLD**

Q. Picard<sup>1</sup>, S. Delpeux<sup>1</sup>, N. Rochet<sup>2</sup>, J. Chancolon<sup>1</sup>, F. Warmont<sup>1</sup>, F. Fayon<sup>3</sup>, S. Bonnamy<sup>1</sup>

<sup>1</sup>ICMN, CNRS / University of Orléans, 45071 Orléans Cedex 2, France

<sup>2</sup>Institut de biologie Valrose INSERM/BIPOA, 06107 Nice Cedex 2, France

<sup>3</sup>CEMHTI, CNRS, 45071 Orléans Cedex 2, France.

### **04-3**

#### **La AND F CO-SUBSTITUTED HYDROXYAPATITE BIOACTIVE COATING REINFORCED BY SIC NANOWIRE/ZrO<sub>2</sub> HYBRID MATERIALS FOR CARBON/CARBON COMPOSITES**

Zhang Leilei, Li Hejun, Li Kezhi

*State Key Laboratory of Solidification Processing, Northwestern Polytechnical University, Xi'an 710072, China.*

## **S1: Carbons for Health and Medicine – Poster Session**

### **PI-1**

#### **A COMPARATIVE STUDY ON THE $\pi$ - $\pi$ CONJUGATION BETWEEN POLYHYDROXYLATED FULLERENES [C<sub>60</sub>(OH)<sub>10</sub>, C<sub>60</sub>(OH)<sub>44</sub>] AND FOLIC ACID**

Sadia Afreen<sup>1</sup>, Kasturi Muthoosamy<sup>1</sup>, Ken Kokubo<sup>2</sup>, and Sivakumar Manickam<sup>1</sup>

<sup>1</sup>Department of Chemical & Environmental Engineering, The University of Nottingham Malaysia Campus, Jalan Broga, Semenyih, Selangor D.E, 43500, Malaysia.

<sup>2</sup>Division of Applied Chemistry, Graduate School of Engineering, Osaka University, 2-1 Yamadaoka, Suita, Osaka 565-0871, Japan

### **PI-2**

#### **HYBRIDIZED CARBON NANOFIBERS CONTAINING BIOACTIVE CERAMIC NANOPARTICLES FOR BONE REPAIRING**

Qing Cai<sup>1,2</sup>, Xiaolong Jia<sup>1</sup>, and Xiaoping Yang<sup>1,2</sup>

<sup>1</sup>State Key Laboratory of Organic-Inorganic Composites and <sup>2</sup>Beijing Laboratory of Biomedical Materials, Beijing University of Chemical Technology, Beijing 100029, PR China.

### **PI-3**

#### **THE USE OF ACTIVATED CARBON IN BONE HEALING PROCESS**

Gisele Amaral-Labat<sup>1</sup>, Rodrigo Labat-Marcos<sup>2</sup>, Vanessa Fierro<sup>3</sup>, Guilherme F.B. Lenz e Silva<sup>1</sup>, Patricia Almeida<sup>2</sup>, and Alain Celzard<sup>3</sup>

<sup>1</sup>University of São Paulo, PMT-USP, Avenida Mello Moraes, 2463-Cidade Universitária, CEP 05508-030 - São Paulo-SP, Brazil

<sup>2</sup>University Nove de Julho, Biophotonics Applied to Health Sciences, Rua vergueiro, 235-249. Bairro Liberdade, CEP: 01504-001 São Paulo-SP, Brazil

<sup>3</sup>Institut Jean Lamour-UMR Université de Lorraine-CNRS 7198, ENSTIB, 27 rue Philippe Seguin, CS 60036, 88026 Epinal Cedex, France.

**P1-4**

**FLUORESCENT PROPERTIES OF WALNUT SHELLS BASED CARBON QUANTUM DOTS AND THEIR APPLICATIONS IN OSTEOSARCOMA MG-63 CELLS IMAGING**

Yanni Shi, Chaoge Cheng, Qilin Wu

*State Key Laboratory for Modification of Chemical Fibers and Polymer Materials, Shanghai 201620, P.R. China.*

**P1-5**

**CARBON NANOMATERIALS HYBRID COATINGS AS A SUPPORT FOR NERVE CELLS STIMULATION AND REGENERATION**

Aneta Fraczek-Szczypta<sup>1\*</sup>, Alicja Wedel-Grzenda<sup>1</sup>, Filip Ciepiela<sup>1</sup>, Danuta Jantas<sup>2</sup>, Sławomir Zimowski<sup>3</sup>, Stanisław Blazewicz<sup>1</sup>

<sup>1</sup>*Faculty of Materials Science and Ceramics, AGH – University of Science and Technology, al. Mickiewicza 30, 30-059 Krakow, Poland*

<sup>2</sup>*Institute of Pharmacology, Polish Academy of Science, ul. Smetna 12, 31-343 Krakow, Poland*

<sup>3</sup>*Faculty of Mechanical Engineering and Robotics, AGH – University of Science and Technology, al. Mickiewicza 30, 30-059 Krakow, Poland.*

**P1-6**

**EFFECTS OF INTERMOLECULAR FORCES ON THE STABILITY OF CARBON NANOTUBES CAPPED BY GOLD NANOPARTICLES AT ACIDIC pH. A MOLECULAR DYNAMICS STUDY**

Lukasz Konczak, Tomasz Panczyk

*Jerzy Haber Institute of Catalysis and Surface Chemistry Polish Academy of Sciences, ul. Niazapominajek 830-239 Krakow, Poland.*

**P1-7**

**A NOVEL MICRO-MACROPOROUS ACTIVATED CARBON MONOLITH FOR THE URAEMIC TOXIN REMOVAL IN HAEMODIALYSIS**

Yishan Zheng<sup>1</sup>, Ganesh Ingavle<sup>1</sup>, Carol Howell<sup>1</sup>, Steve Tension<sup>2</sup>, Sergey Mikhalovsky<sup>1</sup>, Susan Sandeman<sup>1</sup>

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<sup>2</sup>*MAST Carbon International Ltd., Jays Close, Viables, Basingstoke, Hampshire, UK.*

**P1-8**

**ACTIVATED CARBON AS A POROUS CARRIER FOR AMORPHOUS DRUG DELIVERY**

Nikhila Miriyala<sup>1</sup>, Defang Ouyang<sup>2</sup>, Deborah Lowry<sup>1</sup>, and Daniel Kirby<sup>1</sup>

<sup>1</sup>*Aston University, Birmingham, West Midlands, B47ET, UK*

<sup>2</sup>*University of Macau, Avenida da universidade, Macau, Taipa, China.*

**P1-9**

(now O7-4 in S10)

**P1-10**

**FROM BIOWASTE TO FLUORESCENT CARBON QUANTUM DOTS**

Nikolaos Papaioannou<sup>1,2</sup>, Noriko Yoshizawa<sup>3</sup>, Andrei Sapelkin<sup>1,2</sup>, Maria-Magdalena Titirici<sup>2,4</sup>

<sup>1</sup>*School of Physics and Astronomy, Queen Mary, University of London, 327 Mile End Road, London, E1 4NS, UK*

<sup>2</sup>*Materials Research Institute, Queen Mary University of London, 327 Mile End Road, E14NS, London, UK*

<sup>3</sup>*National Institute of Advanced Industrial Science and Technology (AIST), 16-1 Onogawa, Tsukuba 305-8569, Japan*

<sup>4</sup>*School of Engineering and Materials Science, Queen Mary University of London, 327 Mile End Road, E1 4NS, London, UK.*

**P1-11**

**EFFECT OF GRAPHENE AND GRAPHENE OXIDE ON SKIN KERATINOCYTES: CYTOXOCITY AND MEMBRANE DAMAGE**

Marco Pelin<sup>1</sup>, Laura Fusco<sup>1</sup>, Alejandro Criado<sup>2</sup>, Veronica León<sup>3</sup>, Ester Vázquez<sup>3</sup>, Maurizio Prato<sup>2</sup>, Aurelia Tubaro<sup>1</sup>

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<sup>3</sup>*Department of Organic Chemistry, University of Castilla-La Mancha, 13071 Ciudad Real, Spain.*

**P1-12**

**ELECTROCHEMICAL GLUCOSE BIOSENSORS BASED ON NANOSTRUCTURED CARBON MATERIALS**

Carolina González-Gaitán, Ramiro Ruiz-Rosas, Emilia Morallón, Diego Cazorla-Amorós  
*Instituto Universitario de Materiales, Universidad de Alicante, Apdo. 99, Alicante, Spain.*

**P1-13**

**MESOPOROUS CARBONS AS NOVEL MATERIALS FOR PASSIVE DRUG DELIVERY**

Dipendu Saha

*Department of Chemical Engineering, Widener University, Chester, PA 19013, USA.*

**P1-14**

**MULTIPLE COLOR GRAPHENE AND TRANSITION-METAL DICHALCOGENIDES QUANTUM DOTS**

Bedanga Sapkota<sup>†</sup>, Abdelkrim Benabbas<sup>†</sup>, Paul Champion<sup>†</sup>, and Meni Wanunu<sup>†,‡</sup>

<sup>†</sup>*Department of Physics and* <sup>‡</sup>*Department of Chemistry and Chemical Biology,*

*Northeastern University, Boston, Massachusetts 02115, United States.*

**P1-15**

**TOWARD RATIONAL DESIGN OF CARBON NANOMATERIALS: DECOUPLING THE ROLE OF MATERIAL STRUCTURE AND SURFACE CHEMISTRY IN ELECTROCHEMICAL AND ANTIMICROBIAL ACTIVITY**

Yan Wang, Leanne M. Gilbertson

*Department of Civil and Environmental Engineering, University of Pittsburgh, Pittsburgh, PA 15261, USA.*

**P1-16**

**CO-ADSORPTION OF DOXORUBICIN AND SELECTED DYES IN CARBON NANOTUBES FUNCTIONALIZED BY FOLIC ACID. A MOLECULAR DYNAMICS STUDY**

Pawel Wolski, Tomasz Panczyk

*Jerzy Haber Institute of Catalysis and Surface Chemistry Polish Academy of Sciences, Niezapominajek 830-239 Krakow, Poland.*

**P1-17**

**THE EFFICACIES OF KOCARBONAG IN BACTERIAL BURDEN REDUCTION AND WOUND MANAGEMENT**

Alan Yu<sup>1</sup>, Yu-Hsin Lin<sup>2</sup>, Ming-Wei Wu<sup>3</sup>, Wei-Shan Hsu<sup>1</sup>, Wan-Yu Chung<sup>1</sup>, Tse-HaoKo<sup>4</sup>, and Jui-Hsiang Lin<sup>1</sup>

<sup>1</sup>*Research and Development Center, Bio-medical Carbon Technology Co., Ltd., Taichung, Taiwan*

<sup>2</sup>*Department of Biological Science and Technology, China Medical University, Taichung, Taiwan*

<sup>3</sup>*Dr. Ming-Wei Wu, Inc., Las Vegas, Nevada, USA*

<sup>4</sup>*Department of Materials Science and Engineering, Feng Chia University, Taichung, Taiwan.*

## **S2: Carbon Blacks and Flame-Formed Carbons - 1**

(R Vander Wal, presiding)

### **01-1 (Keynote)**

#### **FULL SCHEME FOR FULLERENE, GRAPHENE AND SOOT FORMATION IN FLAME**

Zulhair A. Mansurov

*Institute of Combustion Problems, 172 Bogenbai Batyr St., 050012, Almaty, Kazakhstan.*

### **01-2**

#### **PULSED LASER ANNEALING OF FLAME-FORMED CARBONS**

Joseph Abrahamson and Randy Vander Wal

*John and Willie Leone Family Department of Energy and Mineral Engineering and The EMS Energy Institute, The Pennsylvania State University, USA.*

### **01-3**

#### **RESTRUCTURING OF DISORDERED CARBON MATERIALS BY THERMAL ANNEALING**

B. Apicella<sup>1</sup>, C. Russo<sup>1</sup>, A. Tregrossi<sup>1</sup>, V. Mennella<sup>2</sup>, A. Ciajolo<sup>1</sup>

<sup>1</sup>*Istituto di Ricerche sulla Combustione - C.N.R., P.le Tecchio 80, 80135 Napoli, Italy*

<sup>2</sup>*Istituto Nazionale di Astrofisica – INAF, Salita Moiarriello, 16 80131, Napoli, Italy.*

## **S2: Carbon Blacks and Flame-Formed Carbons - 2**

(A Korchev, presiding)

### **02-1**

#### **DETERMINATION OF TOTAL EXTERNAL SPECIFIC SURFACE AREA OF MICROPOROUS CARBON BLACK**

Arndt-Peter Schinkel

*Orion Engineered Carbons GmbH, Harry-Kloepfer-Str. 1, 50997 Cologne, Germany.*

### **02-2**

#### **IMPROVED CURVATURE ANALYSIS FOR HRTEM LATTICE FRINGES APPLIED TO SOOT**

Chang'an Wang<sup>1,2</sup>, Thomas Huddle<sup>3</sup>, Chung-Hsuan Huang<sup>2</sup>, Randal Vander Wal<sup>2</sup>, Ed Lester<sup>3</sup>, and Jonathan P. Mathews<sup>2</sup>

<sup>1</sup>*School of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an, 710049, China*

<sup>2</sup>*The Leone Family Department of Energy and Mineral Engineering, and the EMS Energy Institute, The Pennsylvania State University, United States*

<sup>3</sup>*Energy and Sustainability Research Division, Faculty of Engineering, University of Nottingham, University Park, Nottingham, United Kingdom.*

### **02-3**

#### **ANALYSES OF CARBONIZED AROMATIC COMPOUNDS WITH ZIGZAG AND ARMCHAIR EDGES**

Miki Kawai<sup>1</sup>, Yasuhiro Yamada<sup>1</sup>, Hideki Yorimitsu<sup>2</sup>, Shinya Otsuka<sup>2</sup>, Ryohei Kishi<sup>3</sup>, and Satoshi Sato<sup>1</sup>

<sup>1</sup>*Graduate School of Engineering, Chiba University, 1-33 Yayoi, Inage, Chiba, 263-8522, Japan)*

<sup>2</sup>*Graduate School of Science, Kyoto University, Kitashirakawa Oiwakecho, Sakyo, Kyoto 606- 8502, Japan)*

<sup>3</sup>*Graduate School of Engineering Science, Osaka University, 1-3 Machikaneyama, Toyonaka, Osaka, 560-8531, Japan.*

### **02-4**

#### **EXTRAORDINARILY HIGH MECHANICAL ENERGY DISSIPATION DISCOVERED IN CARBON BLACK AND UNCONVENTIONALLY BASED ON THE INTERFACIAL MECHANISM**

Yoshihiro Takizawa, Daojun Wang, and D.D.L. Chung

*Composite Materials Research Laboratory, University at Buffalo, State University of New York, Buffalo, NY 14260-4400, USA.*

## **S2: Carbon Blacks and Flame-Formed Carbons - 3**

(R Taylor, presiding)

### ***O3-1 (Keynote)***

#### **A SHORT REVIEW OF NANOSTRUCTURE AS A PARADIGM FOR DESCRIBING CARBON STRUCTURE, INTERPRETING ITS REACTIVITY AND QUANTIFYING ITS TRANSFORMATIONS**

Randy Vander Wal, Kuen Yehliu, Chethan Gaddam and Chung-Hsuan Huang

*John and Willie Leone Family Department of Energy and Mineral Engineering and The EMS Energy Institute, The Pennsylvania State University, USA.*

### ***O3-2***

#### **THERMAL TREATMENT OF TREAD TYPE CARBON BLACK: EFFECTS ON PHYSICO-CHEMICAL AND SORPTION PROPERTIES**

Archie P. Smith<sup>1</sup>, George Joyce<sup>1</sup> and Ranjan Ghosal<sup>2</sup>

<sup>1</sup>*Birla Carbon Technology Center, Marietta, USA*

<sup>2</sup>*Birla Carbon Technology Center, Taloja, India.*

### ***O3-3***

#### **NEUTRON RADIOGRAPHY STUDIES OF THE INTERACTION BETWEEN HYDROGENOUS SUBSTANCES AND COMBUSTION-GENERATED POROUS CARBON MATERIALS**

Frederik Ossler<sup>1</sup>, Louis J. Santodonato<sup>2</sup>, Hassina Z. Bilheux<sup>2</sup>

<sup>1</sup>*Combustion Physics, Lund University, PO BOX 118, SE 221 00 LUND, Sweden*

<sup>2</sup>*Neutron Sciences Directorate, Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA.*

### ***O3-4***

#### **THERMAL ENERGY STORAGE USING PHASE CHANGE MATERIALS AND A VARIETY OF CARBONS**

Heinrich Badenhorst

*Department of Chemical Engineering, University of Pretoria, Pretoria, 0002, South Africa.*

## **S2: Carbon Blacks and Flame-Formed Carbons – Poster Session**

### ***P1-18***

#### **CARBON COMBUSTION SYNTHESIS OF COMPLEX OXIDES**

Karen Martirosyan

*Department of Physics, University of Texas Rio Grande Valley, Brownsville, TX 78520, USA.*

### ***P1-19***

#### **A 2D FINGERPRINTING APPROACH FOR STRUCTURAL VISUALIZATION OF COMPLEX 3D SOOT ATOMISTIC REPRESENTATIONS**

Wenbo Zhu<sup>1</sup>, Changan Wang<sup>1,2</sup>, Randy Vander Wal<sup>1</sup>, and Jonathan P. Mathews<sup>1</sup>

<sup>1</sup>*The Leone Family Department of Energy and Mineral Engineering, and the EMS Energy Institute, The Pennsylvania State University, United States*

<sup>2</sup>*School of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an, 710049, China.*

### ***P1-20***

#### **HYDROPHOBIC SOOT NANOPARTICLES FOR OIL SEPARATION**

Meruyert Nazhipkyzy<sup>1,2</sup>, Bakhytzhan T. Lesbayev<sup>1,2</sup>, Tolganay S. Temirgalieva<sup>1,2</sup>, ZhalenovaAida<sup>1,2</sup>, Nikolay G. Prikhodko<sup>1,3</sup> and Zulkhair A. Mansurov<sup>1,2</sup>

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**PI-21**

**ANALYSES OF CARBONIZED AROMATIC COMPOUNDS WITH VARIOUS EDGES**

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**PI-22**

**LASER INDUCED INCANDESCENCE: A MEASUREMENT AND PROCESS DIAGNOSTIC**

Randy Vander Wal, Joseph Abrahamson and Chethan Gaddam

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**PI-23**

**CARBONACEUS MATERIAL DEPOSITION USING THE CATHODIC CAGE PLASMA TECHNIQUE**

R.R.M. de Sousa<sup>1</sup>, F.O. de Araújo<sup>2</sup>, J.A.P. da Costa<sup>3</sup>, F. E. Paz Santos<sup>4</sup>, B. C. Viana<sup>4</sup>, T.H. de Carvalho Costa<sup>5</sup>, A. Nunes Filho<sup>5</sup>, C. Alves Jr<sup>2</sup>

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### **S3: Photocatalysis - 1**

(J Matos, presiding)

#### **07-1 (Keynote)**

#### **ON THE POSSIBILITIES OF PHOTOCATALYSIS BASED ON NANOPOROUS CARBONS**

Alicia Gomis-Berenguer, Raquel García-González, Inma Velo-Gala, and Conchi O. Ania

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#### **07-2**

#### **PHOTOACTIVITY OF g-C<sub>3</sub>N<sub>4</sub>/S-DOPED POROUS CARBON COMPOSITE: SYNERGISTIC EFFECT OF COMPOSITE FORMATION**

Mykola Seredych<sup>1</sup>, Szymon. Łoś<sup>2</sup>, Dimitrios A. Giannakoudakis<sup>1,3</sup>, Enrique Rodriguez-Castellon<sup>4</sup> and Teresa J. Bandoz<sup>1,3</sup>

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#### **07-3**

#### **DEVELOPING COMPOSITE NANOMATERIALS FOR PHOTOCATALYSIS: THE ROLE OF THE CARBON PHASE**

Joaquim Luís Faria

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#### **07-4**

#### **PROGRESSIVE DESIGN AND FABRICATION OF NOVEL GRAPHENE-BASED SEMICONDUCTORS AND THEIR CATALYTIC APPLICATIONS**

Won-Chun Oh

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### **S3: Photocatalysis - 2**

(C Ania, presiding)

#### **08-1**

#### **Fe(II)-Fe(III)/ACTIVE CARBON AS PHOTOCATALYST FOR NAPHTHALENE DEGRADATION IN AQUEOUS PHASE**

Alicia L. García-Costa, Juan A. Zazo, Jose A. Casas, Juan José Rodríguez

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#### **08-2**

#### **CATALYTIC PROPERTIES OF LAYERED CARBON NITRIDE MATERIALS**

Ana Belen Jorge<sup>1</sup>, Ishanka Dedigama<sup>2</sup>, Thomas S. Miller<sup>3</sup>, Noramalina Mansor<sup>2</sup>, Rhodri Jervis<sup>2</sup>, Furio Corà<sup>3</sup>, Andrea Sella<sup>3</sup>, Paul Shearing<sup>2</sup>, Daniel J. L. Brett<sup>2</sup>, Paul F. McMillan<sup>3</sup>

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**O8-3**  
(tbd)

**S3: Electrocatalysis - 1**

(L Dai, presiding)

**O10-1**

**DESIGN PRINCIPLES OF HETEROATOM-DOPED NANOCARBON ELECTROCATALYSTS FOR FUEL CELLS AND METAL-AIR BATTERIES**

Zhenghang Zhao<sup>1</sup>, Mingtao Li<sup>2</sup>, Lipeng Zhang<sup>1</sup>, Liming Dai<sup>3</sup>, Zhenhai Xia<sup>1</sup>

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**O10-2**

**ABOUT THE EFFECT OF MICROPOROSITY IN THE OXYGEN REDUCTION REACTION**

Ramiro Ruiz-Rosas<sup>1</sup>, Carolina González-Gaitán<sup>2</sup>, María José Valero-Romero<sup>3</sup>, José Rodríguez-Mirasol<sup>3</sup>, Tomás Cordero<sup>3</sup>, Emilia Morallón<sup>2</sup>, and Diego Cazorla-Amorós<sup>1</sup>

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**O10-3**

**INSIGHTS INTO THE METAL-SUPPORT INTERACTION OF PT SUPPORTED ON N-DOPED CARBON NANOTUBES: EFFECT OF ELECTRON TRANSFER ON CATALYSIS**

Xiaomei Ning, Yuhang Li, Hao Yu, Hongjuan Wang, and Feng Peng

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**O10-4**

**DESIGNING POROUS STRUCTURES IN CARBON-BASED ELECTROCATALYSTS**

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*Technische Universität Dresden, 01062 Dresden, Germany.*

**S3: Green Catalysis - 1**

(M Titirici and R White, presiding)

**O11-1 (Keynote)**

**BOTTOM-UP DESIGN OF METAL-FREE CARBOCATALYSTS FOR THE CONVERSION OF BIOMASS UNDER HYDROTHERMAL CONDITIONS**

Jack Carraher and Jean-Philippe Tessonnier\*

*Department of Chemical and Biological Engineering, Iowa State University and NSF Engineering Research Center for Biorenewable Chemicals (CBiRC), Ames, Iowa, USA.*

### **O11-2**

#### **NOVEL DESIGN OF ANCIENT MATERIALS FOR A NEW GENERATION OF CATALYSTS WITH TUNABLE SELECTIVITY**

Sarah Metzke<sup>1</sup>, Stefan Glatzel<sup>2</sup>, and Cristina Giordano<sup>3</sup>

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### **O11-3**

#### **LIGNIN-DERIVED CARBON MATERIALS AS CATALYSTS FOR WET PEROXIDE OXIDATION**

Maria Martin-Martinez<sup>1</sup>, Maria Filomena F. Barreiro<sup>1</sup>, Adrián M.T. Silva<sup>2</sup>, José L. Figueiredo<sup>2</sup>, Joaquim L. Faria<sup>2</sup> and Helder T. Gomes<sup>1</sup>

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### **O11-4**

#### **NANOPOROUS CARBON AND CARBIDE MATERIALS AS SUPPORTS FOR THE SUSTAINABLE PRODUCTION OF LOWER OLEFINS FROM SYNTHESIS GAS WITH IRON-BASED CATALYSTS**

Martin Oschatz<sup>1</sup>, A. Iulian Dugulan<sup>2</sup>, and Krijn P. de Jong<sup>1</sup>

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### **S3: Electrocatalysis - 2**

(X Feng, presiding)

### **O12-1**

#### **LARGE-SIZE GRAPHENE TUBES: OXYGEN ELECTROCATALYSTS FOR ENERGY CONVERSION**

Gang Wu

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### **O12-2**

#### **SYNTHESIS OF AMORPHOUS MoS<sub>2</sub> ANCHORED GRAPHENE FOR HIGHLY STABLE ELECTROCHEMICAL HER CATALYST**

Cheol-Ho Lee<sup>1,2</sup>, Jin-Mun Yun<sup>3</sup>, Sungho Lee<sup>1</sup>, Seong-Mu Jo<sup>1</sup>, Doh C. Lee<sup>2</sup>, Han-Ik Joh<sup>1</sup>

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**012-3**

**SINGLE-STEP SYNTHESIS OF W<sub>2</sub>C/C ELECTROCATALYST FOR HYDROGEN EVOLUTION REACTIONS UTILIZING PHOSPHATE GROUPS ON CARBON EDGE SITES**

Takafumi Ishii, Keita Yamada, Jun-ichi Ozaki

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**S3: Electrocatalysis - 3**

(G Wu, presiding)

**013-1 (Keynote)**

**CARBON-BASED METAL-FREE ELECTROCATALYSTS FOR OXYGEN REDUCTION: MATERIALS, PROPERTIES AND MECHANISM**

Zheng Hu, Lijun Yang, Xizhang Wang, Qiang Wu

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**013-2**

**ACTIVE SITES OF NITROGEN-DOPED CARBON MATERIALS FOR OXYGEN REDUCTION REACTION**

Donghui Guo, Takahiro Kondo, Junji Nakamura

*Faculty of Pure & Applied Sciences, University of Tsukuba, 1-1-1 Tennodai, Tsukuba, Ibaraki 305-8573, Japan.*

**013-3**

**CONDUCTIVITY VERSUS ACTIVE SITES IN METAL-FREE OXYGEN REDUCTION REACTION ELECTROCATALYSIS**

Magdalena Titirici<sup>1,2</sup>, Kathrin Preuss<sup>1,2</sup>, Guillermo Álvarez<sup>3</sup>, Mo Qiao<sup>1</sup>, Marta Sevilla<sup>3</sup>

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**S3: Electrocatalysis - 4**

(Z Hu, presiding)

**014-1**

**CARBON GEL BASED Pt/C CATALYSTS WITH A HIGH SINTERING TOLERANCE**

Kodai Satoh, Takanori Tsuchiya, Shinichiro Iwamura, Isao Ogino and Shin R. Mukai

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**014-2**

**Co-METAL ORGANIC FRAMEWORK NANO-CRYSTALS ON EXFOLIATED GRAPHITE AS NOBLE METAL-FREE ELECTRODE PRECURSORS**

Tania Rodenas<sup>1</sup>, Youngmi Yi<sup>1</sup>, Saskia Buller<sup>1</sup>, Sylvia Becker<sup>1</sup>, and Robert Schlögl<sup>1,2</sup>

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**O14-3**

**ELECTROCATALYTIC ACTIVITY OF GRAPHENE/(SCN)<sub>n</sub> COMPOSITES FOR OXYGEN REDUCTION REACTION**

Jurgis Barkauskas<sup>1\*</sup>, Justina Gaidukevič<sup>1</sup>, Julija Razumienė<sup>2</sup>, Ieva Šakinytė<sup>2</sup>, Romas Baronas<sup>3</sup>, and Karolis Petrauskas<sup>3</sup>

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**O14-4**

(tbd)

**S3: Green Catalysis - 2**

(J P Tessonnier and J Artz, presiding)

**O15-1 (Keynote)**

**TAILORING BIOMASS-DERIVED CARBON-SUPPORTED CATALYSTS FOR CIRCULAR-ECONOMY-RELATED APPLICATIONS**

Robin J. White, Monika Bosilj, Mohamed Ouda

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**O15-2**

**CARBON NANOTUBES AS SUSTAINABLE CATALYTIC MATERIAL FOR THE HYDROGENATION OF NITROARENES**

Shuchang Wu<sup>1</sup>, Sylvia Becker<sup>1</sup>, Saskia Buller<sup>1</sup>, and Robert Schlögl<sup>1,2</sup>

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**O15-3**

(tbd)

**O15-4**

(tbd)

**S3: Green Catalysis - 3**

(A B Jorge Sobrido and C Giordano, presiding)

**O16-1**

**SUPPORTED METAL CATALYSTS ON COVALENT TRIAZINE FRAMEWORKS AND THEIR APPLICATION IN CATALYSIS**

Jens Artz and Regina Palkovits

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### **O16-2**

#### **PtCo NANOPARTICLES SUPPORTED ON NITROGEN-DOPED ORDERED MESOPOROUS CARBON: NOVEL CATALYSTS FOR HYDRODEOXYGENATION REACTIONS**

Guang-Hui Wang<sup>1</sup>, Zhengwen Cao<sup>1</sup>, Dong Gu<sup>1</sup>, Norbert Pfänder<sup>2</sup>, Ann-Christin Swertz<sup>1</sup>, Bernd Spliethoff<sup>1</sup>, Hans-Josef Bongard<sup>1</sup>, Claudia Weidenthaler<sup>1</sup>, Wolfgang Schmidt<sup>1</sup>, Roberto Rinaldi<sup>3</sup>, and Ferdi Schüth<sup>1</sup>

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### **O16-3**

#### **HUMINS, A NOVEL AND UNIQUE BIOMASS-DERIVED FEEDSTOCK FOR CARBONACEOUS MATERIAL**

Alice Mija<sup>1</sup>, Jan C. van der Waal<sup>2</sup>, Nathanael Guigo<sup>1</sup>, and Ed de Jong<sup>2</sup>

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### **S3: Carbon-Metal Interactions - 1**

(A Lueking, presiding)

#### **O17-1 (Keynote)**

#### **METAL-CARBON FRAMEWORK: THROUGH A CONTROL OF CATALYST SYNTHESIS AT THE MOLECULAR LEVEL**

Faqiang Leng<sup>1</sup>, Rosa Axet<sup>1</sup>, Iann Gerber<sup>2</sup>, Philippe Serp<sup>1</sup>

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#### **O17-2**

#### **SYNTHESIS AND APPLICATION IN CATALYTIC HYDROTREATMENT OF TEMPLATED N-DOPED POROUS CARBON**

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#### **O17-3**

#### **LEWIS BASIC SITES CREATED ON NITROGEN-DOPED GRAPHITE SURFACES**

Riku Shibuya<sup>1</sup>, Takahiro Kondo<sup>2</sup>, and Junji Nakamura<sup>2</sup>

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### **S3: Carbon-Metal Interactions - 2**

(A Lueking, presiding)

#### **O18-1**

#### **IN-DEPTH CHARACTERIZATION OF FUNCTIONAL GROUPS OF MULTIWALLED CARBON NANOTUBES AND THEIR INTERACTIONS WITH ATOMIC LAYER DEPOSITED VANADIUM OXIDE**

Pascal Düngen<sup>1</sup>, Saskia Buller<sup>1</sup>, and Robert Schlögl<sup>1,2</sup>

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<sup>2</sup>Fritz-Haber-Institut der Max-Planck-Gesellschaft, Faradayweg 4-6, 14195 Berlin.

#### **O18-2**

#### **EFFECT OF CARBON SURFACE CHEMISTRY ON THE $\text{Cu}^{2+}$ + BENZENE-1,3,5-TRICARBOXYLIC ACID REACTION**

Balázs Nagy<sup>1</sup>, Laura P. Nichele<sup>1,2</sup>, Dávid Srankó<sup>3</sup>, Zoltán Hell<sup>4</sup>, János Madarász<sup>5</sup>, and Krisztina László<sup>1</sup>

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<sup>5</sup>Department of Inorganic and Analytical Chemistry, Budapest University of Technology and Economics, Budapest, Hungary.

#### **O18-3**

#### **EFFECT OF SUPPORT GRAPHITIZATION ON THE ACTIVITY OF Pd/C CATALYSTS FOR AQUEOUS-PHASE HYDRODECHLORINATION**

José A. Baeza<sup>1</sup>, Luisa Calvo<sup>1</sup>, Noelia Alonso-Morales<sup>1</sup>, Francisco Heras<sup>1</sup>, Semih Eser<sup>2</sup>, Juan J. Rodriguez<sup>1</sup>, Miguel A. Gilarranz<sup>1</sup>

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<sup>2</sup>John and Willie Leone Family Department of Energy and Mineral Engineering and EMS Energy Institute, The Pennsylvania State University, 114A Hosler Building, University Park, PA 16802, United States.

#### **O18-4**

#### **HYBRID GRAPHENE-METAL ORGANIC FRAMEWORK NANOCOMPOSITES FOR APPLICATIONS IN HETEROGENEOUS CATALYSIS**

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### **S3: Catalysts and Electrocatalysts – Poster Session**

#### **P1-24**

#### **ACTIVATED CARBON FIBERS AS REDOX MEDIATORS IN BIOLOGICAL SYSTEMS: REDUCTION OF p-NITROPHENOL TO p-AMINOPHENOL**

H.J. Amezcua-García<sup>1,2</sup>, J.R. Rangel-Mendez<sup>1</sup>, F.J. Cervantes<sup>1</sup>, and E. Razo-Flores<sup>1</sup>

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**P1-25**

**ENHANCED ELECTROCATALYTIC ACTIVITY OF PLATINUM NANOCCLUSERS LOADED ON THE POROUS N-DOPED CARBON LAYER COATED CARBON NANOTUBES**

Baigang An<sup>1,2</sup>, Yanqiu Zhang<sup>2</sup>, Hongwei Zhao<sup>2</sup>, Lixiang Li<sup>1,2</sup>, Xin Geng<sup>1,2</sup>

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University of Science and Technology Liaoning, 185 Qianshanzhong Road, Anshan 114051, China.

**P1-26**

**SYNTHESIS OF ORDERED MESOPOROUS CARBONS THROUGH SOFT-TEMPLATE METHOD AND THEIR CHARACTERIZATION FOR CATALYTIC APPLICATIONS**

Sara Andreoli, Matilde Valeria Solmi, Patricia Benito, Giuseppe Fornasari, and Stefania Albonetti

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**P1-27**

**ENHANCED VISIBLE LIGHT CONVERSION ON O- AND S-DOPED NANOPOROUS CARBONS**

Alicia Gomis-Berenguer<sup>1</sup>, Mykola Seredych<sup>2</sup>, Jesus Iniesta<sup>3</sup>, Joao C. Lima<sup>4</sup>, Teresa J. Bandoz<sup>2</sup> and Conchi O. Ania<sup>1</sup>

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**P1-28**

**INFLUENCE OF METAL-SUPPORT INTERACTION ON THE STABILITY OF CARBON SUPPORTED METALLIC CATALYSTS FOR HYDRODECHLORINATION**

Maria Martin-Martinez<sup>1</sup>, Luisa M. Gómez-Sainero<sup>1</sup>, Richard T. Baker<sup>2</sup>, Alejandra Arevalo-Bastante<sup>1</sup> and Juan J. Rodríguez<sup>1</sup>

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<sup>2</sup>School of Chemistry, University of St Andrews, St Andrews, Fife KY16 9ST, United Kingdom.

**P1-29**

**HYDRODECHLORINATION OF DICHLOROMETHANE WITH PLATINUM CATALYSTS SUPPORTED ON ACTIVATED CARBONS OBTAINED BY CHEMICAL ACTIVATION OF LIGNIN**

Alejandra Arevalo-Bastante, Jorge Bedia, M. Ariadna Álvarez-Montero, Maria Martin-Martinez, Juan J. Rodriguez and Luisa M. Gómez-Sainero

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**P1-30**

**IN-DEPTH CHARACTERIZATION OF STABLE DISC ELECTRODE MATERIALS BY MULTI-WALLED CARBON NANOTUBES AND HYDROTHERMAL CARBON AS SUPPORT FOR MANGANESE OXIDES**

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**P1-31**

**ENHANCED SELECTIVITY OF Pt CATALYSTS IN THE HYDROGENATION OF CITRAL BY USING CARBON-TITANIA COMPOSITES AS SUPPORT**

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**PI-32**

**NOVEL CARBON-ZrO<sub>2</sub> COMPOSITES AS HIGHLY EFFICIENT VISIBLE-LIGHT PHOTOCATALYSTS**

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**PI-33**

**METAL CARBON COMPOSITES PREPARED BY CATALYTIC PYROLYSIS OF POLYETHYLENE AS ELECTROCATALYSTS FOR THE REDUCTION OF CO<sub>2</sub> TO HYDROCARBONS**

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**PI-34**

**COBALT-DOPED CARBON GELS AS ELECTROCATALYSTS FOR THE REDUCTION OF CO<sub>2</sub> TO HYDROCARBONS**

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**PI-35**

**PHOTOCATALYTIC DEGRADATION OF PHENOL BY TiO<sub>2</sub>/CARBON CATALYSTS: THE EFFECT OF IRRADIATION WAVELENGTH**

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**PI-36**

(withdrawn)

**PI-37**

**ACTIVATED CARBON-BASED BIFUNCTIONAL CATALYST FOR THE HYDROCRACKING OF TIRE OIL**

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**PI-38**

**DEPOSITION OF ZnO FILMS ON CARBON FIBERS USING MAGNETRON SPUTTERING TECHNIQUE AS SEEDS FOR GROWING ZnO NANORODS**

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**P1-39**

**REDUCED-GRAPHENE-OXIDE/CARBON-NITRIDE PHOTOCATALYSTS FOR THE SELECTIVE PRODUCTION OF ALDEHYDES FROM ALCOHOLS**

Maria José Lima, Luisa M. Pastrana-Martínez, Adrián M.T. Silva, Cláudia Gomes Silva, and Joaquim Luís Faria

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**P1-40**

**PHOTOCATALYTIC ACTIVITY OF FUNCTIONALIZED NANODIAMOND-TiO<sub>2</sub> COMPOSITES**

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**P1-41**

**PHOTODESIGN OF NANOPOROUS CARBONS USING METAL/POLYMER NANOASSEMBLIES**

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**P1-42**

**PHOTOCATALYTIC ACTIVITY OF SELF-CLEANING SEMICONDUCTOR/CARBON PAINTS**

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**P1-43**

**ON THE USE OF NANOPOROUS CARBONS ADDITIVES TO WO<sub>3</sub> PHOTOANODES**

Alicia Gomis-Berenguer<sup>1</sup>, Veronica Celorrio<sup>2</sup>, David J. Fermin<sup>2</sup>, Jesus Iniesta<sup>3</sup>, and Conchi O. Ania<sup>1</sup>

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**P1-44**

**ORIENTATION CONTROL OF LACCASE IMMOBILIZED IN A CARBON-COATED ANODIC ALUMINA OXIDE FILM FOR ENHANCING ELECTROCATALYTIC ACTIVITY**

Yasuto Hoshikawa<sup>1</sup>, Castro-Muñiz Alberto<sup>1</sup>, Hanako Tawata<sup>1</sup>, Takashi Kyotani<sup>1</sup>, Kouichi Nozaki<sup>2</sup>, Shohei Yamane<sup>2</sup>, Tetsuji Itoh<sup>3</sup>

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**P1-45**

**TEXTURE REGULATION AND OXYGEN REDUCTION CATALYTIC ACTIVITY OF NITROGEN DOPED CARBON NANOTUBES**

Lixiang Li<sup>1,2</sup>, Yanqiu Zhang<sup>1</sup>, Tianyu Xing<sup>1</sup>, Baigang An<sup>1,2</sup>, Xin Geng<sup>1,2</sup>, Renfeng Song<sup>3</sup>

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**P1-46**

**INFLUENCES OF CARBON BLACK ADDITION ON FORMATION OF NANOSHELLS AND OXYGEN REDUCTION REACTION ACTIVITIES OF CARBON ALLOY CATALYSTS**

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**P1-47**

**CARBON-BASED MATERIALS FOR THE SUSTAINABLE CATALYSIS AND PHOTOCATALYSIS**

Juan Matos<sup>1</sup>, Hermenegildo García<sup>2</sup>, Andrzej Borodzinski<sup>3</sup>, and Teresa J. Bandosz<sup>4</sup>

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**P1-48**

**ACTIVATED CARBON FROM BIODIESEL PRODUCTION WASTES FOR GREEN ACID CATALYSIS IN THE VALORIZATION OF GLYCEROL**

Mary Batista<sup>1,2</sup>, Inês Matos<sup>1</sup>, Maria Bernardo<sup>1,2</sup>, Ana S. Mestre<sup>2</sup>, Ana P. Carvalho<sup>2</sup>, Isabel Fonseca<sup>1</sup>, Joaquim Vital<sup>1</sup>

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**P1-49**

**MOLECULAR-PALLADIUM COMPLEXES COVALENTLY BONDED TO GRAPHENE AS CATALYSTS IN THE HECK CROSS-COUPPLING REACTION**

Laura Fernández-García, Matías Blanco, Zoraida González, Clara Blanco, Patricia Álvarez, Marcos Granda, Ricardo Santamaría and Rosa Menéndez

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**P1-50**

**XEROGEL-DERIVED CARBONS WITH TUNABLE POROSITY FOR HOSTING BIOMOLECULES**

Alejandro Concheso, Isabel D. Alonso-Buenaposada, J. Ángel Menéndez, Ana Arenillas, Miguel A. Montes-Morán

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**P1-51**

**TUNING THE PORE STRUCTURE AND SURFACE PROPERTIES OF SULFONATED CARBON GEL MICROHONEYCOMBS TO MAXIMIZE THEIR CATALYTIC PERFORMANCE IN LIQUID PHASE REACTIONS**

Isao Ogino, Yukei Suzuki, and Shin R. Mukai

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**PI-52**

**SYNERGISTIC ENHANCEMENT OF OXYGEN REDUCTION ACTIVITY OF CARBON CATALYSTS OBTAINED BY SIMULTANEOUS INCORPORATION OF IRON AND COPPER PHTHALOCYANINES TO A PHENOL-FORMALDEHYDE RESIN**

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**PI-53**

**NITROGEN AND SULFUR CO-DOPED LARGE SURFACE BIO-CARBON DERIVED FROM CHICKEN FEATHER FOR OXYGEN REDUCTION REACTION**

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**PI-54**

**BIOMASS-DERIVED POROUS CARBONS FOR THE OXYGEN REDUCTION REACTION**

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**PI-55**

**SYNTHESIS AND GROWTH MECHANISM OF CARBON NANOSTRUCTURES ON A Ni-Fe ALLOY COMING FROM A PEROVSKITE CATALYST PRECURSOR**

Mauricio Velásquez<sup>1</sup>, Catherine Batiot-Dupeyrat<sup>2</sup>, Jaime Gallego<sup>1</sup>, Jhon J. Fernández<sup>1</sup>, Diana Lopez<sup>1</sup> and Alexander Santamaria<sup>1</sup>

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**PI-56**

**EGG-DERIVED CARBON ALLOY CATALYSTS FOR ELECTROCHEMICAL HYDROGEN EVOLUTION REACTION**

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**PI-57**

**CARBON SUPPORT EFFECTS ON THE PERFORMANCE OF NOBLE METAL HYDROGENATION CATALYSTS**

Radhika Giri Rao<sup>1</sup>, Thomas W. Hansen<sup>2</sup>, Raoul Blume<sup>3</sup>, Simona Moldovan<sup>4</sup>, Ovidiu Ersen<sup>4</sup>, and Jean-Philippe Tessonnier<sup>1</sup>

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**P1-58**

**FACILE ROUTE TO BIMETAL AND NITROGEN-CODOPED 3D POROUS GRAPHITIC CARBON NETWORKS FOR EFFICIENT OXYGEN REDUCTION**

Feng Wang<sup>1</sup>, Zhengping Zhang<sup>1</sup>, Meiling Dou<sup>1</sup>, Haijing Liu<sup>1</sup>, Liming Dai<sup>2</sup>

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**P1-59**

**KNOEVENAGEL CONDENSATION UTILIZING NITROGEN-CONTAINING CARBON MATERIALS**

Takehiro Tanabe, Yasuhiro Yamada, and Satoshi Sato

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**P1-60**

**REVIEW FOR ANALYSES OF DEFECTS IN CARBON MATERIALS USING X-RAY PHOTOELECTRON SPECTROSCOPY AND COMPUTATION**

Yasuhiro Yamada, Jungpil Kim, Ayaka Fujimoto, and Satoshi Sato

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**P1-61**

**NITROGEN-ENRICHED CARBON WITH ENCAPSULATED NICKEL NANOPARTICLES FOR HYDROGEN EVOLUTION ELECTROCATALYSIS IN ALKALINE ELECTROLYTES**

Zhi-Yu Yang<sup>1,2</sup>, Qinghua Liang<sup>2</sup>, Xiaoliang Yu<sup>2</sup>, Yu Bai<sup>2</sup>, Zheng-Hong Huang<sup>1,2</sup>, Ruitao Lv<sup>2</sup>, Wanci Shen<sup>2</sup> and Feiyu Kang<sup>2,3</sup>

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**P1-62**

**GRAPHENE QUANTUM DOTS SYNTHESIS AND OPTICAL PROPERTIES**

Yan Yang, Maria Magdalena Titirici

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**P1-63**

**CARBON STRONGLY COUPLED TWO DIMENSIONAL LAYERED ARCHITECTURES AS HIGH-EFFICIENT ELECTROCATALYSTS FOR WATER SPLITTING**

Xiaotong Han, Huawei Huang, Zhibing Liu, and Chang Yu, Jiешan Qiu

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***P1-64***

**A FACILE POLYMERIZATION PROCESS FOR PHTHALOCYANINE AS PRECURSORS OF  
TRANSITION METAL-NITROGEN DOPED CARBON FOR OXYGEN REDUCTION**

Zhengping Zhang<sup>1</sup>, Meiling Dou<sup>1</sup>, Haijing Liu<sup>1</sup>, Zhonghua Xiang<sup>2</sup>, Feng Wang<sup>1</sup>

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## **S4: Cokes and Graphite - 1**

(C Contescu, presiding)

### ***O1-1 (Keynote)***

#### **UPDATING IRRADIATED GRAPHITE DISPOSAL: PROJECT 'GRAPA' AND THE INTERNATIONAL DECOMMISSIONING NETWORK**

A.J. Wickham<sup>1</sup>, H.-J. Steinmetz<sup>2</sup>, P. O'Sullivan<sup>3</sup> and M. Ojovan<sup>3</sup>

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<sup>3</sup>*International Atomic Energy Agency, Vienna, Austria.*

### ***O1-2***

#### **IDENTIFICATION AND QUANTIFICATION OF CARBON PHASES IN CONVERSION FUEL FOR THE TRANSIENT REACTOR TEST FACILITY**

Robert Steele<sup>1</sup>, Angelica Mata<sup>2</sup>, Mary Lou Dunzik-Gougar<sup>2</sup> and Isabella van Rooyen<sup>3</sup>

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### ***O1-3***

#### **DEVELOPMENT OF GRAPHITE POWDER CHARACTERIZATION PROTOCOL SUITABLE FOR PRODUCTION OF SPHERICAL NUCLEAR FUEL ELEMENTS**

Tao Liu<sup>1</sup>, Qinghong Lu<sup>1</sup>, Dai Huang<sup>1</sup>, Houzheng Wu<sup>2</sup>

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## **S4: Cokes and Graphite - 2**

(N Gallego, presiding)

### ***O2-1***

#### **GRAPHITE OXIDATION AS A TOOL FOR MICROSTRUCTURAL INVESTIGATION**

Heinrich Badenhorst

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### ***O2-2***

#### **OXIDATION RESISTANCE OF ISO-MOLDED GRAPHITE WITH DIFFERENT GRAIN SIZE**

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### ***O2-3***

#### **REVISITING WEIGHT-LOSS PREDICTIONS IN ADVANCED GAS-COOLED REACTOR GRAPHITE CORES**

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### ***O2-4***

#### **PREDICTIVE MODEL FOR CHRONIC OXIDATION OF NUCLEAR GRAPHITE UNDER NORMAL OPERATING CONDITIONS OF HIGH TEMPERATURE GAS-COOLED REACTORS**

Cristian Contescu<sup>1</sup>, Robert Mee<sup>2</sup>, Joshua Kane<sup>3</sup>, Nidia Gallego<sup>1</sup>, Timothy Burchell<sup>1</sup>, and William Windes<sup>3</sup>

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## **S4: Cokes and Graphite - 3**

(M Weisenberger, presiding)

### **03-1 (Keynote)**

#### **A COMPARISON OF COAL TAR AND PETROLEUM PITCH**

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### **03-2**

#### **EFFECT OF MONTMORILLONITE NANOPARTICLES ON THERMAL CONVERSION OF COAL TAR PITCH**

Maciej Gubernat<sup>1</sup>, Wilhelm Frohs<sup>2</sup>, Janusz Tomala<sup>3</sup>, Aneta Fraczek-Szczypta<sup>1</sup> and Stanislaw Blazewicz<sup>1</sup>

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### **03-3**

#### **LIGNIN/COLLAGEN HYBRID BIOMATERIALS AS BINDER SUBSTITUTE FOR SPECIALTY GRAPHITES AND ELECTRODES**

Zilong Zhao<sup>1,2,3</sup>, Fred S. Cannon<sup>3</sup>, Cesar Nieto-Delgado<sup>4</sup>, Leidy Pena<sup>5</sup>

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### **03-4**

#### **WOOD-DERIVED TAR AS NON-TOXIC BINDER PRECURSOR FOR CARBON AND GRAPHITE MANUFACTURE**

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## **S4: Cokes and Graphite - 4**

(J Norley, presiding)

### **04-1**

#### **SYMMETRY ASSIGNMENT OF THE D1, D2, AND D'' BANDS IN THE RAMAN SPECTRA OF GRAPHITE**

Craig P. Marshall<sup>1,2</sup>, Bahne C. Cornilsen<sup>3</sup>, John A. Jaszczak<sup>4</sup>

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#### **04-2**

### **THERMALLY PURIFIED NATURAL FLAKE GRAPHITE PREPARED BY AN ELECTROTHERMAL FLUIDIZED BED REACTOR**

Huajun Yuan<sup>1</sup>, Soeren Koester<sup>2</sup>, Carsten Wehling<sup>2</sup>

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<sup>2</sup>*Superior Graphite Europe, Bergstrasse 2, 56203 Hoehr-Grenzhausen, Germany.*

#### **04-3**

### **GRAPHITIZATION OF POLYMER THIN FILMS BY SPIN COATING**

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## **S4: Cokes and Graphite - 5**

*(A Wickham, presiding)*

#### **05-1 (Keynote)**

### **NEUTRON IRRADIATION EFFECTS ON THE STRUCTURE OF HIGHLY ORIENTED PYROLYTIC GRAPHITE: XRD AND SANS STUDY**

Nidia C Gallego<sup>1</sup>, Timothy D Burchell<sup>1</sup>, Lilin He<sup>2</sup>, Melanie J. Kirkham<sup>3</sup>, Cristian I Contescu<sup>1</sup>

<sup>1</sup>*Materials Science and Technology Division;* <sup>2</sup>*Biology and Soft Matter Division;* <sup>3</sup>*Instrument and Source Division Oak Ridge National Laboratory, 1 Bethel Valley Rd, Oak Ridge TN, 37831-6087, USA.*

#### **05-2**

### **ASSESSMENT OF ELASTIC ANISOTROPY IN NUCLEAR GRAPHITES USING LASER ULTRASONIC SHEAR WAVE BIREFRINGENCE MEASUREMENTS**

James B. Spicer<sup>1</sup>, Fan W. Zeng<sup>1</sup>, Nidia C. Gallego<sup>2</sup> and Cristian I. Contescu<sup>2</sup>

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#### **05-3**

### **FAILURE PREDICTIONS FOR GRAPHITE REFLECTOR BRICKS IN THE VERY HIGH TEMPERATURE REACTOR WITH THE PRISMATIC CORE DESIGN**

Gyanender Singh<sup>1</sup>, Alex Fok<sup>2,3</sup> and Sue Mantell<sup>3</sup>

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## **S4: Cokes and Graphite – Poster Session**

### **P2-1**

#### **PHOTOCATALYTIC ACTIVITY AND ANTIBACTERIAL PROPERTIES OF ZnO/G-C<sub>3</sub>N<sub>4</sub> COMPOSITE DECORATED WITH METAL NANOPARTICLES**

Surya Prasad Adhikari<sup>1,2,3</sup>, Ganesh Prasad Awasthi<sup>1</sup>, Han Joo Kim<sup>4</sup>, Chan Hee Park<sup>1,3</sup>, Cheol Sang Kim<sup>1,3</sup>

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### **P2-2**

#### **SLUDGE PROCESSING USING ELECTROHYDRAULIC EFFECT**

Duisen U. Bodykov<sup>1</sup>, Meiram S. Abdikarimov<sup>1</sup>, Zulkhair A. Mansurov<sup>1,2</sup>, Meruyert Nazhipkyzy<sup>1,2</sup>

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<sup>2</sup>*Al-Farabi Kazakh National University, Ave. al-Farabi 71, Almaty, Kazakhstan.*

### **P2-3**

#### **COLOMBIAN COALS CHARACTERIZATION – RELATION WITH COKE QUALITY INDICES**

Ariel O. Cadena S.<sup>1</sup>, Luís J. Mejía U.<sup>2</sup>, Orlando Hernández<sup>1</sup>, Yazmin Y. Agámez P.<sup>1</sup>, José de J Díaz V.<sup>1</sup>

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<sup>2</sup>*Departamento de Geología, Facultad de Ciencias, Universidad Nacional de Colombia, Colombia.*

### **P2-4**

#### **ENERGY RELEASE AT HIGH TEMPERATURE IN COAL CARBONIZATION**

Ariel O. Cadena S., Yazmin Y. Agámez P., José de J Díaz V.

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### **P2-5**

#### **STACKING STRUCTURE IN COLOMBIAN COALS AND THEIR COKES**

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### **P2-6**

#### **COALESCENCE BEHAVIOURS OF BROOKS-TAYLOR MESOPHASE SPHERES UNDER HIGH-TEMPERATURE CENTRIFUGATION**

Lei Chen<sup>1</sup>, Xiaohua Fan<sup>1</sup>, Zhao Jiang<sup>1</sup>, Ting Ouyang<sup>1</sup> and Youqing Fei<sup>1,2</sup>

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### **P2-7**

(now O2-4 in S4)

### **P2-8**

#### **MODIFICATION AND CHARACTERIZATION OF THE SURFACE CHEMISTRY OF A COLOMBIAN METALLURGICAL COKE**

Diego Arcelio Rico Sierra<sup>1</sup>, Yazmin Yaneth Agámez Pertuz<sup>1</sup>, Eduard Ricardo Romero Malagón<sup>1</sup>, Miguel Ángel Centeno Gallego<sup>2</sup>, José Antonio Odriozola Gordon<sup>2</sup>, José de Jesús Díaz Velásquez<sup>1</sup>

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**P2-9**

**PREPARATION OF HIGHLY GRAPHITIZED CARBON USING NON-GRAPHITIZABLE RAW MATERIALS AND ITS MECHANISM**

Hyun-Sig Kil<sup>1</sup>, Doo-Won Kim<sup>1</sup>, Isao Mochida<sup>2</sup>, Koji Nakabayashi<sup>1,3</sup>, Jin Miyawaki<sup>1,3</sup>, Seong-Ho Yoon<sup>1,3</sup>

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**P2-10**

**EFFECT OF CARBON BLACK AND CARBON NANOTUBE ADDITIVES ON THE MICROSTRUCTURE AND GRAPHITIZATION TEMPERATURE OF A COAL TAR PITCH**

Hesam Fallah Arani<sup>1</sup>, Alireza Mirhabibi<sup>2</sup>

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<sup>2</sup>*Institute for Materials Research, Leeds University, UK.*

**P2-11**

**DISPERSION OF NANOPARTICLES IN COAL TAR PITCH- BASED CARBON MATERIALS**

Maciej Gubernat<sup>1</sup>, Janusz Tomala<sup>2</sup>, Aneta Fraczek – Szczypta<sup>1</sup> and Stanislaw Blazewicz<sup>1</sup>

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**P2-12**

**PREPARATION OF SELF-SINTERING CARBON MATERIALS FROM COAL TAR**

Uisu Im<sup>1</sup>, Byung-Rok Lee<sup>2</sup>, and Doo-Hwan Jung<sup>1,2</sup>

<sup>1</sup>*Advanced Energy Technology, University of Science and Technology University, Daejeon, 305-350, Korea*

<sup>2</sup>*New & Renewable Energy Research Division, Korea Institute of Energy Research, Daejeon, 305-350, Korea.*

**P2-13**

**CHARACTERISTICS OF MESOPHASE PITCH PREPARED FROM CHEMICALLY MODIFIED PFO BASED PITCHES**

Han Joo Jo<sup>1</sup>, Kyung Hoon Kim<sup>1</sup>, Seung-Kon Ryu<sup>2</sup>, and Young-Seak Lee<sup>1</sup>

<sup>1</sup>*Department of Chemical Engineering and Applied Chemistry, Chungnam National University, Daejeon, 34134, Korea*

<sup>2</sup>*Korea Institute of Carbon Convergence Technology, Banryonong-ro, Jeonju, 561-844, Korea.*

**P2-14**

**LOW-PRESSURE AND HIGH-TEMPERATURE TRITIUM BEHAVIOUR ON CARBON IN FISSION AND FUSION POWER PLANTS**

Stephen Tsz Tang Lam<sup>1</sup>, Charles W. Forsberg<sup>1</sup>, Ronald G. Ballinger<sup>1</sup>, and Raluca Scarlat<sup>2</sup>

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<sup>2</sup>*University of Wisconsin, Madison, WI 53706, USA.*

**P2-15**

**CHANGES IN MECHANICAL AND ELECTRICAL PROPERTIES WITH VARYING NUMBER OF IMPREGNATIONS IN BULK GRAPHITE MANUFACTURING**

Sang-Min Lee, Dong-Su Kang, Un-Gyeong Baek, Won-Pyo Jang and Jae-Seung Roh

*School of Materials Science and Engineering, Kumoh National Institute of Technology, Korea.*

**P2-16**

**THE EFFECT OF WAVINESS ON JOINING STRENGTH OF ISOTROPIC BULK GRAPHITE**

Un-Gyeong Baek, Dong-Su Kang, Sang-Min Lee, and Jae-Seung Roh

*School of Materials Science and Engineering, Kumoh National Institute of Technology, Korea.*

**P2-17**

**HYDROGENATION OF FINE-GRAINED CARBON AND GRAPHITE FOR SINTERING PROCESS**

Tomasz Lis<sup>1</sup>, Piotr Szatkowski<sup>1</sup>, Janusz Tomala<sup>2</sup>, Aneta Fraczek- Szczypta<sup>1</sup>, and Stanislaw Blazewicz<sup>1</sup>

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**P2-18**

**GAS PERMEATION OF COMPACTED EXPANDED GRAPHITE AS A FUNCTION OF EXPANSION TEMPERATURE**

Artem Malakho<sup>1,2</sup>, Andrey Ivanov<sup>1</sup>, Stanislav Filimonov<sup>1</sup>, Olga Shornikova<sup>1,2</sup> and Victor Avdeev<sup>1,2</sup>

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**P2-19**

**2D AND 3D RANDOMLY STRUCTURED CARBON NETWORKS FROM THE CONTROLLED PYROLYSIS OF SACCHAROSE: TOPOLOGICAL, TEXTURAL, OPTICAL AND MAGNETIC CHARACTERIZATION**

Juan Matos<sup>1</sup>, Antonio G. Souza-Filho<sup>2</sup>, Eduardo Barros<sup>2</sup>, José A. Rodriguez<sup>3</sup> and Mark M. Turnbull<sup>4</sup>

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<sup>4</sup>*Carlson School of Chemistry and Biochemistry, Clark University, Worcester, MA 01610, U.S.A.*

**P2-20**

**HIGH ELECTRICAL CONDUCTIVITIES OF COPPER CHLORIDE AND ALUMINUM CHLORIDE TERNARY GICs PREPARED FROM FLEXIBLE GRAPHITE SHEETS**

Rika Matsumoto, Yusuke Okabe, Syun Okubo, Yuki Kubota, Shohei Yasuda

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**P2-21**

**DETERMINATION OF CARBON/CARBON SHEAR STRENGTH USING AFM TECHNIQUE: APPLICATION TO THE UNDERSTANDING OF TRIBOLOGICAL PROPERTIES OF GRAPHITE TRIBOFILMS**

G. Minatchy<sup>1</sup>, A. Molza<sup>1</sup>, J.L. Mansot<sup>1,2</sup>, P. Thomas<sup>1</sup>, L. Romana<sup>1</sup>

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**P2-22**

**WATER TITRATABLE ACID FUNCTIONAL GROUPS IN LIGNIN AS INDICATOR OF ITS PERFORMANCE AS HIGH TEMPERATURE ANTHRACITE BINDER**

Cesar Nieto-Delgado<sup>1,2</sup>, Fred S. Cannon<sup>2</sup>, Zilong Zhao<sup>2</sup> and Nicole R. Brown<sup>3</sup>

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<sup>3</sup>*College of Agricultural Sciences, The Pennsylvania State University, 226 Forest Resources Building, University Park, PA 16802, USA.*

**P2-23**

**EVALUATION OF THE BINDING MECHANISM OF LIGNIN DURING PYROLYSIS BY RAMAN SPECTROSCOPY**

Cesar Nieto-Delgado<sup>1,2</sup>, Fred S. Cannon<sup>2</sup>, Zilong Zhao<sup>2</sup> and Nicole R. Brown<sup>3</sup>

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**P2-24**

**MICROSTRUCTURAL CHARACTERIZATION OF GRAPHITE MATRIX A-3, AND A COMPARISON WITH NUCLEAR GRAPHITE IG-110**

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**P2-25**

**HYDROSTATIC PRESSURE EFFECT ON TURBOSTRATIC GRAPHITES**

Vladislav Slyusarev

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**P2-26**

**SPECIMEN SIZE EFFECT ON YOUNG'S MODULUS AND 4-POINT FLEXURAL STRENGTH OF FINE GRAINED GRAPHITE FOR HIGH TEMPERATURE NUCLEAR REACTORS**

Hui Yang<sup>1\*</sup>, He Li<sup>1</sup>, Anne A. Campbell<sup>2</sup>, Mary Snead<sup>2</sup>, Yutai Katoh<sup>2</sup>, Lulu Gao<sup>1</sup>, Yuzhen Mao<sup>1</sup>, Dai Huang<sup>1</sup>, Houzheng Wu<sup>1,3</sup>

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## **S5: Electrochemical Carbons 1 – Li-Ion Batteries and Capacitors**

(S Kaskel and K Kaneko, presiding)

### **O1-1 (Keynote)**

#### **A SMART SELF-REGENERATIVE LITHIUM ION SUPERCAPACITOR**

Xu-Yi Shan, Feng Li and Hui-Ming Cheng

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### **O1-2**

#### **ELECTROCHEMICAL PROPERTIES OF HF-TREATED B/C/N MATERIALS AS THE ANODE OF LITHIUM-ION BATTERIES**

Masayuki Kawaguchi, Kaoru Yamada and Tsunahito Kitai

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### **O1-3**

#### **PREPARATION OF ACTIVATED CARBONS FROM TROPICAL SEAWEEDS FOR ELECTRODE OF SUPERCAPACITORS AND WATER TREATMENT APPLICATION**

S. Gaspard<sup>1</sup>, M. J. Pintor<sup>1</sup>, S. Roche<sup>1</sup>, C. Jean-Marius<sup>1</sup>, A.C. Alvarez<sup>4</sup>, J-L. Mansot<sup>3</sup>, N. Passé-Coutrin<sup>1</sup>, P.-L. Taberna<sup>2</sup>, V. Jeanne-Rose<sup>1</sup>

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## **S5: Electrochemical Carbons 2 – Li-Ion Batteries and Capacitors**

(S Kaskel and K Kaneko, presiding)

### **O2-1**

#### **GRAPHITE OXIDE AS A POLARIZABLE ELECTRICAL CONDUCTOR IN THE THROUGH-THICKNESS DIRECTION**

Xinghua Hong<sup>1,2</sup>, Andi Wang<sup>1</sup>, Weidong Yu<sup>2</sup>, and D.D.L. Chung<sup>1</sup>

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<sup>2</sup>*Key Laboratory of Textile Science & Technology, Ministry of Education, College of Textiles, Donghua University, Shanghai 201620, China.*

### **O2-2**

#### **GRAPHENE/CELLULOSIC COMPOSITES FOR LI-ION BATTERIES**

Olga Naboka, Yaser Abu-Lebdeh

*National Research Council Canada, 1200 Montreal Rd, Ottawa K1A 0R6, Canada.*

### **O2-3**

#### **THE MECHANISM OF GRAPHITIZED CARBON SPHERES WITH AN ONION-LIKE TEXTURE AS AN ANODE MATERIAL FOR LI-ION BATTERIES**

Bin Cao, Huaihe Song and Xiaohong Chen

*State Key Laboratory of Chemical Resource Engineering, Beijing Key Laboratory of Electrochemical Process and Technology for Materials, Beijing University of Chemical Technology, Beijing 100029, China.*

### **O2-4**

(tbd)

## **S5: Electrochemical Carbons 3 – Li-S and Ni-Ion Batteries**

(Q-H Yang and J-K Kim, presiding)

### **03-1 (Keynote)**

#### **TAILORING POROUS CARBONS AND RELATED MATERIALS FOR ENERGY APPLICATIONS**

Sheng Dai

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Department of Chemistry, University of Tennessee, Knoxville, TN 37996-1600, USA.*

### **03-2**

#### **THE CORE ROLE OF CARBON FOR LI-S BATTERIES**

Qiang Zhang, Jia-Qi Huang, Xin-Bing Cheng, and Hong-Jie Peng

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### **03-3**

#### **DUAL FUNCTIONALITIES OF CARBON NANOTUBE FILMS FOR DENDRITE-FREE LITHIUM-SULFUR BATTERIES**

Keyu Xie<sup>1</sup>, Kai Yuan<sup>1</sup>, You You<sup>1</sup>, Weibang Lu<sup>2</sup>, Wei Lu<sup>3</sup>, Yanqing Lai<sup>4</sup> and Bingqing Wei<sup>5</sup>

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<sup>5</sup>*Department of Mechanical Engineering, University of Delaware, Newark, DE19716, USA.*

### **03-4**

#### **ULTRAFINE FE<sub>2</sub>O<sub>3</sub> NANOPARTICLES ANCHORED ON THE GRAPHENE NANOSHEETS AS ANODES FOR SODIUM-ION BATTERIES**

Dan Li<sup>1</sup>, Jisheng Zhou<sup>1,2</sup>, Huaihe Song<sup>1,2</sup> and Xiaohong Chen<sup>1</sup>

<sup>1</sup>*State Key Laboratory of Chemical Resource Engineering, Key Laboratory of Carbon Fiber and Functional Polymers, Ministry of Education, Beijing University of Chemical Technology, Beijing, P. R. China.*

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## **S5: Electrochemical Carbons 4 – Li-S and Ni-Ion Batteries**

(Q-H Yang and J-K Kim, presiding)

### **04-1**

#### **BIOMASS-DERIVED LOW COST NEGATIVE ELECTRODES IN NA-ION BATTERIES**

Pelin Yilmaz<sup>1</sup>, Yunming Li<sup>2</sup>, Mo Qiao<sup>1</sup>, Yong-Sheng Hu<sup>2</sup>, Magdalena Titirici<sup>1</sup>

<sup>1</sup>*Queen Mary University of London, School of Engineering and Materials Science & Materials Research Institute, London, UK*

<sup>2</sup>*Chinese Academy of Science, Institute of Physics, Beijing, China.*

### **04-2**

#### **UTILIZATION OF NITROGEN-DOPED CARBONIZED METAL ORGANIC FRAMEWORK FOR HIGH STABILITY ROOM TEMPERATURE SODIUM-SULFUR BATTERY**

Yu-Ming Chen<sup>1</sup>, Wengfeng Liang<sup>1</sup>, Feng Zou<sup>1</sup>, Zhe Qiang<sup>2</sup>, Sarang M. Bhaway<sup>2</sup>, Si Li<sup>1</sup>, Min Gao<sup>3</sup>, Bryan D. Vogt<sup>2</sup>, Yu Zhu<sup>1</sup>

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<sup>3</sup>*Liquid Crystal Institute, Kent State University, Kent, Ohio 44242, USA.*



### **04-3**

#### **DESIGN AND COMBINATION OF CARBON MATERIALS FOR ADVANCED LITHIUM SULFUR BATTERIES**

Li Feng, Liang Ji, Fang Ruopian, Hu Guangjian, Zhou Guangmin, Song Renheng and Cheng Hui-Ming  
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### **S5: Electrochemical Carbons 5 - Graphene and CNTs**

(E Frackowiak and Q Zhang, presiding)

#### **05-1 (Keynote)**

##### **DENSIFYING ENERGY STORAGE BY GRAPHENE**

Quan-Hong Yang

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#### **05-2**

##### **THE ATOMIC ORIGIN OF UNIQUE PROPERTIES OF GRAPHENE MATERIALS**

Junjie Guo<sup>1</sup>, Bingshe Xu<sup>1</sup>, Cristian I. Contescu<sup>2</sup>, Matthew F. Chisholm<sup>2</sup>, Stephen J. Pennycook<sup>3</sup>

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<sup>3</sup>*Department of Materials Science and Engineering, National University of Singapore, Singapore 117576, Singapore.*

#### **05-3**

##### **GRAPHENE-BASED HYBRID MATERIALS FOR SUPERCAPACITIVE ENERGY STORAGE**

Cheng-Meng Chen, Qing-Qiang Kong, Fang-Yuan Su, Li-Jing Xie, Chun-Xiang Lu

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### **S5: Electrochemical Carbons 6 - Graphene and CNTs**

(E Frackowiak and Q Zhang, presiding)

#### **06-1**

##### **FREESTANDING CARBON NANOFIBERS/GRAPHENE COMPOSITE ELECTRODES FOR SUPERCAPACITORS**

Volodymyr Kuzmenko<sup>1,2</sup>, Nan Wang<sup>1</sup>, Arun Bhaskar<sup>1</sup>, Henrik Staaf<sup>1</sup>, Olga Naboka<sup>1</sup>, Paul Gatenholm<sup>2,3</sup>, Johan Liu<sup>1,4</sup>, and Peter Enoksson<sup>1,2</sup>

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## **O6-2**

### **STRUCTURE AND DYNAMICS OF DIGLYME MOLECULES IN GRAPHENE LAYERS WITH SODIUM ION STUDIED BY <sup>2</sup>H NMR**

Kazuma Gotoh<sup>1,2</sup>, Hisashi Maruyama<sup>1</sup>, Tomoaki Takizawa<sup>1</sup>, Ryohei Morita<sup>1</sup>, Tatsuya Miyatou<sup>3</sup>, Motohiro Mizuno<sup>3</sup>, Koki Urita<sup>4</sup>, Hiroyuki Ishida<sup>1</sup>

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<sup>4</sup>*Graduate School of Engineering, Nagasaki University, Japan.*

## **O6-3**

### **PLANAR GRAPHENE FILM SUPERCAPACITOR DERIVED FROM LIQUID-AIR INTERFACIAL ASSEMBLY**

Xiangrong Chen<sup>1</sup>, Shun Luo<sup>1</sup>, Zhengjie Li<sup>2</sup>, and Jiao-Jing Shao<sup>1</sup>

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<sup>2</sup>*School of Chemical Engineering and Technology, Tianjin University, Tianjin 300072, China.*

## **O6-4 (Keynote)**

### **EFFECT OF SURFACE MODIFICATION ON THE CAPACITIVE DEIONIZATION PERFORMANCE OF ELECTRODES: THE ROLE OF POTENTIAL OF ZERO CHARGE**

Tingting Wu, Gang Wang, Jieshan Qiu

*State Key Lab of Fine Chemicals, Liaoning Key Lab for Energy Materials and Chemical Engineering, PSU-DUT Joint Center for Energy Research, Dalian University of Technology, Dalian, 116024, China.*

## **S5: Electrochemical Carbons - 7**

(S Kaskel and L Dai, presiding)

## **O7-1**

(tbd)

## **O7-2**

### **SPACE-CONFINED ASSEMBLY OF ALL-CARBON HYBRID FIBERS FOR CAPACITIVE ENERGY STORAGE**

Yuan Chen<sup>1</sup>, Wenchao Jiang<sup>2</sup>, Shengli Zhai<sup>1,2</sup>

<sup>1</sup>*School of Chemical and Biomolecular Engineering, The University of Sydney, NSW, 2006, Australia*

<sup>2</sup>*School of Chemical and Biomedical Engineering, Nanyang Technological University, 62 Nanyang Drive, 637459, Singapore.*

## **O7-3**

### **IDEAS ON THE RATIONAL DESIGN OF FUNCTIONAL CARBON NANOSTRUCTURES VIA PRE-ORGANIZATION**

Nina Fechner, Thomas Jordan, Thomas Berthold, Christian Mbaya Mani and Markus Antonietti

*Max Planck Institute of Colloids and Interfaces, Department of Colloid Chemistry, Am Mühlenberg 1, 14476 Potsdam, Germany.*

**07-4**

**RENEWABLE CARBON FILM FOR SUPERCAPACITOR APPLICATIONS**

Chau D Tran<sup>1</sup>, Jong K Keum<sup>2,3</sup>, Jihua Chen<sup>2</sup>, Nidia C Gallego<sup>1</sup>, and Amit K Naskar<sup>1</sup>

<sup>1</sup>*Materials Science and Technology Division,*

<sup>2</sup>*Center for Nanophase Materials Science,*

<sup>3</sup>*Neutron Science Directorate,*

*Oak Ridge National Laboratory, Oak Ridge, TN 37831 USA.*

**S5: Electrochemical Carbons - 8**

(S Kaskel and L Dai, presiding)

**08-1**

**CARBON MATERIALS FOR FLOWABLE ENERGY STORAGE SYSTEMS**

Muhammad Boota<sup>1</sup>, Kelsey B. Hatzell<sup>1,2</sup>, and Yury Gogotsi<sup>1</sup>

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<sup>2</sup>*Lawrence Berkeley National Lab, Berkeley, CA 94709 USA.*

**08-2**

**SUPERCAPACITIVE PROPERTIES OF Ni-Co OXIDE NANOSHEETS ON CARBON NANOFIBERS WITH BILATERAL STRUCTURE**

Ji Hoon Kim<sup>1</sup>, Hyeonseok Yoon<sup>1,2</sup>, Christopher E. Bunker<sup>3</sup>, Yoong Ahm Kim<sup>1,2</sup>, Kap Seung Yang<sup>1,2</sup>

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<sup>2</sup>*Alan G. MacDiarmid Energy Research Institute, School of Polymer Science and Engineering, Chonnam National University, 77 Yongbong-ro, Buk-gu, Gwangju 61186, Republic of Korea.*

<sup>3</sup>*Air Force Research Laboratory, Aerospace Systems Directorate, Wright-Patterson Air Force Base, Ohio 45433-7103, USA.*

**08-3 (CARBON Elsevier Prize)**

**CARBIDE-DERIVED CARBONS WITH HIERARCHICAL PORE ARCHITECTURES FOR ELECTROCHEMICAL ENERGY STORAGE IN ELECTRICAL DOUBLE-LAYER CAPACITORS**

Martin Oschatz<sup>1,2</sup>, Lars Borchardt<sup>2</sup>, Winfried Nickel<sup>2</sup>, and Stefan Kaskel<sup>2</sup>

<sup>1</sup>*Inorganic Chemistry and Catalysis, Debye Institute for Nanomaterials Science, Utrecht University, Universiteitsweg 99, 3584 CG Utrecht, The Netherlands.*

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**S5: Electrochemical Carbons 9 - Supercapacitors**

(S Shiraishi and B Dyatkin, presiding)

**09-1 (Keynote)**

**CHEMISTRY OF AGEING PHENOMENA IN CARBON-BASED CAPACITORS STUDIED BY OEMS TECHNIQUE**

Elzbieta Frackowiak<sup>1</sup>, Minglong He<sup>2</sup>, Erik J. Berg<sup>2</sup> Krzysztof Fic<sup>1</sup>, and Petr Novak<sup>2</sup>

<sup>1</sup>*Poznan University of Technology, Institute of Chemistry and Technical Electrochemistry, Berdychowo 4, 60-965 Poznan, Poland*

<sup>2</sup>*Electrochemistry Laboratory, Paul Scherrer Institut, 5232 Villigen PSI, Switzerland.*

## **09-2**

### **HYBRID CAPACITORS WITH QUINONE GRAFTED CARBON ELECTRODES**

Paulina Babuchowska, François Béguin

*Institute of Chemistry and Technical Electrochemistry, Poznan University of Technology, ul. Berdychowo 4, 60-965 Poznan, Poland.*

## **09-3**

### **ULTRAPOROUS NITROGEN-DOPED ZEOLITE-TEMPLATED CARBON FOR HIGH ENERGY DENSITY AQUEOUS-BASED SUPERCAPACITORS**

M. José Mostazo-López<sup>1</sup>, R. Ruiz-Rosas<sup>1</sup>, A. Castro-Muñiz<sup>2</sup>, H. Nishihara<sup>2</sup>, T. Kyotani<sup>2</sup>, E. Morallón<sup>3</sup>, D. Cazorla-Amorós<sup>1</sup>

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## **S5: Electrochemical Carbons 10 - Supercapacitors**

(S Shiraishi and B Dyatkin, presiding)

## **010-1**

### **HYBRID POTASSIUM-ION CAPACITOR: AN INNOVATIVE AND COST-EFFECTIVE ENERGY STORAGE DEVICE FOR TRANSPORTATION APPLICATIONS**

Annaïg Le Comte, Matthieu Picot, Philippe Azaïs, and Fabien Perdu

*CEA, LITEN, Department of Electricity and Hydrogen for Transportation, 17 rue des Martyrs, Grenoble, France.*

## **010-2**

### **HIGH PERFORMANCE OF COARSE-GRAINED CARBIDE-DERIVED CARBON SUPERCAPACITOR ELECTRODES**

Boris Dyatkin<sup>1</sup>, Oleksiy Gogotsi<sup>2</sup>, Veronika Zahorodna<sup>2</sup>, Yuliya Zozulya<sup>2</sup>, Hsiu-Wen Wang<sup>3</sup>, Katharine Page<sup>3</sup>, Patrice Simon<sup>4</sup>, and Yury Gogotsi<sup>1</sup>

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<sup>3</sup>*Oak Ridge National Laboratory, Oak Ridge, TN, USA*

<sup>4</sup>*CIRIMAT, CNRS Université Paul Sabatier, Toulouse, France.*

## **010-3**

### **MODEL CARBONS FOR SUPERCAPS: ELUCIDATING THE STORAGE MECHANISM**

Lars Borchardt<sup>1</sup>, Stefan Kaskel<sup>1</sup>, and Eike Brunner<sup>2</sup>

<sup>1</sup>*Technische Universität Dresden, Department for Inorganic Chemistry, Bergstrasse 66, 01069 Dresden, Germany*

<sup>2</sup>*Technische Universität Dresden, Department for Bioanalytical Chemistry, Bergstrasse 66, 01069 Dresden, Germany.*

## **010-4 (Keynote)**

### **AN INDUSTRIAL PERSPECTIVE ON SUPERCAPACITOR CARBONS**

Ranjan K. Dash<sup>1</sup> and Lawrence Weinstein<sup>2</sup>

<sup>1</sup>*SABIC, 475 Creamery Way, Exton, PA 19341*

<sup>2</sup>*FlexEI LLC, 387 Technology Drive #2104, College Park, MD 20742, USA.*

## **S5: Electrochemical Carbons - 11**

(H-M Cheng and S Dai, presiding)

### ***O11-1 (Keynote)***

#### **ELECTROCHEMICAL CARBON RESEARCH IN THE FIRST ENERGY FRONTIER RESEARCH CENTER**

David J. Wesolowski

*Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA.*

### ***O11-2***

#### **ELECTROCHEMICAL PERFORMANCE IN SUPERCAPACITORS OF CARBONS PREPARED FROM RICE HUSK**

Vladimir Pavlenko<sup>1</sup>, Qamar Abbas<sup>2</sup>, Makhmut Bijsenbaev<sup>1</sup>, Krzysztof Fic<sup>2</sup>, Anvar Zakhidov<sup>3</sup>, François Béguin<sup>2</sup> and Zulkhair Mansurov<sup>1</sup>

<sup>1</sup>*Institute of Combustion Problems, Bogenbay Batyr str. 172, Almaty, Kazakhstan*

<sup>2</sup>*Poznan University of Technology, ul. Berdychowo 4, 60-965 Poznan, Poland*

<sup>3</sup>*University of Texas at Dallas, 75080-3021 Texas, USA.*

### ***O11-3***

#### **POLYFURFURYL ALCOHOL DERIVED CARBON BASED ELECTRODES FOR HIGH ENERGY DENSITY ELECTROCHEMICAL CAPACITORS**

Amir Reza Aref<sup>1</sup>, Chih-Chuan Chou<sup>2</sup>, Ramakrishnan Rajagopalan<sup>3,4</sup>, and Clive Randall<sup>2,4</sup>

<sup>1</sup>*Engineering Science and Mechanics, The Pennsylvania State University, University Park, PA 16802, USA*

<sup>2</sup>*Materials Science and Engineering, The Pennsylvania State University, University Park, PA 16802, USA*

<sup>3</sup>*Department of Engineering, Penn State DuBois, DuBois, PA 15801, USA*

<sup>4</sup>*Materials Research Institute, The Pennsylvania State University, University Park, PA 16802, USA.*

### ***O11-4***

#### **EFFECT OF CARBON-BASED COMPOSITE ON THE PERFORMANCE OF CAPACITIVE DEIONIZATION: THE ROLE OF MICROSTRUCTURE AND HYDROPHILICITY**

Qinghan Meng, Yancong Wei, and Bing Cao

*College of Materials Science and Engineering, Beijing University of Chemical Technology, Beijing 100029, China.*

## **S5: Electrochemical Carbons - 12**

(H-M Cheng and S Dai, presiding)

### ***O12-1***

#### **BIOMASS-DERIVED HYDROTHERMAL CARBON DISC FOR ELECTROCATALYTIC WATER SPLITTING**

Youngmi Yi<sup>1</sup>, Natalia Kowalew<sup>1</sup>, Sylvia Becker<sup>1</sup>, Robert Schlögl<sup>1,2</sup>

<sup>1</sup>*Max Planck Institute for Chemical Energy Conversion, Mülheim an der Ruhr, Germany*

<sup>2</sup>*Fritz Haber Institute of the Max Planck Society, Berlin, Germany.*

### ***O12-2***

#### **ARCHITECTURING FLEXIBLE CARBON NANOTUBE BASED SOLID STATE ULTRACAPACITOR**

Kofi Adu<sup>1,2</sup>, Ramakrishnan Rajagopalan<sup>2,4</sup> and Clive Randall<sup>2,3</sup>

<sup>1</sup>*Department of Physics, Altoona College, The Pennsylvania State University, Altoona, PA 16601, USA*

<sup>2</sup>*Materials Research Institute, The Pennsylvania State University, University Park, PA 16802, USA*

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<sup>4</sup>*Department of Engineering, The Pennsylvania State University-DuBois, DuBois, PA 15801, USA*

**O12-3**

**3D HIERARCHICAL POROUS N-DOPED POLYACRYLONITRILE-DERIVED CARBON MONOLITH FOR HIGH-RATE ELECTROCHEMICAL CAPACITIVE ENERGY STORAGE**

Yanqing Wang<sup>1</sup>, Bunshi Fugetsu<sup>2</sup>, Wei Gong<sup>1</sup>, Zhipeng Wang<sup>3</sup>, Shingo Morimoto<sup>3</sup>, Ichiro Sakata<sup>1,2</sup>, Mauricio Terrones<sup>4</sup>, Morinobu Endo<sup>3</sup>, Mildred Dresselhaus<sup>5</sup>

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**S5: Electrochemical Carbons 13 - In Situ Studies**

(K Kaneko and X W Lou, presiding)

**O13-1 (Keynote)**

**STUDY OF LITHIATION MECHANISMS OF EXCEPTIONAL HIGH-PERFORMANCE SILICON/CARBON ANODES BY *IN SITU* MICROSCOPY**

Zheng-Long Xu, Mohammad Akbari Garakani, Sara Abouali and Jang-Kyo Kim

Department of Mechanical and Aerospace Engineering, The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong.

**O13-2**

**MULTIDIMENSIONAL *OPERANDO* ANALYSIS OF LITHIUM SULFUR CELLS WITH X-RAY RADIOGRAPHY**

Sebastian Risse<sup>1</sup>, Charl J. Jafta<sup>1</sup>, Yan Yang<sup>1</sup>, Nikolay Kardjilov<sup>2</sup>, André Hilger<sup>2</sup>, Annika Juhl<sup>3</sup>, Simone Mascotto<sup>3</sup>, Boris Ufer<sup>3</sup>, Michael Fröba<sup>3</sup>, Ingo Manke<sup>2</sup>, Matthias Ballauff<sup>1</sup>

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<sup>3</sup>Institute of Inorganic Solid State Chemistry and Material Science, University of Hamburg, Martin-Luther-King Platz 2016 Hamburg, Germany.

**O13-3**

***IN SITU* GROWTH OF MnO<sub>2</sub> CRYSTALS UNDER NANOPORE-CONSTRAINT IN CARBON NANOFIBERS AND THEIR ELECTROCHEMICAL PERFORMANCE**

Ying Yang<sup>1</sup>, Trung Hieu Le<sup>1</sup>, Liu Yu<sup>1</sup>, Zhenghong Huang<sup>2</sup>, and Feiyu Kang<sup>2</sup>

<sup>1</sup>State Key Laboratory of Control and Simulation of Power System and Generation Equipments, Tsinghua University, Beijing 100084, China

<sup>2</sup>Laboratory of Advanced Materials, Department of Materials Science and Engineering, Tsinghua University, Beijing 100084, China.

## **S5: Electrochemical Carbons 14 - In Situ Studies**

(K Kaneko and X W Lou, presiding)

### **O14-1**

#### **IN SITU EQCM STUDY OF ION DYNAMICS AND CHARGE STORAGE MECHANISM FOR SUPERCAPACITOR APPLICATIONS**

Wan-Yu Tsai<sup>1,2</sup>, Pierre-Louis Taberna<sup>1,2</sup>, Patrice Simon<sup>1,2</sup>

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<sup>2</sup>*Réseau sur le Stockage Electrochimique de l'Energie (RS2E), FR CNRS 3459, France.*

### **O14-2**

#### **IN SITU CHARACTERIZATION OF CARBON-BASED ELECTROCHEMICAL CAPACITORS**

Krzysztof Fic, Elzbieta Frackowiak

*Poznan University of Technology, Institute of Chemistry and Technical Electrochemistry, Berdychowo 4, 60-965 Poznan, Poland.*

### **O14-3**

#### **ELECTROCHEMICAL CAPACITOR USING GRAPHITE-FLUORIDE AND ALKALI METAL**

Soshi Shiraishi<sup>1</sup>, Tsuyoshi Kawashima<sup>1</sup>, Yasuyoshi Shiraishi<sup>1</sup>, and Hiroyuki Fujimoto<sup>2</sup>

<sup>1</sup>*Gunma University, Kiryu, Gunma 376-8515, Japan*

<sup>2</sup>*Osaka Gas Co. Ltd., Osaka 554-0051, Japan.*

### **O14-4 (Keynote)**

#### **SWCNT FOR ELECTROCHEMICAL POWER SOURCES**

Konstantin Tikhonov, Oleg Bobrenok, Mikhail Predtechensky

*OCSiAl S.à r.l., 15-17 Avenue Gaston Diderich, L-1420 Luxembourg.*

## **S5: Electrochemical Carbons 15 - Carbon Research for Industry**

(R K Dash and Y-K Lee, presiding)

### **O15-1 (Keynote)**

#### **THERMALLY PURIFIED GRAPHITE FOR ENERGY APPLICATIONS**

Francois Henry, Joseph Li, Diptarka Majumdar

*Superior Graphite, 1470 S. Riverside Plaza, Chicago, IL 60606, USA.*

### **O15-2**

#### **FABRICATION OF SILICON CARBIDE DERIVED CARBON MADE FROM RICE HUSK AND ITS ELECTROCHEMICAL PERFORMANCES FOR CAPACITOR ELECTRODES**

Takahiro Saito, Kazuya Kuwahara, Shinji Ishikawa

*Sumitomo Electric Industries, LTD., 1, Taya-cho, Sakae-ku, Yokohama 244-8588, Japan.*

### **O15-3**

#### **SELECTIVE DEPOSITION AND QUANTITATIVE EVALUATION OF NANO-SCALE OXIDE PARTICLES ON THE EDGE STRUCTURES OF THE GRAPHITE SURFACE**

Nobuaki Takahashi, Hiroyuki Yamaguchi, Hideyuki Koga, Shinji Nakanishi, and Hideki Iba

*Toyota Motor Corporation, 1200, Mishuku, Susono, Shizuoka, 410-1193, Japan.*

### **O15-4**

#### **A TUNABLE HIERARCHICAL POROUS CARBON (HPC) FOR SPECIFIC ENERGY STORAGE APPLICATIONS**

Luis Estevez<sup>1</sup>, Sookyung Jeong<sup>1</sup>, Wu Xu<sup>1</sup>, Ruiguo Cao<sup>1</sup>, Xiaolin Li<sup>1</sup>, Priyanka Bhattacharya<sup>1</sup>, Qiang Wu<sup>2</sup>, Jim P. Zheng<sup>2</sup>, Ji-Guang Zhang<sup>1</sup>

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<sup>2</sup>*Florida State University, Tallahassee, FL, USA.*

## **S5: Electrochemical Carbons 16 - Carbon Research for Industry**

(R K Dash and Y-K Lee, presiding)

### **O16-1**

#### **GICs OF NANOCARBONS AND THEIR ROLE AS EFFECTIVE REDUCING AGENT**

Ferdinand Hof<sup>1,2</sup>, Kai Huang<sup>1,2</sup>, Katerina Kampioti<sup>1,2</sup>, Alessandro Boni<sup>3</sup>, Giovanni Valenti<sup>3</sup>, Catharina Paukner<sup>4</sup>, Alain Derre<sup>1,2</sup>, Francesco Paolucci<sup>3</sup>, Alain Penicaud<sup>1,2</sup>

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<sup>3</sup>Dipartimento di Chimica "G. Ciamician", Università di Bologna, 40126 Bologna, Italy.

### **O16-2**

#### **TUNING WATER MANAGEMENT IN PEM FUEL CELLS – ROLE OF CARBONS AND GDL DESIGN REVISITED**

Ruediger Schweiss, Christian Meiser, Oswin Oettinger

SGL Carbon GmbH, Technology and Innovation, Werner von Siemensstrasse 18, D-86405 Meitingen, Germany.

### **O16-3**

(tbd)

## **S5: Electrochemical Carbons 17 - Porous Carbons**

(H-M Cheng and D Weselowski, presiding)

### **O17-1 (Keynote)**

#### **UNDERSTANDING THE ELECTROCHEMICAL DEGRADATION OF CARBON MATERIALS IN TERMS OF CARBON EDGE SITES**

Kaishi Taguchi<sup>1</sup>, Hiroto Nishihara<sup>1</sup>, Takafumi Ishii<sup>2</sup>, Yasuji Muramatsu<sup>3</sup>, Diego Cazorla-Amorós<sup>4</sup>, and Takashi Kyotani<sup>1</sup>

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<sup>4</sup>Departamento de Química Física e Instituto Universitario de Materiales, Universidad de Alicante. Apdo 99, Alicante, Spain.

### **O17-2**

#### **ANOMALOUS ACCUMULATION OF ISOCHARGED IONS IN THE NEAREST COUNTER ION SHELL OF IONIC LIQUID CONFINED IN CARBON MICROPORES**

Ryusuke Futamura<sup>1</sup>, Taku Iiyama<sup>1,2</sup>, Yuma Takasaki<sup>2</sup>, Yury Gogotsi<sup>3</sup>, Mark Biggs<sup>4,5</sup>, Patrice Simon<sup>6,7</sup>, and Katsumi Kaneko<sup>1</sup>

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<sup>2</sup>Faculty of Science, Department of Chemistry, Shinshu University, 3-1-1, Matsumoto, 390-8621, Japan

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<sup>7</sup>Réseau sur le Stockage Electrochimique de l'Energie, RS2E FR CNRS 3459, France.



### **O17-3**

#### **TEMPLATED POROUS CARBON WITH DETERMINISTIC CONTROL OVER MULTIPLE LENGTH SCALES**

Patrick G. Campbell, James S. Oakdale, Swetha Chandrasekaran, Jianchao Ye, Julie A. Jackson, William L. Smith, Maira R. Céron Hernandez, Marcus A. Worsley, Theodore A. Baumann, Eric B. Duoss, Christopher M. Spadaccini, and Juergen Biener

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### **S5: Electrochemical Carbons 18 - Porous Carbon**

(H-M Cheng and D Weselowski, presiding)

### **O18-1**

#### **ION DYNAMICS AND CAPACITANCE IN FUNCTIONALIZED POROUS AND NON-POROUS CARBON ELECTRODES**

Boris Dyatkin<sup>1</sup>, Yu Zhang<sup>2</sup>, Eugene Mamontov<sup>3</sup>, Naresh C. Osti<sup>3</sup>, Alexander I. Kolesnikov<sup>3</sup>, Yongqiang Cheng<sup>3</sup>, Peter T. Cummings<sup>2</sup>, Yury Gogotsi<sup>1</sup>

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<sup>2</sup>*Vanderbilt University, Nashville, TN, USA*

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### **O18-2**

#### **DISTRIBUTION OF SULFUR IN CARBON/SULFUR NANOCOMPOSITES ANALYZED BY SMALL ANGLE X-RAY SCATTERING**

Simone Mascotto<sup>1</sup>, Albrecht Petzold<sup>2</sup>, Günter Goerigk<sup>2</sup>, Daniel Clemens<sup>2</sup>, Jonas Scholz<sup>1</sup>, Anika Juhl<sup>1</sup>, Michael Fröba<sup>1</sup> and Matthias Ballauff<sup>2</sup>

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### **O18-3**

#### **EFFECT OF PROCESSING CONDITIONS ON THE CAPACITIVE PERFORMANCE OF ONION-LIKE CARBON**

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### **O18-4 (Keynote)**

#### **NANOSTRUCTURED CARBON MATERIALS FOR LITHIUM SULFUR BATTERIES**

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### **S5: Electrochemical Carbons - Poster Session 1**

### **P2-27**

#### **HYBRIDIZATION TO REDUCE OXIDATION AT THE POSITIVE CARBON ELECTRODE OF ELECTROCHEMICAL CAPACITORS IN AQUEOUS ELECTROLYTE**

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**P2-28**

**SOLVOTHERMAL SULPHUR FUNCTIONALIZATION OF ACTIVATED CARBON FOR OXYGEN REDUCTION REACTION**

Jose F. Vivo-Vilches, Abdelhakim Elmouwahidi, Agustín F. Pérez-Cadenas, Francisco J. Maldonado-Hódar, and Francisco Carrasco-Marín

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**P2-29**

**UNDERSTANDING THE REAL EFFECT OF NITROGEN-DOPING ON THE ELECTROCHEMICAL PERFORMANCE OF CARBON MATERIALS**

Alberto Castro-Muñiz, Yasuto Hoshikawa, Takatoshi Kasukabe, Hiroshi Komiyama, and Takashi Kyotani

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**P2-30**

**ELECTROCHEMICAL PERFORMANCES OF ORDERED MESOPOROUS CARBONS OBTAINED FROM BIOSOURCED PHENOLIC MOLECULES**

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**P2-31**

**MULTI-REACTIVATION LITHIUM ION BATTERY AND ANODE MATERIALS IN CARBON AND GRAPHITE**

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**P2-32**

**CARBON BLACK FOR ELECTROCHEMICAL ELECTRODES AND THERMAL INTERFACE MATERIALS**

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**P2-33**

**HOW DOES AMALGAMATED Ni CATHODE AFFECT CARBON NANOTUBE GROWTH. A DENSITY FUNCTIONAL THEORY STUDY**

Gangotri Dey<sup>1</sup>, Jiawen Ren<sup>2</sup>, Tarek El-Ghazawi<sup>1</sup>, Stuart Licht<sup>2</sup>

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**P2-34**

**THE INVESTIGATION OF LARGE PORE-SIZE EFFECT ON THE HIGH POTENTIAL ELECTROCHEMICAL PERFORMANCES OF EDLCs USING TWO KINDS OF ELECTROLYTES**

Doo-Won Kim<sup>1</sup>, Chinami Morishima<sup>1</sup>, Keiko Ideta<sup>2</sup>, Hyun-Sig Kil<sup>1</sup>, Koji Nakabayashi<sup>1,2</sup>, Jin Miyawaki<sup>1,2</sup>, and Seong-Ho Yoon<sup>1,2</sup>

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**P2-35**

**PORE-SIZE UNBALANCED EDLC ELECTRODES FOR HIGH POTENTIAL ELECTROCHEMICAL PERFORMANCE**

Doo-Won Kim<sup>1</sup>, Hyun-Sig Kil<sup>1</sup>, Keiko Ideta<sup>2</sup>, Koji Nakabayashi<sup>1,2</sup>, Jin Miyawaki<sup>1,2</sup>, and Seong-Ho Yoon<sup>1,2</sup>

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**P2-36**

**STRUCTURAL AND COMPOSITIONAL CHARACTERIZATION OF AGING PHENOMENA IN ULTRACAPACITOR ACTIVATED CARBON ELECTRODES**

Steven R. D'Souza<sup>1,2</sup>, Peter Crozier<sup>1</sup>, Terry Alford<sup>1</sup>

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**P2-38**

**THE ANODE PERFORMANCE OF HIGHLY FINE SILICON METAL PARTICLES HYBRIDIZED WITH PITCH-DERIVED CARBON IN A Li ION BATTERY**

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**P2-39**

**SYNTHESIS AND ELECTROCHEMICAL PERFORMANCE OF COLLOIDAL CARBON SPHERES**

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**P2-40**

**PREPARATION OF ACTIVATED CARBONS FROM SCHINUS MOLLE SEEDS AND THEIR USE AS ELECTRODES FOR SUPERCAPACITORS**

Helena García-Rosero, Carlos Moreno-Castilla and Francisco Carrasco-Marín

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**P2-41**

**SUSTAINABLE ENERGY SYSTEMS: HIGH PERFORMANCE LITHIUM ION BATTERY COMPONENTS FROM RENEWABLE RESOURCES**

Valerie García-Negrón<sup>1</sup>, Orlando Rios<sup>2</sup>, David J. Keffer<sup>1</sup>, and David P. Harper<sup>3</sup>

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**P2-42**

**LIGNIN-BASED CARBON NANOFIBRES FOR FLEXIBLE ENERGY STORAGE**

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**P2-43**

**NOVEL HIERARCHICAL POROUS CARBONS DERIVED FROM MgAl-LAYERED DOUBLE HYDROXIDES AS A HIGH CAPACITY ANODE FOR LITHIUM-ION BATTERIES**

Liluo Shi, Yaxin Chen, Huaihe Song, Xiaohong Chen, Jisheng Zhou and Zhaokun Ma

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**P2-44**

**PREPARATION AND LITHIUM STORAGE PERFORMANCE OF TWO-DIMENSIONAL CARBON/METAL OXIDE NANOSHEET COMPOSITE ELECTRODE MATERIALS**

Yaxin Chen, Mengyao Guo, Liluo Shi, Qiong Yuan, Huaihe Song, Xiaohong Chen, Jisheng Zhou and Zhaokun Ma

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**P2-45**

**BIOCATHODES BASED ON MESOPOROUS CARBONS FOR THE ELECTROREDUCTION OF CO<sub>2</sub> INTO FORMATE**

Naiara Hernández-Ibáñez<sup>1</sup>, Alicia Gomis-Berenguer<sup>2</sup>, Conchi Ania<sup>2</sup>, Vicente Montiel<sup>1</sup>, and Jesús Iniesta<sup>1</sup>

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**P2-46**

**CARBONACEOUS ELECTRODE MATERIALS FOR Li-S BATTERIES: A ReaxFF REACTIVE FORCE FIELD STUDY**

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**P2-47**

**FLOWER-LIKE MESOPOROUS CARBON AS A HIGH-PERFORMANCE ANODE MATERIAL FOR SODIUM ION BATTERIES**

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**P2-48**

**FLUORINATION EFFECT ON ELECTRICAL PROPERTIES OF CARBON PAPER**

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**P2-49**

**A FACILE HYDROTHERMAL REFLUX SYNTHESIS OF Ni(OH)<sub>2</sub>/GF ELECTRODE FOR SUPERCAPACITOR APPLICATION**

A.A. Khaleed<sup>1,2</sup>, A. Bello<sup>1</sup>, J. K. Dangbegnon<sup>1</sup>, F.U. Ugbo<sup>1</sup>, F. Barzegar<sup>1</sup>, D. Y. Momodu<sup>1</sup>, M.J. Madito<sup>1</sup>, T. M. Masikhwa<sup>1</sup>, O. Olaniyan<sup>1</sup>, N. Manyala<sup>1</sup>

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**P2-50**

**HIERARCHICAL POROUS CARBON NANOFIBER CATHODES WITH HIGH SULFUR LOADING FOR HIGH PERFORMANCE LI-SULFUR BATTERIES**

Zheng-Long Xu, Jian-Qiu Huang, Woon Gie Chong, Xianying Qin, Xiangyu Wang and Jang-Kyo Kim

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**P2-51**

**IMPROVED DESALINATION EFFICIENCY OF ACF-BASED ELECTRODES MODIFIED BY OXYFLUORINATION**

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**S5: Electrochemical Carbons - Poster Session 2**

**P3-1**

**EFFECT OF LOW TEMPERATURE PRE-HEAT TREATMENT ON THE ELECTROCHEMICAL ANODIC PERFORMANCES OF BIOMASS-DERIVED HARD CARBONS IN SODIUM ION BATTERIES**

Koji Nakabayashi<sup>1,2</sup>, Yujin Han<sup>1</sup>, Jin Miyawaki<sup>1,2</sup>, Seong-Ho Yoon<sup>1,2</sup>

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**P3-2**

**RATIONAL DESIGN OF 2D MATERIALS@GRAPHENE NANOCABLES: TOWARDS HIGH PERFORMANCE ELECTRODE MATERIALS FOR LITHIUM ION BATTERIES**

Debin Kong<sup>1,2,3</sup>, Haiyong He<sup>2</sup>, Qi Song<sup>2</sup>, Bin Wang<sup>2</sup>, Wei Lv<sup>1,3</sup>, Quan-Hong Yang<sup>1,3</sup> and Linjie Zhi<sup>1,2,3</sup>

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**P3-3**

**HIGHLY CONDUCTIVE AND POROUS CARBON AEROGELS FROM NANOCELLULOSE AS SUSTAINABLE ELECTRODES FOR SUPERCAPACITORS**

Volodymyr Kuzmenko<sup>1,2</sup>, Mazharul Haque<sup>1</sup>, Athanasios Mantas<sup>3</sup>, Per Lundgren<sup>1</sup>, Paul Gatenholm<sup>2,3</sup> and Peter Enoksson<sup>1,2</sup>

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**P3-4**

**CARBON NANOFIBERS-SUPPORTED B<sub>2</sub>O<sub>3</sub>-SnO<sub>x</sub> GLASSES AS ANODE MATERIALS FOR HIGH-PERFORMANCE LITHIUM-ION BATTERIES**

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### **P3-5**

#### **FORMATION REACTIONS AT THE SOLID-ELECTROLYTE INTERFACE OF GRAPHITE ANODES FROM REACTIVE MOLECULAR DYNAMICS**

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### **P3-6**

#### **MONOLITHIC TRACK ETCHED CARBON THIN FILMS FOR SUPERCAPACITORS**

Zoran Laušević<sup>1</sup>, Dragana Žugić<sup>1</sup>, Petar Laušević<sup>1,2</sup>, Yuri Kochnev<sup>3</sup> and Pavel Apel<sup>3</sup>

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### **P3-7**

#### **IMPEDANCE STUDY AND MODELING OF KAPTON-DERIVED THIN FILM SUPERCAPACITORS**

Petar Laušević<sup>1,2</sup>, Vladimir Nikolić<sup>2</sup>, Milica Marčeta Kaninski<sup>2</sup>, Zoran Laušević<sup>2</sup> and Predrag Pejović<sup>1</sup>

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### **P3-8**

#### **NITROGEN-DOPED CARBON MATERIALS AS ELECTROCATALYSTS FOR THE OXYGEN REDUCTION REACTION**

M.J. Nieto-Monge<sup>1</sup>, G. Lemes<sup>1</sup>, A. Borrero<sup>1</sup>, C. Alegre<sup>2</sup>, R. Moliner<sup>1</sup>, M.V. Martínez- Huerta<sup>3</sup>, M.C. Goya<sup>4</sup>, E. Pastor<sup>4</sup> and M.J. Lázaro<sup>1</sup>

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### **P3-9**

#### **ELECTRICAL CONDUCTIVITY OF NANOSTRUCTURED CARBON MATERIALS: INFLUENCE OF THE PHYSICOCHEMICAL PROPERTIES**

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### **P3-10**

#### **PREPARATION AND CHARACTERIZATION OF CARBON COMPOSITE HYBRID CATALYSTS FOR FUEL CELLS**

Seon Ho Lee<sup>1,2</sup>, Gu-gon Park<sup>2</sup>, Dong-Hyun Peck<sup>2,3</sup>, Sang-kyung Kim<sup>2,3</sup>, Byung-rok Lee<sup>2</sup>, Yong Gun Shul<sup>1</sup> and Doo-Hwan Jung<sup>2,3</sup>

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**P3-11**

**PREPARATION OF MICROPOROUS CARBON NANOFIBER FABRICS VIA ONE-STEP POLYMERIZATION ELECTROSPINNING AS FREE-STANDING ELECTRODES FOR HIGH PERFORMANCE SUPERCAPACITORS**

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**P3-12**

**EFFECT OF HYDROGEN AND OTHER SURFACE CHEMISTRY TREATMENTS ON CARBON-BASED MATERIALS**

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**P3-13**

**HIGH PERFORMANCE ASYMMETRIC SUPERCAPACITOR BASED ON MoS<sub>2</sub>/GF AND ACTIVATED CARBON**

Tshifhiwa M. Masikhwa, Julien K. Dangbegnon, Abdulhakeem Bello, Moshawe J. Madito, Damilola Momodu and Ncholu Manyala

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**P3-14**

**PREPARATION AND CHARACTERIZATION OF THREE-DIMENSIONAL NANOPOROUS CARBON FROM EXPANDED GRAPHITE FOR HIGH ENERGY DENSITY SUPERCAPACITOR IN AQUEOUS ELECTROLYTE**

N. Manyala, F. Barzegar, A. Bello, D. Y. Momodu, M. J. Madito and J. K. Dangbegnon

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**P3-15**

**SYNTHESIS OF HIGH SURFACE AREA GRAPHENE AEROGELS FOR LITHIUM ION SUPERCAPACITOR CATHODES**

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**P3-16**

**CARBON XEROGELS AS ACTIVE MATERIAL IN ELECTROCHEMICAL DEVICES**

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### **P3-17**

#### **A STUDY OF QUASI-METALLIC LITHIUM/SODIUM CLUSTER IN NEGATIVE ELECTRODE MATERIALS FOR SECONDARY BATTERY USING SOLID STATE NMR AND DFT CALCULATION**

Ryohei Morita<sup>1</sup>, Kazuma Gotoh<sup>1,2</sup>, Mika Fukunishi<sup>3</sup>, Mouad Dahbi<sup>2,3</sup>, Kei Kubota<sup>2,3</sup>, Shinichi Komaba<sup>2,3</sup>, Naoto Nishimura<sup>4</sup>, Takashi Yumura<sup>4</sup>, Kenzo Deguchi<sup>5</sup>, Shinobu Ohki<sup>5</sup>, Tadashi Shimizu<sup>5</sup>, and Hiroyuki Ishida<sup>1</sup>

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### **P3-18**

#### **IMPROVEMENT OF THE ELECTROCHEMICAL PERFORMANCE OF A SUPERPOROUS ACTIVATED CARBON BY N-FUNCTIONALIZATION AT MILD CONDITIONS**

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### **P3-19**

#### **DEVELOPMENT OF HIGH PERFORMANCE NANOCARBON COMPOSITES BY USING AGRICULTURAL PRODUCTS**

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### **P3-20**

#### **ELECTROCHEMICAL CAPACITOR BASED ON MULTILAYERED FILMS OF POLYANILINE AND REDUCED GRAPHENE OXIDE**

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### **P3-21**

#### **CONDUCTIVITY VERSUS ACTIVE SITES IN METAL-FREE OXYGEN REDUCTION REACTION ELECTROCATALYSIS**

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**P3-22**

**MODELING ELECTRICAL DOUBLE LAYER AND PSEUDOCAPACITIVE PERFORMANCE OF CARBON ELECTRODES**

Ramakrishnan Rajagopalan<sup>1,2</sup>, Danhao Ma<sup>3</sup>, Chih-Chuan Chou<sup>4</sup> and Clive Randall<sup>2,4</sup>

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**P3-23**

**EVIDENCES OF THE ELECTROACTIVITY OF SURFACE PHOSPHORUS GROUPS ON CARBON MATERIALS**

Ramiro Ruiz-Rosas<sup>1</sup>, Raúl Berenguer<sup>2</sup>, José Rodríguez-Mirasol<sup>3</sup>, Tomás Cordero<sup>3</sup>, Emilia Morallón<sup>2</sup>, and Diego Cazorla-Amorós<sup>1</sup>

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**P3-24**

**EFFECT OF INTERNAL NANOSTRUCTURE ON THE PERFORMANCE OF FRACTAL-LIKE CARBON NANOPARTICLES FOR HIGH RATE LITHIUM ION BATTERY ANODE MATERIAL**

Anton D. Sediako<sup>1</sup>, Sanam Atashin<sup>2</sup>, Mohammad Reza Kholghy<sup>1</sup>, Amr Helmy<sup>1</sup>, John Wen<sup>2</sup>, Murray J. Thomson<sup>1</sup>

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**P3-25**

**BIOMASS-DERIVED ELECTRODE MATERIAL FOR CAPACITIVE DEIONIZATION OF BRACKISH WATER**

Arupananda Sengupta<sup>1,2</sup>, Ramakrishnan Rajagopalan<sup>3,5</sup>, Khanjan Mehta<sup>4</sup>, Kofi Adu<sup>6</sup> and Randy L. Vander Wal<sup>1,2</sup>

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**S5: Electrochemical Carbons - Poster Session 3**

**P4-1**

**ELABORATION OF CARBON NANOTUBES-BASED NANOCOMPOSITES AS BINDER-FREE ELECTRODES FOR ELECTROCHEMICAL CAPACITORS**

Ricardo M. Silva<sup>1</sup>, Nicola Pinna<sup>2</sup>, Rui F. Silva<sup>1</sup>

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**P4-2**

**EFFECTS OF NITROGEN- AND OXYGEN-CONTAINING FUNCTIONAL GROUPS OF ELECTROSPUN CARBON NANOFIBERS ON THE ELECTROCHEMICAL PERFORMANCE IN SUPERCAPACITORS**

Xiaodong Tian<sup>1,2</sup>, Kai Wang<sup>1,2</sup>, Xiao Li<sup>1,2</sup>, Tao Yang<sup>1,2</sup>, Yan Song<sup>1</sup>, Quanguo Guo<sup>1</sup>, Lang Liu<sup>1</sup>

<sup>1</sup>Key Laboratory of Carbon Materials, Institution of Coal Chemistry, Chinese Academy of Sciences, Taiyuan 030001, China

<sup>2</sup>University of Chinese Academy of Sciences, Beijing 100049, China.

**P4-3**

**NICKEL COBALT SULPHIDES ON CARBON MICROTUBES (CMTs /Ni<sub>x</sub>Co<sub>y</sub>S) COMPOSITES FOR HIGH-PERFORMANCE SUPERCAPACITORS**

Kai Wang<sup>1,2</sup>, Rui Yan<sup>1,2</sup>, Xiaodong Tian<sup>1,2</sup>, Xiao Li<sup>1,2</sup>, Yan Song<sup>1</sup>, Quanguo Guo<sup>1</sup>, Lang Liu<sup>1</sup>

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**P4-4**

**BINDER-FREE N-FUNCTIONALIZED HYDROTHERMAL CARBON-BASED DISC ELECTRODE MATERIALS USING UROTROPINE AND GLUCOSE AS PRECURSOR**

Jan Willem Straten<sup>1</sup>, Sylvia Becker<sup>1</sup>, Saskia Buller<sup>1</sup>, and Robert Schlögl<sup>1,2</sup>

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**P4-5**

**EFFECTS OF SUBSTRATE MATERIALS ON ELECTROCHEMICAL PROPERTIES OF PANI FILMS SYNTHESIZED BY ELECTROPOLYMERIZATION**

Yanhong Tian, Chen Li, Honglei Dai, and Xuejun Zhang

Key Laboratory of Carbon Fiber and Functional Polymers, Beijing University of Chemical Technology, Beijing 100029, PR China.

**P4-6**

**ULTRASOUND-ASSISTED PREPARATION OF ELECTROSPUN CARBON FIBER/GRAPHENE ELECTRODES FOR CAPACITIVE DEIONIZATION: IMPORTANCE AND UNIQUE ROLE OF ELECTRICAL CONDUCTIVITY**

Gang Wang, Qiang Dong, Jieshan Qiu

State Key Lab of Fine Chemicals, Liaoning Key Lab for Energy Materials and Chemical Engineering, PSU-DUT Joint Center for Energy Research, Dalian University of Technology, Dalian 116024, China.

**P4-7**

**LAYERED CARBIDE-DERIVED CARBON WITH HIERARCHICALLY POROUS STRUCTURE FOR HIGH-RATE LITHIUM-SULFUR BATTERIES**

Yanju Wei<sup>1</sup>, Yingqing Tao<sup>1</sup>, Chuanfang Zhang<sup>2</sup>, Jitong Wang<sup>1</sup>, Wenming Qiao<sup>1</sup>, Licheng Ling<sup>1</sup> and Donghui Long<sup>1</sup>

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**P4-8**

**THE EFFECT OF MELAMINE-MODIFIED CARBON FELT ANODE IN MICROBIAL FUEL CELLS**

Yang'en Xie, Zhaokun Ma, Huaihe Song

State Key Laboratory of Chemical Resource Engineering, Beijing Key Laboratory of Electrochemical Process and Technology for Materials, Beijing University of Chemical Technology, Beijing 100029, PR China.

**P4-9**

**FLEXIBLE HIERARCHICAL POROUS CARBON ELECTRODES FOR HIGH-PERFORMANCE SUPERCAPACITORS**

Haoran Wang and Bin Xu

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**P4-10**

**HIERARCHICAL POROUS CARBON MATERIALS WITH HIGH SURFACE AREA FOR SUPERCAPACITORS**

Shukai Yu, Bin Xu

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**P4-11**

**SODIUM ION STORAGE IN BIOMASS-DERIVED CARBONS**

Ning Sun, Huan Liu, Bin Xu

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**P4-12**

**CHEMICAL ACTIVATION OF BIOMASS-DERIVED CARBON FOR ELECTROCHEMICAL ENERGY STORAGE SYSTEM**

Seunghyun Yoo<sup>1</sup>, Junyeong Park<sup>1</sup>, Wei Gao<sup>2</sup>, Stephen Kelley<sup>1</sup>, and Sunkyu Park<sup>1</sup>

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**P4-13**

**FABRICATION OF HOLLOW CARBON SPHERE CONTAINING ACTIVE MATERIALS VIA ELECTROSPRAYING**

Jihyun Yoon<sup>1</sup>, Ho-Sung Yang<sup>1</sup>, Byoung-Sun Lee<sup>2</sup>, Woong-Ryeol Yu<sup>1</sup>

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**P4-14**

**POLYDOPAMINE-DERIVED NITROGEN-DOPED CARBON TUBES FOR HIGH-PERFORMANCE ELECTROCHEMICAL ENERGY STORAGE**

Yunhua Yu, Yuan Liu, Jinle Lan, Seung-Kon Ryu<sup>2</sup>, and Xiao Ping Yang<sup>1</sup>

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**P4-15**

**THE KEY PRE-PYROLYSIS IN LIGNIN-BASED ACTIVATED CARBON PREPARATION FOR HIGH-PERFORMANCE SUPERCAPACITATIONS**

Baojun Yu<sup>1,2</sup>, Zhenzhen Chang<sup>1,2</sup>, Chengyang Wang<sup>1,2</sup>

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**P4-16**

**FABRICATION AND CAPACITANCE OF POROUS CARBON-POLYANILINE HYBRID MATERIALS VIA INTERFACIAL COVALENT BONDING**

Jiangtao Cai<sup>1</sup>, Shiqi Fu<sup>1</sup>, Yating Zhang<sup>1</sup>, Jieshan Qiu<sup>2</sup>, Anning Zhou<sup>1</sup>

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**P4-17**

**GAS-INJECTED CONTROLLABLE FABRICATION OF GRAPHENE/S COMPOSITES FOR HIGH-PERFORMANCE Li-S BATTERIES**

Si-Da Wu<sup>1,2</sup>, Chen Zhang<sup>1,3</sup>, and Quan-Hong Yang<sup>1,2</sup>

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<sup>3</sup>Tianjin Air Pollution Control Laboratory, Tianjin Academy of Environmental Sciences, Tianjin 300191, China.

**P4-18**

**SYNTHESIS OF CARBON/SULFUR NANOLAMINATES BY ELECTROCHEMICAL EXTRACTION OF TITANIUM FROM Ti<sub>2</sub>SC AND OTHER "AX" STRUCTURES**

Meng-Qiang Zhao, Maria R. Lukatskaya, Michael Ghidui, Boris Dyatkin, Darin J. Tallman, Katherine Van Aken, Michel W. Barsoum, Yury Gogotsi

Department of Materials Science and Engineering and A.J. Drexel Nanomaterials Institute, Drexel University, Philadelphia, PA 19104, USA.

**P4-19**

**FACILE PREPARATION OF CARBON-ENCAPSULATED MnS CORE/SHELL NANOSTRUCTURES TOWARDS HIGH-PERFORMANCE LITHIUM-ION STORAGE**

Jinyu Ning<sup>1</sup>, Jisheng Zhou<sup>1,2</sup>, Huaihe Song<sup>1,2</sup> and Xiaohong Chen<sup>1</sup>

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**P4-20**

**N-DOPED POROUS CARBON DERIVED FROM COPPER-BASED METAL ORGANIC FRAMEWORK AS ANODE MATERIALS FOR LITHIUM-ION BATTERIES**

Sitong Liu<sup>1</sup>, Kunhong Liu<sup>2</sup>, Ling Lan<sup>2</sup>, Yana Ju<sup>2</sup>, Weijun Hu<sup>3</sup>, Chunshui Li<sup>3</sup>, Huaihe Song<sup>1</sup>, Xiaohong Chen<sup>1</sup> and Jisheng Zhou<sup>1</sup>

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## **S6: Fibers and Composites - 1**

(J Norley, presiding)

### **01-1**

#### **MODIFICATION OF FCC-DO FOR FEASIBLE PROCESSES OF MESOPHASE PITCH BASED CARBON FIBERS**

Dong Hun Lee<sup>1</sup>, Kap Seung Yang<sup>1,2</sup>, Young Se Oh<sup>3</sup>

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### **01-2**

#### **SUPERCRITICAL FRACTIONATION OF PYRENE OLIGOMERS FOR ENHANCED MATERIALS PROPERTIES**

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### **01-3**

#### **NEW PROCESSES FOR THE PRODUCTION OF ISOTROPIC AND MESOPHASE PITCH**

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## **S6: Fibers and Composites - 2**

(W Hoffman, presiding)

### **02-1**

#### **INVESTIGATION OF THE EFFECTS OF HIGH TEMPERATURES OF SHORT DURATION ON MICROSTRUCTURE AND PROPERTIES OF PAN-BASED CARBON FIBERS AND DRY CARBON YARNS**

Brian J. Sullivan<sup>1</sup>, Kerry D. Howren<sup>1</sup>, Chanse Appling<sup>2</sup>, Jacques Cuneo<sup>2</sup>, John Koenig<sup>2</sup>, and David Anderson<sup>3</sup>

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<sup>2</sup>*Southern Research Institute, Birmingham, AL, USA*

<sup>3</sup>*University of Dayton Research Institute, Dayton, OH, USA.*

### **02-2**

#### **SHORTENING THE THERMAL STABILIZATION OF POLYACRYLONITRILE-BASED CARBON FIBERS: ROLE OF ELECTRON BEAM IRRADIATION PRIOR TO THERMAL STABILIZATION**

Seung Hwa Yoo, Sejoon Park, Ha Ri Kang, Seong Mu Jo, Han-Ik Joh, Sungho Lee

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### **02-3**

#### **CHEMICAL REACTIONS OF ATACTIC-POLYACRYLONITRILE STABILIZATION**

Toshikazu Miyoshi<sup>1</sup>, Xiaoran Liu<sup>1</sup>, Youlee Hong<sup>2</sup>, and Yusuke Nishiyama<sup>2</sup>

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**02-4**

**MAPPING THE MECHANICAL PROPERTIES OF CARBON FIBER COMPOSITE BY ADVANCED NANOINDENTATION TECHNIQUE**

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**S6: Fibers and Composites - 3**

(A Ogale, presiding)

**03-1**

**PAN PRECURSOR DRAW AND STRAIN RATE DURING SPINNING: QUANTITATIVE EFFECTS ON MECHANICAL PROPERTIES AND ORIENTATION OF RESULTANT CARBON FIBER**

Sarah Edrington, E. Ashley Morris, Nik Hochstrasser, Matthew C. Weisenberger, and Jason Stewart

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**03-2**

**ENHANCED STABILIZATION OF POLYACRYLONITRILE BASED CARBON FIBRE WITH IONIC LIQUIDS**

Maxime Maghe<sup>1</sup>, Claudia Creighton<sup>1</sup>, Luke Henderson<sup>1</sup>, Mickey Huson<sup>2</sup>, Nolene Byrne<sup>3</sup> and Bronwyn Fox<sup>4</sup>

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**03-3**

**FIRST OBSERVATION OF ELECTRICAL-RESISANCE-BASED DAMAGE SELF-SENSING AND VISCOELASTIC BEHAVIOR OF CARBON FIBER TOWS**

Miguel Ramirez<sup>1,2</sup> and D.D.L. Chung<sup>1</sup>

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**03-4**

**APPLICATION OF DRAWING PROFILES DURING STABILIZATION FOR IMPROVED CARBON FIBRE STRENGTH**

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**S6: Fibers and Composites - 4**

(M Thies, presiding)

**04-1**

**LOW-COST, RENEWABLY SOURCED LIGNIN-BASED CARBON FIBERS FOR HIGH-TEMPERATURE APPLICATIONS**

Ryan M. Paul, Xuliang Dai, Shadab Shaikh, Deanna Burwell, and Andrew Hausner

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**04-2**

**CARBON FIBERS DERIVED FROM LIGNIN-PAN POLYMER BLEND PRECURSOR**

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### **04-3**

#### **TUNABLE FABRICATION OF CARBON NANOFIBERS BASED ON THE ELECTROSPINNING OF BIOWASTE LIGNIN AND RECYCLED PET**

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### **S6: Fibers and Composites - 5**

(A Naskar, presiding)

#### **05-1**

#### **HIGH STRENGTH CARBON NANOTUBE COMPOSITE YARNS BY INFILTRATION OF DICYCLOPENTADIENE POLYMER FORMULATION**

Igor De Rosa<sup>1</sup>, Wenbo Xin<sup>2</sup>, Larry Carlson<sup>1</sup>

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*University of California Los Angeles, 420 Westwood Plaza, Los Angeles 90095, USA.*

#### **05-2**

#### **SCALING UP THE FABRICATION OF MECHANICALLY ROBUST CARBON NANOFIBER FOAMS**

Jonathan Phillips<sup>1</sup>, William Curtin<sup>2</sup>, Pedro Arias Monje<sup>2</sup>, Chariean Dominguez<sup>2</sup>, and Claudia C. Luhrs<sup>2</sup>

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#### **05-3**

#### **MECHANICAL PROPERTIES OF CARBON/CARBON COMPOSITES REINFORCED BY CARBON NANOTUBES WITH DIFFERENT EXTENDING LENGTHS**

Lei Feng, Ke-zhi Li, He-jun Li, Qiang Song, Lei-Lei Zhang, Jin-hua Lu

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### **S6: Fibers and Composites - 6**

(W Lu, presiding)

#### **06-1**

#### **CONTINUOUS CARBON FIBER POLYMER-MATRIX COMPOSITES IN UNPRECEDENTED ANTIFERROELECTRIC COUPLING AND PROVIDING HIGH THROUGH-THICKNESS ELECTRIC PERMITTIVITY UP TO 78,000**

Yoshihiro Takizawa<sup>1,2</sup>, and D.D.L. Chung<sup>1</sup>

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#### **06-2**

#### **IMPACT OF NITROGEN DOPING OF CARBON NANOTUBE ON DIELECTRIC PROPERTIES OF CARBON NANOTUBE/POLYMER NANOCOMPOSITES**

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### **06-3**

#### **GRAPHITE NANOPATELET-BASED EPOXY COMPOSITES AS ADHESIVES AND PADS FOR THERMAL INTERFACE APPLICATIONS**

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### **06-4**

#### **GRAPHENE AS A NEW CLASS OF POTENTIAL NANOFILLER FOR ELASTOMERIC NANOCOMPOSITES**

Anil K. Bhowmick<sup>1</sup>, Titash Mondal<sup>1</sup>, Ranjan Ghosal<sup>2</sup>, and Rabindra Mukhopadhyay<sup>3</sup>

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### **S6: Fibers and Composites - 7**

(N Gallego, presiding)

### **07-1**

#### **THE EFFECT OF STRUCTURE OF THERMALLY REDUCED GRAPHENE OXIDE ON THE PROPERTIES OF EPOXY RESIN-BASED COMPOSITES**

Rubén Sánchez-Hidalgo<sup>1</sup>, Silvia Rubiera<sup>2</sup>, Clara Blanco<sup>1</sup>, Ricardo Santamaría<sup>1</sup>, Antonio Argüelles<sup>2</sup>, Jaime Viña<sup>2</sup>, Raquel Verdejo<sup>3</sup>, Miguel Ángel López-Manchado<sup>3</sup>, Rosa Menéndez<sup>1</sup>

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### **07-2**

#### **C<sub>x</sub>N<sub>y</sub>-MATERIALS FROM SUPRAMOLECULAR PRECURSORS FOR “ALL-CARBON” COMPOSITE MATERIALS**

Thomas Jordan, Markus Antonietti, Menny Shalom, and Nina Fechler

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### **07-3**

#### **FIRST REPORT OF FUMED ALUMINA INCORPORATION IN CARBON-CARBON COMPOSITE AND THE CONSEQUENT IMPROVEMENT OF THE OXIDATION RESISTANCE AND MECHANICAL PROPERTIES**

Andi Wang and D.D.L. Chung

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### **07-4**

#### **INCORPORATION OF NANODIAMOND INTO A EPOXY POLYMER NETWORK: HIGH THERMAL CONDUCTIVITY FOR ELECTRICAL INSULATING PROPERTIES**

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## **S6: Fibers and Composites - 8**

(W Frohs, presiding)

### **08-1**

#### **OPTIMISING SURFACE FUNCTIONALISATION OF CARBON FIBRE TO ENHANCE INTERFACIAL ADHESION**

Kathleen Beggs<sup>1</sup>, Daniel Gunzelmann<sup>1</sup>, Luke O'Dell<sup>1</sup>, Jennifer M. Pringle<sup>1</sup>, Cristina Pozo Gonzalo<sup>1</sup>, Thomas Gengenbach<sup>2</sup>, Linden Servinis<sup>1</sup>, Magenta D. Perus<sup>1</sup>, Bronwyn Fox<sup>3</sup> and Luke Henderson<sup>1</sup>

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### **08-2**

#### **EFFECT OF ATOMIC OXYGEN ON THE PERFORMANCE OF C/C–SiC–ZrC COMPOSITES: THE ROLE OF EXPOSURE TIME**

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### **08-3**

(tbd)

## **S6: Fibers and Composites - 9**

(C A León y León, presiding)

### **09-1**

#### **DEVELOPMENT OF TEST DEVICE OF THERMAL EXPANSION OF CARBON FIBER**

Norio Iwashita, Hiromichi Watanabe, and Naofumi Yamada

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### **09-2**

#### **AMPACITY AND ELECTRICAL CONDUCTIVITY OF A COPPER CARBON NANOTUBE COMPOSITE AT ROOM AND ELEVATED TEMPERATURES**

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### **09-3**

#### **Ni-Mg/MWCNT AND Ni-Ca/MWCNT FROM THE CONTROLLED DRY METHANE REFORMING ON ACTIVATED CARBON-SUPPORTED Ni-BASED CATALYSTS**

Juan Matos<sup>1</sup>, José R. Rangel-Méndez<sup>2</sup>, and Javier A. Arcibar-Orozco<sup>2,3</sup>

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## **S6: Fibers and Composites - Poster Session 1**

**P2-52**

### **SYNTHESIS OF CARBON-CONTAINING COMPOSITES BY COMBUSTION**

Roza Abdulkarimova, Zulkhair Mansurov

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**P2-53**

### **TEST DESIGN AND RESULTS OF INVESTIGATION OF THE EFFECTS OF SHORT DURATION HEAT TREATMENT OF PAN-BASED CARBON FIBERS AND DRY CARBON YARNS**

Chanse Appling<sup>1</sup>, Jacques Cuneo<sup>1</sup>, John Koenig<sup>1</sup>, Brian Sullivan<sup>2</sup>, and Kerry D. Howren<sup>2</sup>

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**P2-54**

### **EFFECT OF SYNTHESIS TEMPERATURE ON ELECTRICAL CONDUCTIVITY AND ELECTROMAGNETIC INTERFERENCE SHIELDING OF CARBON NANOTUBE/POLYMER NANOCOMPOSITES**

Seyyed Alireza Mirkhani, Mohammad Arjmand, Uttandaraman Sundararaj

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**P2-55**

### **TYPE AND AMOUNT OF FUNCTIONAL GROUPS IN THE MWCNTs AFFECTS THERMAL CONVERSION OF PAN NANOFIBERS INTO CARBON NANOFIBERS**

Aleksandra Benko, Ewa Stodolak-Zych, Marek Nocuń, Marta Błażewicz

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**P2-56**

### **EFFECT OF DRAW-DOWN RATIO OF MESOPHASE PITCH FIBERS ON THE PROPERTIES OF CARBON FIBERS**

Victor Bermudez, Sam Lukubira and Amod Ogale

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**P2-57**

### **DIRECT THERMAL DIFFUSIVITY MEASUREMENT ALONG THE AXIAL DIRECTION OF CARBON FIBER USING LASER FLASH: SPECIMEN PREPARATION AND RESULTS**

Jordan Burgess, Matthew Weisenberger, Sarah Edrington, and John Craddock

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**P2-58**

### **THE COMPOSITES OF CARBON FIBER NETWORK REINFORCED EPOXY USING ISOTROPIC PETROLEUM PITCH AS A BINDER**

Lei Chen<sup>1</sup>, Xiaohua Fan<sup>1</sup>, Yun Luo<sup>1,2</sup>, Dan Yang<sup>1</sup>, and Youqing Fei<sup>1,2</sup>

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**P2-59**

### **CARBON NANOTUBE SOLID-PHASE GROWTH ON THE SURFACE OF CARBON FIBERS**

Ming Chen, Zhaokun Ma, Huaihe Song, Yabing Zhang

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**P2-60**

**EFFECT OF K<sub>2</sub>HPO<sub>4</sub>-STEAM CO-ACTIVATION ON THE ADSORPTION AND MECHANICAL PROPERTIES OF ACTIVATED CARBON FIBERS**

Jie Liu, Jianjun Chen, Yan Xue, Jieying Liang, and Xiaoxu Wang

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**P2-61**

**FABRICATION AND CHARACTERIZATION OF CARBON FABRIC/PHENOLIC COMPOSITES FOR WET FRICTION MATERIALS IN AUTOMOBILE INDUSTRY**

Jinsil Cheon<sup>1</sup>, Donghwan Cho<sup>1</sup>, and Min Soo Doo<sup>2</sup>

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**P2-62**

**EFFECT OF FEEDING METHODS IN EXTRUSION PROCESSING ON THE PROPERTIES OF NICKEL-COATED CARBON FIBER/POLYPROPYLENE COMPOSITES**

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**P2-63**

**A REVIEW OF MULTIFUNCTIONAL CARBON FIBER POLYMER-MATRIX STRUCTURAL COMPOSITES**

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**P2-64**

**THE MICRO-STRUCTURAL CHANGES OF DRY-JET WET SPINNING OF PAN FIBERS DURING THE CONTINUOUS STABILIZATION AND CARBONIZATION PROCESS**

Wei Dang, Jie Liu, Jie-ying Liang, Yan Xue, and Xiao-xu Wang

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**P2-65**

**EFFECT OF ELECTRIC FIELD ON NANOFABRICATION OF THE CARBON NANOFIBERS FOR 3D PRINTING**

Ch. Daulbayev<sup>1</sup>, Timur Dmitriyev<sup>1</sup>, Erkhan Aliev<sup>1</sup>, Zulkhair Mansurov<sup>1</sup>, Anvar Zakhidov<sup>2</sup>

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**P2-66**

**HIGH STRENGTH CARBON NANOTUBE COMPOSITE YARNS BY INFILTRATION OF DICYCLOPENTADIENE POLYMER FORMULATION**

Igor De Rosa<sup>1</sup>, Wenbo Xin<sup>2</sup>, Larry Carlson<sup>1</sup>

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**P2-67**

**CARBON FIBER/COPPER MESH REINFORCED CARBON COMPOSITES FOR PANTOGRAPH SLIDING MATERIAL**

Chaoyong Deng, Hongbo Zhang, Jian Yin, Xiang Xiong, Pei Wang, Xian Leng

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**P2-68**

**EFFECT OF GRAPHENE OR COILED CARBON NANOFIBERS ON REINFORCEMENT OF NATURE RUBBER**

Qingshan Fu<sup>1,2</sup>, Jian Chen<sup>1,2</sup>, Yongzhong Jin<sup>1,2</sup>, Jinyu Zhang<sup>1,2</sup>, and Linying Zhu<sup>1,2</sup>

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**P2-69**

**EFFECT OF HYBRIDIZATION OF CARBON BLACK AND CARBON NANOTUBE ON THE PERFORMANCE OF CONDUCTIVE COMPOUND**

Yoko Horikoshi, Tatsuya Nagai, Hitoshi Kaneko, and Hiroshi Yokota

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**P2-70**

**EFFECT OF DRAW RATIO ON THE STRUCTURE AND THE THERMOCHEMICAL PROPERTIES OF ELECTROSPUN POLYACRYLONITRILE NANOFIBERS**

Jie Liu, Ruoyu Huang, Jieying Liang, Yan Xue, and Xiaoxu Wang

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**P2-71**

**THE EFFECT OF CYCLIZATION REACTION ON THE MECHANICAL PROPERTY OF PAN-BASED CARBON FIBERS**

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**P2-72**

**RELATION AMONG COMPOSITION, CRYSTALLINITY AND SPECIFIC RESISTANCE OF B/C/N MATERIALS**

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**P2-73**

**SYNTHESIS OF NANOFIBROUS C/C-COMPOSITE USING UREA-TREATED OXIDIZED CARBON DERIVED VIA K<sub>2</sub>CO<sub>3</sub> ACTIVATION OF LIGNOCELLULOSE**

J.M. Jandosov<sup>1,3</sup>, S.V. Mikhailovsky<sup>2,4</sup>, D.I. Chenchik<sup>1</sup>, Z.A. Mansurov<sup>1,3</sup>, C.A. Howell<sup>4</sup>, N.R. Guseinov<sup>3</sup>, S. Ray<sup>4</sup>, A.Z. Baimenov<sup>2</sup>, B.K. Kosher<sup>1,3</sup>, A.I. Merkel<sup>2</sup>

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**P2-74**

**THE EFFECT OF BLOCKED ISOCYANATE EMULSION SIZING AGENT ON THE SHEAR STRENGTH OF CARBON FIBER REINFORCED THERMOPLASTIC POLYETHERSULFONE COMPOSITES**

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**P2-75**

**PREPARATION OF CARBON/CARBON COMPOSITE USING THE STABILIZED PREFORMS AND ITS CHARACTERISTICS**

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**P2-76**

**ELECTRICAL CONDUCTIVITY OF THE PETROLEUM MESOPHASE PITCH-BASED CARBON FIBERS AT VARIOUS SPINNING CONDITIONS**

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**S6: Fibers and Composites - Poster Session 2**

**P3-26**

**ELECTRICAL AND THERMAL PROPERTIES OF A CARBON-BASED HEATER**

Sang Wan Kim<sup>1</sup>, and Kap Seung Yang<sup>1,2</sup>, Young Jun Lee<sup>3</sup>

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**P3-27**

**PREPARATION OF PITCH-BASED CARBON FIBER WITH THERMAL TREATMENT CONDITIONS**

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**P3-28**

**FABRICATION AND EVALUATION OF SINGLE-WALLED CARBON NANOTUBE/EPOXY PREPREGS AND THEIR COMPOSITES**

Min-Ye Koo<sup>1,2</sup>, Sang-Won Lee<sup>1</sup>, Hon-Chung Shin<sup>1</sup>, Gyowoo Lee<sup>2</sup> and Won-Seok Kim<sup>1</sup>

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**P3-29**

**MECHANICAL AND ELECTRICAL PROPERTIES OF EPOXY COMPOSITES CONTAINING TREATED CARBON NANOTUBES BY OXYFLUORINATION**

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**P3-30**

**EFFECT OF FLUORINATION ON MECHANICAL PROPERTIES OF CARBON NANOTUBES AND GRAPHENE NANOPATELETS REINFORCED EPOXY COMPOSITES**

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**P3-31**

**CARBON NANOFIBER PREPARED FROM FLUORINATED ELECTROSPUN CELLULOSE ACETATE**

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**P3-32**

**CARBON BLACK ADDED CARBON FOAMS WITH HIGH COMPRESSIVE STRENGTH**

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**P3-33**

**THE CHARACTERISTICS OF MESOPHASE PITCH-BASED GRAPHITE FOAMS FABRICATED USING PVA-AAC AS A TEMPLATE**

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**P3-34**

**MANUFACTURE OF PURE CARBON NANOTUBE NANOFIBERS USING ELECTROSPINNING AND THEIR ELECTRICAL CONDUCTIVITY**

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**P3-35**

**EFFECT OF MWCNT-GRAPHITE COMPOSITES ON ELECTROMAGNETIC FIELD SHIELDING AT EXTREMELY LOW FREQUENCY (ELF)**

Seong-Moon Oh, Dong-Su Kang, Sang-Min Lee, Won-Pyo Jang and Jae-Seung Roh

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**P3-36**

**EFFECT OF PAN-BASED CARBON FIBER LENGTH AFTER OXIDATION ON CRYSTALLITE SIZE CHANGES**

Seong-Moon Oh, Dong-Su Kang, Sang-Min Lee, Sang-Hye Lee, and Jae-Seung Roh

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**P3-37**

**EFFECTS OF TEMPERATURE IN THE MIDDLE AND THE LAST ZONES OF OXIDATIVE STABILIZATION ON THE MECHANICAL PROPERTIES OF CARBON FIBERS**

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**P3-38**

**HIGH FLUX GRAPHENE OXIDE MEMBRANE: THE ROLE OF SURFACTANT**

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**P3-39**

**INFLUENCE OF “SIZE EFFECT” ON THE OXIDATIVE STABILIZATION PROCESS AND THE TENSILE STRENGTH OF PAN-BASED CARBON FIBERS**

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**P3-40**

**ELUCIDATION OF CHEMICAL STRUCTURES OF ATACTIC-POLYACRYLONITRILE STABILIZED AS A FUNCTION OF STABILIZATION TIME BY SOLID-STATE NMR**

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**P3-41**

**NITROGEN-DOPED CARBON THREE-DIMENSIONAL STRUCTURES: SYNTHESIS, CHARACTERIZATION AND MAGNETIC PROPERTIES**

Emilio Muñoz-Sandoval, Alejandro Cortes-López, Beatriz Flores-Gómez, Juan Antonio Esparza-Barraza, Roque Sánchez-Salas, Florentino López-Urías

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**P3-42**

**OXYGEN DIFFUSION AND RADIAL-STRUCTURE TRANSFORMATION OF ELECTROSPUN POLYACRYLONITRILE COPOLYMER NANOFIBERS DURING OXIDATIVE STABILIZATION PROCESS**

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**P3-43**

**PLASMA-BASED CARBONIZATION OF PAN FIBRES WITH SCALABLE LINEAR MICROWAVE PLASMA SOURCE**

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**P3-44**

**RECYCLING OF CARBON FIBRE COMPOSITES**

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**P3-45**

**EFFECT OF CARBON NANOTUBES ON THE ELECTRIC HEATING PERFORMANCE OF PERFLUOROALKOXY COMPOSITE FILMS**

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**P3-46**

**SYNTHESIS OF A GRAPHENE/MOF COMPOSITE MATERIAL FOR IMPROVED HYDROGEN STORAGE PROPERTIES**

Nicholas M. Musyoka<sup>1</sup>, Jianwei Ren<sup>1</sup>, Henrietta W. Langmi<sup>1</sup>, Brian C. North<sup>1</sup>, Mkhulu Mathe<sup>1</sup>, Dmitri Bessarabov<sup>2</sup>

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**P3-47**

**PREPARATION AND PERFORMANCE OF GRAPHENE/POLYIMIDE COMPOSITE CARBON FIBER**

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**P3-48**

**CHOPPED CARBON FIBER-REINFORCED PARTIALLY RENEWABLE THERMOPLASTIC COMPOSITES FOR AUTOMOTIVE APPLICATIONS**

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**P3-49**

**INFLUENCE OF AIR FLOW CONDITIONS ON THE EVOLUTION OF RADIAL HETEROGENEITY IN THERMAL STABILIZATION OF PAN PRECURSOR FIBRES**

Srinivas Nunna<sup>1</sup>, Claudia Creighton<sup>1</sup>, Nishar Hameed<sup>1</sup>, Minoo Naebe<sup>1</sup>, Mohan Setty<sup>1</sup>, Stephen Atkiss<sup>1</sup>, Bronwyn Fox<sup>2</sup>

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**P3-50**

**EXPERIMENTAL OBSERVATION ON FLOW-INDUCED “TUMBLING” STRUCTURE OF MOLTEN MESOPHASE PITCH**

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## **S6: Fibers and Composites - Poster Session 3**

### **P4-21**

#### **GRAPHITE NANOPATELET-LLDPE MICROTTEXTURED FILMS FOR ENHANCED CONVECTIVE AND CONDUCTIVE HEAT TRANSFER**

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### **P4-22**

#### **EFFECT OF PROCESS PARAMETERS ON BIO-PITCH PRODUCTION THROUGH VACUUM DISTILLATION**

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### **P4-23**

#### **MORPHOLOGICAL STUDIES ON LIGNIN-BOUND ANTHRACITE BRIQUETTES**

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### **P4-24**

#### **NOVEL CARBON COATING GENERATED ON TUNGSTEN CARBIDE COATED CARBON/CARBON COMPOSITES DURING OXYACETYLENE ABLATION**

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### **P4-25**

#### **STRUCTURAL PROPERTIES OF CARBON FIBRE PRECURSORS**

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### **P4-26**

#### **INFLUENCE OF TENSION DURING CARBONIZATION ON THE STRUCTURE OF ELECTROSPUN CARBON NANOFIBERS**

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### **P4-27**

#### **QUANTITATIVE EFFECT OF OXIDATIVE DEBRIS REMOVAL FROM GRAPHENE OXIDE ON THE IMPROVEMENT OF EPOXY-CARBON FIBER COMPOSITES**

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### **P4-28**

#### **INNOVATIVE SINGLE-STEP PREPARATION METHOD OF Pt SUPPORTED CARBON FIBERS ELECTRODES FROM LIGNIN BY ELECTROSPINNING**

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**P4-29**

**RAPID PRODUCTION OF HIGH-VALUE SUBMICRON-DIAMETER CARBON FIBERS BY ELECTROSPINNING OF LIGNIN**

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**P4-30**

**CHARACTERIZATION OF CARBON FIBER EMBEDDED IN POLYMER MATRIX USING NANOINDENTATION TECHNIQUES**

Laurence Romana<sup>1</sup>, Georges Minatchy<sup>1</sup>, Patrick Jean-Baptiste<sup>1</sup>, Michel Beraud<sup>2</sup> and Anny Flory<sup>3</sup>

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**P4-31**

**DEVELOPMENT AND PROPERTIES OF C/SiC COMPOSITE FOR PRECISION ANTENNA REFLECTOR**

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**P4-32**

**N-TYPE THERMOELECTRIC PERFORMANCE OF WATER-PROCESSABLE MWCNT/POLY(VINYLPYRROLIDONE) COMPOSITES ENHANCED BY POLY(ETHYLENEIMINE)**

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**P4-33**

**TAILORING THE SEEBECK COEFFICIENT OF SPRAY-COATED PEDOT: PSS FILMS WITH NITROGEN-DOPED MWCNTs**

Ruben Sarabia-Riquelme<sup>1</sup>, Camila Florencia-Gómez<sup>2</sup>, Dali Qian<sup>1</sup>, Ashley Morris<sup>1</sup>, John Craddock<sup>1</sup> and Matthew C. Weisenberger<sup>1</sup>

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**P4-34**

**ENHANCED THERMOELECTRIC PROPERTIES OF PEDOT: PSS/GO SPRAYED COMPOSITE FILMS BY WET-CHEMICAL TREATMENT**

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**P4-35**

**EFFECT OF PRESSURIZED OXIDATIVE STABILIZATION ON THE PREPARATION OF PITCH-BASED CARBON FIBER**

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**P4-36**

**INFLUENCE OF LINEAR-CHAIN CARBON ON THE PROPERTIES OF THE THIN FILM OF CdO**

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**P4-37**

**GRAPHITIZATION BEHAVIOR OF MATRIX CARBONS FOR C/C COMPOSITE BY FILM BOILING METHOD**

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**P4-38**

**EFFECT OF A LIQUID-LIKE CARBON NANOTUBE REINFORCEMENT ON INTERFACIAL AND MECHANICAL PROPERTIES OF CARBON FIBER FILAMENT WOUND COMPOSITES**

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**P4-39**

**OPTO-MECHANIC SWITCHING BASED ON VERTICALLY ALIGNED CARBON NANOTUBES**

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**P4-40**

**PRODUCTION OF CARBON FIBRES, SHEETS AND TUBES ON DIAMOND FILMS UNDER HIGH POWER PLASMA ETCHING CONDITIONS**

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**P4-41**

**DIMENSION CONTROLABLE SYNTHESIS OF GOLD NANOCRYSTALS ON CARBON NANOTUBE ASSEMBLIES AND THEIR MULTI-FUNCTIONAL APPLICATIONS**

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**P4-42**

**STRONG AND FLEXIBLE CERAMIC COMPOSITES WITH HIGH ELECTRICAL CONDUCTIVITY**

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**P4-43**

**EFFECTS OF STRUCTURAL CHANGE DURING STABILIZATION PROCESS ON THE TENSILE STRENGTH OF PAN-BASED CARBON FIBERS**

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**P4-44**

**EFFECT OF GRAPHITIZATION PARAMETERS ON THE PERFORMANCE OF PAN-BASED CARBON FIBERS**

Xuejun Zhang, Zan Han and Yanhong Tian

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**P4-45**

**EFFECTS OF TIME AND POWER OF ULTRASONICATION ON THE SOLVENT REMOVAL OF ELECTROSPUN POLYACRYLONITRILE NANOFIBERS**

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**P4-46**

**ACTIVATED CARBON FIBERS PREPARED FROM OXIDATIVE STABILIZED PAN FIBERS USING STEAM ACTIVATION**

Jie Liu, Peng Miao, Yan Xue, Jie-ying Liang, Xiaoxu Wang

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**P4-47**

**INFLUENCE OF OXYGEN CONTENT ON THE PORE STRUCTURE AND MECHANICAL PROPERTIES OF ACTIVATED PAN CARBON FIBERS**

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**P4-48**

**INFLUENCE OF HYDROPHILIC MODIFICATION ON THE PERFORMANCE OF CARBON FIBER BASED EM BIOFILMS**

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## **S7: Fullerenes, Nanotubes and Other Curved Nanostructures - 1**

(R Andrews, presiding)

### ***O9-1 (Keynote)***

#### **KINETICS OF COLLECTIVE CARBON NANOTUBE NUCLEATION AND DEACTIVATION REVEALED BY *IN SITU* ENVIRONMENTAL TRANSMISSION ELECTRON MICROSCOPY**

Mostafa Bedewy<sup>1,2,†</sup>, Viswanath Balakrishnan<sup>1,††</sup>, Eric R. Meshot<sup>3</sup>, Dmitri N. Zakharov<sup>4</sup>, Eric A. Stach<sup>4</sup> and A. John Hart<sup>1,2</sup>

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### ***O9-2***

#### **HIGH CURRENT PER TUBE IN CARBON NANOTUBE ARRAY FIELD-EFFECT TRANSISTORS**

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### ***O9-3***

#### **TRANSPARENT AND CONDUCTIVE FILM FABRICATION WITH THE Zn/AI COMPLEX-AIDED SWCNT INKS**

Radovan Kukobat<sup>1,2</sup>, Takuya Hayashi<sup>1</sup>, Takafumi Matsuda<sup>3</sup>, Motoo Sunaga<sup>3</sup>, and Katsumi Kaneko<sup>2</sup>

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## **S7: Fullerenes, Nanotubes and Other Curved Nanostructures - 2**

(H Terrones, presiding)

### ***O10-1***

#### **ROBUSTNESS OF CARBON NANOTUBES IN HIGH TEMPERATURE ENERGETICS REACTIONS**

Karen Martirosyan<sup>1</sup>, M.A. Hobosyan<sup>1</sup>, P. Martinez<sup>2</sup>, and A.A. Zakhidov<sup>2</sup>

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### ***O10-2***

#### **HIGHLY EFFICIENT PHOTOLUMINESCENT EUROPIUM-NANOLATEX SYSTEMS ENHANCED BY NITROGEN-DOPED CARBON NANOTUBES**

Cristal Ibañez<sup>1</sup>, Sidicleia Bezerra<sup>2</sup>, Miguel A. Pelagio-Flores<sup>1,2</sup>, Yadira I. Vega-Cantú<sup>2</sup> and André Galembeck<sup>1,2</sup>

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**O10-3**

**ENHANCED ELECTRICAL CONDUCTIVITY IN EXTRUDED SINGLE-WALL CARBON NANOTUBE FIBERS FROM LASER VAPORIZATION SYNTHESIS**

Andrew R. Bucossi<sup>1,2</sup>, Cory D. Cress<sup>3</sup>, Christopher M. Schauerman<sup>2,4</sup>, Jamie E. Rossi<sup>2,5</sup>, Ivan Puchades<sup>2,5</sup>, and Brian J. Landi<sup>2,5</sup>

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**O10-4 (Keynote)**

**CARBON NANOTUBES: FUNDAMENTAL OBSTACLES AND PERSPECTIVES FOR INDUSTRIAL-SCALE APPLICATIONS**

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**S7: Fullerenes, Nanotubes and Other Curved Nanostructures - 3**

(B Pradhan, presiding)

**O11-1 (Keynote)**

**COMPUTATIONAL TOOLS FOR THE ADVANCEMENT OF CARBON-BASED NANOMATERIALS AND BEYOND**

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**O11-2**

**BENZENE DERIVED CARBON NANOTHEADS**

John V. Badding<sup>1,4,5,7</sup>, Xiang Li<sup>1,7</sup>, Thomas Fitzgibbons<sup>1,7</sup>, Malcolm Guthrie<sup>2</sup>, Maria Baldini<sup>3</sup>, Nasim Alem<sup>4,7</sup>, Steven Juhl<sup>1,4,7</sup>, Enshi Xu<sup>5,7</sup>, Tao Wang<sup>5,7</sup>, Roald Hoffmann<sup>6</sup>, Bo Chen<sup>6</sup>, Vincent H. Crespi<sup>1,4,5,7</sup>

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**O11-3**

**CONTROLLED SYNTHESIS OF HIGH-QUALITY SEMICONDUCTING SINGLE-WALL CARBON NANOTUBES**

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**O11-4**

**GROWTH MECHANISM OF HELICALLY STACKED CONE STRUCTURE OF GRAPHENE RIBBON**

Yukie Saito<sup>1</sup>, Masaaki Yoshikawa<sup>2</sup>, Hiroyuki Fujimoto<sup>2</sup>

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**S7: Fullerenes, Nanotubes and Other Curved Nanostructures - 4**

(E Muñoz-Sandoval, presiding)

**O12-1**

**DESIGNING MAGNETIC BUCKYPAPERS TOWARDS ELECTRONICS APPLICATIONS**

Karwei So<sup>1</sup>, Benoit Grosjean<sup>1,2</sup>, Seyyed Shayan Meysami<sup>1</sup>, Vitaly Babenko<sup>1</sup>, Greg Cook<sup>1</sup>, Frank Dillon<sup>1</sup>, Toru Maekawa<sup>3</sup>, Nicole Grobert<sup>1</sup>

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**O12-2**

**PROCESSING OF MULTI-WALLED CARBON NANOTUBES TO ACHIEVE MAGNETIC ADDITIVES FOR POLYMER NANOCOMPOSITES**

Jatin Haibat<sup>1</sup>, Steven Ceneviva<sup>1</sup>, Frances Kwok<sup>2</sup>, Simin Feng<sup>3</sup>, Mychal Spencer<sup>1</sup>, Ana Laura Elias<sup>3</sup>, Mauricio Terrones<sup>2,3,4</sup>, Suzanne Mohny<sup>2</sup>, and Namiko Yamamoto<sup>1</sup>

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**O12-3**

**STRESS-PATTERNED SELF-FORMATION OF TEXTURED GRAPHITE CONDUCTING WIRES IN AMORPHOUS CARBON MATRIX**

Ding-Shiang Wang<sup>1,2</sup>, Shou-Yi Chang<sup>1,3</sup>, Jin-Bao Wu<sup>2</sup>, Ming-Sheng Leu<sup>2</sup>, and Hon-Jen Lai<sup>2</sup>

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**S7: Fullerenes, Nanotubes and Other Curved Nanostructures - 5**

(S B Sinnott, presiding)

**O15-1 (Keynote)**

**COMPUTATIONAL EXPLORATION AND DESIGN OF NANOSCALE SENSORS AND DEVICES**

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**O15-2**

**RAMAN SCATTERING FOR *IN SITU* ANALYSIS OF sp<sup>2</sup> CARBONS UNDER EXTREME CONDITIONS**

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**O15-3**

**MODIFIED GROWTH TERMINATION MODEL OF CARBON NANOTUBE FOREST**

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**O15-4**

**CNT COATINGS AS THE ICING ON LASER TEXTURES - ENTRAPPING SOLID LUBRICANT TO LAST LONGER**

Leander Reinert<sup>1</sup>, Sebastian Suárez<sup>1</sup>, Federico Lasserre<sup>1</sup>, Cedric Mathieu<sup>1</sup>, Steffen Gimmler<sup>1</sup>, Joan Josep Roa<sup>2</sup>, and Frank Mücklich<sup>1</sup>

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**S7: Fullerenes, Nanotubes and Other Curved Nanostructures - 6**

(S Sinnott, presiding)

**O16-1**

**FIELD EMISSION PROPERTIES OF CARBON NANOSTRUCTURES: NANOTUBES, MICRO-ARRAYS AND GRAPHENE OXIDE**

María Luisa García-Betancourt<sup>1,2</sup>, Néstor Perea-López<sup>2</sup>, Ferdinando Tristán<sup>3</sup>, Sofía Vega-Díaz<sup>4</sup>, Ana Laura Elias<sup>2</sup>, Florentino López-Urías<sup>5</sup>, Emilio Muñoz-Sandoval<sup>5</sup>, Mauricio Terrones<sup>2,6,7</sup>

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**O16-2**

**NUCLEAR MAGNETIC RESONANCE CHEMICAL SHIFTS OF PARTIALLY AND FULLY SATURATED CARBON NANOTHEADS CALCULATED BY DENSITY FUNCTIONAL THEORY**

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**O16-3 (Keynote)**

**LOCAL-CURVATURE EFFECTS IN GRAPHENE**

Sokrates Pantelides<sup>1,2</sup>

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**S7: Fullerenes, Nanotubes and Other Curved Nanostructures - 7**

(H Terrones, presiding)

**O17-1 (Keynote)**

**UNDERSTANDING THE ROLES OF GAS COMPOSITION AND CATALYST IN FLAME  
SYNTHESIS OF CARBON NANOTUBES USING PREMIXED AND DIFFUSION FLAMES**

Randy Vander Wal

*John and Willie Leone Family Department of Energy and Mineral Engineering and The EMS Energy Institute,  
The Pennsylvania State University, USA.*

**O17-2**

**KINETICS AND CATALYSIS OF CARBON TUBES GROWTH. CNTs - OCTOPUS CARBON, CNFs -  
SPIRAL GROWTH, KINETIC LINEARITY PRINCIPLE**

Luis S Lobo

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**O17-3**

**RESONANT RAMAN MODES FOR SINGLE CHIRALITY-ENRICHED, SEMICONDUCTING  
CARBON NANOTUBE SOLUTIONS**

Yanmei Piao<sup>1</sup>, Jeffrey R. Simpson<sup>1,3</sup>, Jason K. Streit<sup>2</sup>, Geyou Ao<sup>2</sup>, Ming Zheng<sup>2</sup>, Jeffrey A. Fagan<sup>2</sup>, Angela R.  
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**S7: Fullerenes, Nanotubes and Other Curved Nanostructures - 8**

(N Grobert, presiding)

**O18-1**

**THE EFFECTS OF ION IRRADIATION ON THE CONTACT RESISTANCE BETWEEN SILVER  
AND SINGLE-WALL CARBON NANOTUBE THIN FILMS**

Nathanael D. Cox<sup>1,2</sup>, Jamie E. Rossi<sup>2,3</sup>, Ivan Puchades<sup>2,3</sup>, Andrew Merrill<sup>2,3</sup>, Cory D. Cress<sup>4</sup>, Brian J. Landi<sup>2,3</sup>

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20375, USA.*

**O18-2**

**THIN CNT FILMS FABRICATED BY UNIFORM DROPLETS PRINTING**

Hongcheng Lian, Xianming Zhang, Jun Luo, Lehua Qi, Keyu Xie, and Hejun Li

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**O18-3**

**IS IT POSSIBLE TO SYNTHESIZE MULTIWALLED CARBON NANOTUBES USING A VERY LOW FERROCENE CONCENTRATION?**

Grecia Yajsee<sup>1</sup>, Martínez Ortiz<sup>1,4</sup>, Haydee Pacheco Flores<sup>2,4</sup>, Rocío Morales Salinas<sup>3,4</sup>, Alejandro Javier Cortés-López<sup>1</sup>, Florentino López-Urías<sup>4</sup>, Emilio Muñoz Sandoval<sup>1</sup>

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**O18-4 (Keynote)**

**NANOSTRUCTURED CARBON ALLOTROPES AS WEYL-LIKE SEMIMETALS**

Shengbai Zhang

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**S7: Fullerenes, Nanotubes and Other Curved Nanostructures – Poster Session**

**P1-65**

**TRANSPORT PROPERTIES OF SUBSTITUTIONAL AND TRAPPED NITROGEN IN CARBON NANOTUBES**

Kofi Adu<sup>1,3</sup>, Ali Qajar<sup>2</sup>, Ramakrishnan Rajagopalan<sup>3,4,5</sup>, Gamini Sumanasekera<sup>6</sup>

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**P1-66**

**CARBON NANOTHREADS: AN ABERRATION-CORRECTED TRANSMISSION ELECTRON MICROSCOPY STUDY**

Nasim Alem<sup>1,4</sup>, Stephen Juhl<sup>2,4</sup>, Xiang Li<sup>2,4</sup>, Enshi Xu<sup>2</sup>, Vin Crespi<sup>1,2,3,4</sup>, and John Badding<sup>1,2,3,4</sup>

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**PI-67**

**SYNTHESIS, X-RAY AND NEUTRON SCATTERING, AND VIBRATIONAL SPECTROSCOPY STUDIES OF BENZENE-DERIVED CARBON NANOTHEADS**

Xiang Li<sup>1</sup>, Enshi Xu<sup>2</sup>, Malcolm Guthrie<sup>3</sup>, Maria Baldini<sup>4</sup>, A.J. Ramirez-Cuesta<sup>5</sup>, Tao Wang<sup>2</sup>, Vincent H. Crespi<sup>1,2,6,7</sup> and John V. Badding<sup>1,2,6,7</sup>

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<sup>7</sup>*Materials Research Institute, Pennsylvania State University, University Park, PA 16802, USA.*

**PI-68**

**EFFECT OF DISPERSANT ON THE PHYSICO-CHEMICAL AND ELECTROCHEMICAL PROPERTIES OF THE EPD-DEPOSITED CNT LAYERS**

Aleksandra Benko<sup>1</sup>, Marek Nocuń<sup>1</sup>, Jan Wyrwa<sup>1</sup>, Katarzyna Berent<sup>2</sup>, Andrzej Bernasik<sup>2</sup>, Marta Błazewicz<sup>1</sup>

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**PI-69**

**ROLE OF ACETONE IN THE CARBON SPONGE GROWTH**

Alejandro Javier Cortés-López, Juan Luis Fajardo-Díaz, Juan Antonio Esparza-Barraza, Florentino López-Urías, Emilio Muñoz-Sandoval

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**PI-70**

**MULTIWALL CARBON NANOTUBE ARRAY THERMAL INTERFACE MATERIAL**

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**PI-71**

**NITROGEN-DOPED MULTIWALLED CARBON NANOTUBES GROWN ON Co/Cu THIN FILMS**

Beatriz Flores-Gomez<sup>1</sup>, Juan Luis Fajardo-Díaz<sup>1</sup>, Juan Antonio Esparza-Barraza<sup>1,2</sup>, Florentino López-Urías<sup>1</sup>, Emilio Muñoz-Sandoval<sup>1</sup>

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**PI-72**

(now O16-1 in S7)

**PI-73**

**EFFECT ON THE MORPHOLOGY OF NITROGEN-DOPED CARBON NANOTUBES HEATED AT LOW TEMPERATURES**

María Luisa García-Betancourt<sup>1</sup>, Héctor Gabriel Silva Pereira<sup>2</sup>, Florentino Lopez-Urias<sup>2</sup>, Emilio Muñoz-Sandoval<sup>2</sup>

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**PI-74**

**SELECTIVE SYNTHESIS OF METALLIC SINGLE-WALL CARBON NANOTUBES AND THEIR PROPERTIES**

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**PI-75**

**MICROSTRUCTURE OF  $\alpha$ -Fe/ $\gamma$ -Fe INTERFACES IN NANOWIRES ENCAPSULATED BY MULTIWALLED CARBON NANOTUBES RADially DEPARTING FROM A CENTRAL PARTICLE**

Muhammad Ibrar<sup>1</sup>, Nadezda Tarakina<sup>2</sup>, Rory M. Wilson<sup>3</sup>, David J Dunstan<sup>1</sup> and Mark Baxendale<sup>1</sup>

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**PI-76**

**SYNTHESIS OF A NEW AMINO-FUNCTIONALIZED CARBON NANOTUBES FOR THE PURPOSE OF H<sub>2</sub>S REMOVAL**

Saeed Khodabakhshi<sup>1</sup>, Alimorad Rashidi<sup>2</sup>, Masoud Khaleghi Abbasabadi<sup>2</sup>

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**PI-77**

**STUDY ON STRUCTURE-SELECTIVE PRODUCTION OF CARBON NANOFIBERS**

Koji Nakabayashi<sup>1,2</sup>, Kazunari Teshima<sup>1</sup>, Jin Miyaawki<sup>1,2</sup>, Isao Mochida<sup>2</sup>, Seong-Ho Yoon<sup>1,2</sup>

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**PI-78**

**FABRICATION AND EVALUATION OF SINGLE-WALLED CARBON NANOTUBES/EPOXY PREPREG AND THEIR COMPOSITES**

Min-Ye Koo<sup>1,2</sup>, Sang-Won Lee<sup>1</sup>, Hon-Chung Shin<sup>1</sup>, Gyowoo Lee<sup>2</sup> and Won-Seok Kim<sup>1</sup>

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**PI-79**

**ANTI-FREEZING COATING BASED ON SUPERHYDROPHOBIC SOOT IS CONTAINING CARBON NANOTUBES**

Bakhytzhan T. Lesbayev<sup>1,2</sup>, Meruyert Nazhipkyzy<sup>1,2</sup>, Nikolay G. Prikhodko<sup>1,3</sup>, Beksultan

Zhansaya<sup>1,2</sup>, Turganbaeva Anar<sup>1,2</sup>, Kuletov Duman<sup>1,2</sup>, Kairat Zhumahan<sup>1,2</sup> and Zulkhair A. Mansurov<sup>1,2</sup>

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**PI-80**

(now O17-3 in S7)

**PI-81**

**ENZYMATIC DEGRADATION OF NITROGEN-DOPED MULTIWALL CARBON NANOTUBES**

Gabriella Azuara-Tuexi<sup>1,2</sup>, Florentino López-Urías<sup>1</sup>, Mildred Quintana<sup>2</sup>, Juan Luis Fajardo, Alejandro Javier Cortés, Emilio Muñoz-Sandoval<sup>1</sup>

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**PI-82**

**STUDY OF RESIDUAL MATERIAL COLLECTED FROM SYNTHESIS OF NITROGEN-DOPED MULTIWALL CARBON NANOTUBES BY CHEMICAL VAPOR DEPOSITION**

Gabriella Azuara-Tuexi<sup>1</sup>, Juan A. Esparza Barraza<sup>1,2</sup>, Beatriz Flores-Gómez<sup>1</sup>, Juan L.Fajardo-Diaz<sup>1</sup>, Florentino López-Urías<sup>1</sup>, Emilio Muñoz-Sandoval<sup>1</sup>

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**PI-83**

**SYNTHESIZING PARTICULATE CARBON FROM RENEWABLE MATERIALS**

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**PI-84**

**SYNTHESIS OF MULTIWALLED CARBON NANOTUBES BY CVD METHOD**

Meruyert Nazhipkyzy<sup>1,2</sup>, Tolganay S. Temirgalieva<sup>1,2</sup>, Bakhytzhan T. Lesbayev<sup>1,2</sup>, Nurgain Araylim<sup>1,2</sup>, Zhaparova A. Armanovna<sup>1,2</sup>, Nikolay G. Prikhodko<sup>1,3</sup> and Zulkhair A. Mansurov<sup>1,2</sup>

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**PI-85**

**LOW TEMPERATURE SYNTHESIS OF CARBON NANOTUBES BY THERMAL CVD ON NICKEL NANOPOWDERS**

Gulmaira Partizan<sup>1,2</sup>, Batyr Mansurov<sup>1</sup>, Botagoz Medyanova<sup>1,2</sup>, Aizhan Koshanova<sup>1,2</sup>, Xin Jiang<sup>3</sup>, Bakhodyr Aliyev<sup>2</sup>, Zulkhair Mansurov<sup>1,2</sup>

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**PI-86**

**SYNTHESIS OF CARBON MATERIALS AND THEIR COMPARATIVE STUDY ON ABSORPTIVE CAPACITY OF SOLAR ENERGY**

Nikolay G. Prikhodko<sup>1,2</sup>, Gaukhar. T. Smagulova<sup>1,3</sup>, Nurgali B. Rakhimzhan<sup>1</sup>, Bakhytzhan T. Lesbayev<sup>1,3</sup>, Meruyert Nazhipkyzy<sup>1,3</sup>, and Zulkhair A. Mansurov<sup>1,3</sup>

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**P1-87**

**SYNTHESIS AND EXPERIMENTAL CHARACTERIZATION OF NITROGEN-DOPED CARBON NANOTUBES USING THE CVD METHOD: FORMATION OF NANOBUD-LIKE CONFIGURATIONS**

S. L. Romo-Ávila<sup>1</sup>, R. A. Guirado-López<sup>2</sup>, E. Muñoz-Sandoval<sup>3</sup>

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**P1-88**

**THE FORMATION OF FILAMENTOUS AND FOLDED CARBON NANOSTRUCTURES FROM RENEWABLE RESOURCES**

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**P1-89**

**INTERCALATION BEHAVIOR OF HELICALLY STACKED CONE STRUCTURE OF GRAPHENE RIBBON**

Yukie Saito<sup>1</sup>, Rika Matsumoto<sup>2</sup>, Daisuke Hamane<sup>3</sup>

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**P1-90**

**XPS AND RAMAN STUDIES OF NITROGEN-DOPED CARBON NANOTUBES ACROSS THE REACTOR**

Roque Sánchez-Salas, Florentino López-Urías, Beatriz Flores-Gómez, Emilio Muñoz-Sandoval

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**P1-91**

**A COST-EFFECTIVE PROCESS FOR THE PRODUCTION OF CARBON NANOTUBES AND H-CNG**

N.S. Raman, P. Mohana Sundaram, N. Seshubabu, S.S.V. Ramakumar and B.P. Das

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**P1-92**

**HUMIDITY SENSORS BASED ON METAL CARBON**

Alexander Smirnov, Valery Kochakov, Alexey Vasilyev, Dmitry Petrov

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**P1-93**

**GENERATION OF ELECTRICAL ENERGY FROM HIGHLY ALIGNED CNT SHEET AND ITS APPLICATION TO MOTION SENSING**

Hyelynn Song<sup>1</sup>, Taewoo Kim<sup>1</sup>, Hyungwook Im<sup>1</sup>, Tae June Kang<sup>2</sup> and Yong Hyup Kim<sup>1</sup>

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**P1-94**

(now O17-1 in S7)

**P1-95**

**ESTIMATION OF CONCENTRATION OF ADDITIVES AND CARBON NANOTUBES IN SUSPENSIONS AND ELECTROPHORETICALLY DEPOSITED COATINGS BY MEANS OF UV-VIS ABSORPTION SPECTROSCOPY**

Ali Can Zaman<sup>1</sup>, Figen Kaya<sup>2</sup>, Cengiz Kaya<sup>2</sup>

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**P1-96**

**DESIGNING STRUCTURE DEFECTS TO ACHIEVE EXCITATION-INDEPENDENT AND EXCITATION-DEPENDENT FLUORESCENT CARBON DOTS AND SENSITIVE AG+ DETECTION**

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## **S8: Graphene - 1**

(Jeremy Robinson, presiding)

### ***O5-1 (Keynote)***

#### **CVD GRAPHENE AND NEW OPPORTUNITIES**

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### ***O5-2***

#### **ATOMIC LAYERS OF GRAPHENE PREPARED BY NON-OXIDATIVE INTERCALATION AND EXFOLIATION OF GRAPHITE BY BRØNSTED ACIDS**

Nina I. Kovtyukhova<sup>1</sup>, Yuanxi Wang<sup>2</sup>, Mauricio Terrones<sup>2</sup>, Vincent H. Crespi<sup>2</sup> and Thomas E. Mallouk<sup>1</sup>

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### ***O5-3***

(tbd)

## **S8: Graphene - 2**

(Joshua Robinson, presiding)

### ***O6-1***

#### **A FAST, LOW-TEMPERATURE GROWTH OF VERTICAL GRAPHENE FROM SOLID WASTE PLASTICS AND THEIR ELECTROCHEMICAL PROPERTIES**

Zhipeng Wang<sup>1,2</sup>, Hironori Ogata<sup>3,4</sup>, Gan Jet Hong Melvin<sup>1,5</sup>, Shingo Morimoto<sup>1</sup>, Josue Ortiz-Medina<sup>1</sup>, Rodolfo Cruz-Silva<sup>1</sup>, Masatsugu Fujishige<sup>1</sup>, Kenji Takeuchi<sup>1</sup>, Hiroyuki Muramatsu<sup>2</sup>, Takuya Hayashi<sup>2</sup>, Mauricio Terrones<sup>1,6</sup>, Yoshio Hashimoto<sup>1,2</sup>, Morinobu Endo<sup>1</sup>

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### ***O6-2***

#### **RAPID TRANSFORMATION OF BIOMASS COMPOUNDS TO CATALYSTS VIA SHORT MICROWAVE IRRADIATION**

Mehulkumar Patel<sup>1</sup>, Keerthi Savaram<sup>1</sup>, Feixiang Luo<sup>2</sup>, M. Reza Khoshi<sup>1</sup>, Carol R. Flach<sup>1</sup>, Kristina Keating<sup>2</sup>, Richard Mendelsohn<sup>1</sup>, Eric Garfunkel<sup>2</sup>, Michal Szostak<sup>1</sup>, and Huixin He<sup>1</sup>

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### ***O6-3***

#### **THREE-DIMENSIONAL BI-CONTINUOUS GRAPHENE MONOLITH FROM POLYMER TEMPLATES**

Kewei Liu, Yu-Ming Chen, Gina M. Policastro, Matthew L. Becker, and Yu Zhu

*Department of Polymer Science, University of Akron, 170 University Circle, Akron, Ohio 44325-3909, USA*



**O6-4 (Keynote)**

**TOWARDS LARGE-AREA SINGLE-CRYSTAL MONOLAYER AND BILAYER GRAPHENE**

Van Luan Nguyen and Young Hee Lee

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**S8: Graphene - 3**

(S Das, presiding)

**O7-1 (Keynote)**

**GRAPHENE FOR NEXT GENERATION INTERCONNECTS APPLICATIONS**

Ruchit Mehta, Sunny Chugh, Zhihong Chen

*School of ECE and Birck Nanotechnology Center, Purdue University, West Lafayette, IN 47907, USA.*

**O7-2**

**REDUCED GRAPHENE OXIDE/CARBIDE DERIVED CARBON FILMS AS HYBRID ELECTRODES FOR HIGH-PERFORMANCE SUPERCAPACITORS**

Mohamed Alhabeb, Majid Beidaghi, K. L. Van Aken, Yury Gogotsi

*A.J. Drexel Nanomaterials Institute and Department of Materials Science and Engineering, Drexel University, 3141 Chestnut St, Philadelphia, PA 19104, USA.*

**O7-3**

**DEFECTIVE GRAPHENE FOR HIGH PERFORMANCE SUPERCAPACITORS**

Lili Jiang, Tong Wei, Zhuangjun Fan

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**O7-4**

(tbd)

**S8: Graphene - 4**

(R Cruz-Silva, presiding)

**O8-1**

**ALL-CARBON NANOARCHITECTURES AS HIGH PERFORMANCE SEPARATION MEMBRANES WITH SUPERIOR STABILITY**

Yuan Chen<sup>1</sup> and Kunli Goh<sup>2</sup>

*<sup>1</sup>School of Chemical and Biomolecular Engineering, The University of Sydney, NSW, 2006, Australia*

*<sup>2</sup>School of Chemical and Biomedical Engineering, Nanyang Technological University, 62 Nanyang Drive, 637459, Singapore.*

**O8-2**

**PREPARATION AND APPLICATION OF HIGHLY FOCUSED ELECTRON BEAM GENERATED USING MULTI-LAYER GRAPHENE-GATED TRIODE STRUCTURE**

Young Chul Choi<sup>1</sup>, Hyojin Jeon<sup>1,2</sup>, Sora Park<sup>1</sup>, Jun-Tae Kang<sup>1</sup>, Eunsol Go<sup>1,2</sup>, Min-Sik Shin<sup>1,2</sup>, Jae-Woo Kim<sup>1</sup>, Jin-Woo Jeong<sup>1</sup> and Yoon-Ho Song<sup>1,2</sup>

*<sup>1</sup>Nano-Electron Source Creative Research Center, Electronics and Telecommunications Research Institute, 218 Gajeong-ro, Yuseong-gu, Daejeon 305-700, Republic of Korea*

*<sup>2</sup>School of Advanced Device Engineering, University of Science and Technology, 217 Gajeong-ro, Yuseong-gu, Daejeon 305-350, Republic of Korea.*

***O8-3 (Keynote)***

**MULTIDIMENSIONAL CARBON: MODELING THE NANOTUBES, GRAPHENE, CARBYNE**

Boris I. Yakobson

*Rice University, Houston, Texas, USA.*

**S8: Graphene - 5**

(Jeremy Robinson, presiding)

***O9-1***

(tbd)

***O9-2***

**SURFACTANT-FREE SINGLE LAYER GRAPHENE IN WATER**

George Bepete<sup>1,2</sup>, Eric Anglaret<sup>3</sup>, Carlos Drummond<sup>1,2</sup>, and Alain Penicaud<sup>1,2</sup>

<sup>1</sup>CNRS, Centre de Recherche Paul Pascal (CRPP), UPR 8641, F-33600 Pessac, France

<sup>2</sup>Univ. Bordeaux, CRPP, UPR 8641, F-33600 Pessac, France

<sup>3</sup>Univ. Montpellier-II, Laboratoire Charles Coulomb (L2C), UMR CNRS 5521, F-34000 Montpellier, France.

***O9-3***

(tbd)

**S8: Graphene - 6**

(tbd, presiding)

***O10-1***

**GRAPHENE ELECTRONICS: PROGRESS AND PROSPECT**

Saptarshi Das

*Department of Engineering Science and Mechanics, Center for 2-Dimensional and Layered Materials and Materials Research Institute. The Pennsylvania State University, University Park, Pennsylvania 16802, USA.*

***O10-2***

**ADSORPTION OF ORGANIC CONTAMINANTS ON GRAPHENE SURFACES**

Archi Dasgupta<sup>1</sup>, Juan Matos<sup>5</sup>, Christopher Rotella<sup>2</sup>, Hiroyuki Muramatsu<sup>6</sup>, Viviana Gonzalez<sup>7</sup>, Lakshmy Pulickal<sup>2</sup>, Kazunori Fujisawa<sup>3</sup>, Ana Laura Elias<sup>3</sup>, Ljubisa Radovic<sup>4,5</sup> and Mauricio Terrones<sup>1,2,3</sup>

<sup>1</sup>Department of Chemistry, <sup>2</sup>Department of Materials Science and Engineering, <sup>3</sup>Department of Physics,

<sup>4</sup>Department of Energy and Mineral Engineering, The Pennsylvania State University, University Park, PA, USA

<sup>5</sup>Department of Biomaterials, Technology Development Unit, University of Concepcion, Chile.

<sup>6</sup>Faculty of Engineering, Shinshu University, Japan

<sup>7</sup>Department of Chemistry, University of Castilla la Mancha, Spain.

***O10-3***

**PREPARATION AND CHARACTERIZATION OF EDGE SELECTIVELY OXIDIZED GRAPHENE**

Jisoo Park, Taehoon Kim, Yern Seung Kim and Chong Rae Park

*Department of Materials Science and Engineering, Seoul National University, Seoul 151-744, Korea.*

***O10-4***

(tbd)

## **S8: Graphene - 7**

(M Drndic, presiding)

### **O11-1 (Keynote)**

#### **NANOBIOSENSORS BASED ON 2-DIMENSIONAL MATERIALS**

A. T. Charlie Johnson

*Department of Physics and Astronomy and Laboratory for Research on the Structure of Matter, University of Pennsylvania, Philadelphia, Pennsylvania 19104, USA.*

### **O11-2**

#### **IONIC TRANSPORT ACROSS GRAPHENE MEMBRANES**

Michael I. Walker<sup>1</sup>, Robert S. Weatherup<sup>2</sup>, Stephan Hofmann<sup>2</sup>, and Ulrich F. Keyser<sup>1</sup>

<sup>1</sup>*Cavendish Laboratory, University of Cambridge, J.J. Thomson Avenue, Cambridge CB3 0HE, United Kingdom*

<sup>2</sup>*Department of Engineering, University of Cambridge, Cambridge CB3 0FA, United Kingdom.*

### **O11-3**

#### **DECORATING GRAPHENE WITH CUSTOM BIOMOLECULES**

Mirela Mustata<sup>1</sup>, Yong-Ho Kim<sup>2</sup>, Jian Zhang<sup>3</sup>, William F. DeGrado<sup>4</sup>, Gevorg Grigoryan<sup>3,5</sup>, and Meni Wanunu<sup>1</sup>

<sup>1</sup>*Department of Physics and Chemistry/Chemical Biology, Northeastern University Boston MA, USA*

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<sup>3</sup>*Department of Computer Science, Dartmouth College, Hanover, NH, USA*

<sup>4</sup>*Department of Pharmaceutical Chemistry, UC San Francisco, San Francisco, CA, USA.*

### **O11-4**

#### **THE PERMEATION OF 2D MOLECULE THROUGH GRAPHENE OXIDE MEMBRANE: THE ROLE OF MOLECULE SHAPE**

Boyue Lian<sup>1</sup>, Greg Leslie<sup>1</sup> and Rakesh Joshi<sup>2</sup>

<sup>1</sup>*UNESCO Centre for Membrane Science and Technology, University of New South Wales, Australia*

<sup>2</sup>*School of Materials Science and Engineering, University of New South Wales, Australia.*

## **S8: Graphene - 8**

(A Morelos-Gomez, presiding)

### **O12-1**

#### **CHEMICALLY SELECTIVE, SHAPE RESPONSIVE, CONDUCTIVE SOFT GRAPHENE COMPOSITE FOAMS**

Deepthi Varghese<sup>1</sup>, Steven Woltornist<sup>1</sup>, Daniel Massucci<sup>1</sup>, Andrey Dobrynin<sup>3</sup>, Douglas Adamson<sup>1,2</sup>

<sup>1</sup>*Department of Chemistry, University of Connecticut, Storrs, Connecticut, 06269, United States*

<sup>2</sup>*Polymer Program, Institute of Materials Science, University of Connecticut, Storrs, Connecticut 06269, United States*

<sup>3</sup>*Department of Polymer Science, The University of Akron, Akron, Ohio 44325, USA.*

### **O12-2**

#### **SYNTHESIS OF HETEROATOM DOPED GRAPHENE QUANTUM DOTS VIA ONEPOT REACTION INCLUDING SIMULTANEOUS EXFOLIATING AND DOPING**

Gil-Seong Kang<sup>1,2</sup>, Eun-Su Choi<sup>3</sup>, Cheol-Ho Lee<sup>1,2</sup>, Sungho Lee<sup>1</sup>, Doh C. Lee<sup>2</sup>, Seok-In Na<sup>3</sup> and Han-Ik Joh<sup>1</sup>

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<sup>3</sup>*Professional Graduate School of Flexible and Printable Electronics, Department of Flexible and Printable Electronics, Chonbuk National University, 664-14, Deokjin-dong, Jeonju-si, Jeollabuk-do, Republic of Korea.*

**O12-3**

**MULTISCALE GRAPHENE TOPOGRAPHIES PROGRAMMED BY SEQUENTIAL MECHANICAL DEFORMATION**

Po-Yen Chen, Ian Y. Wong, Robert H. Hurt

*School of Engineering, Institute for Molecular and Nanoscale Innovation, Brown University, Providence, RI 02912, USA.*

**S8: Graphene - 9**

(Joshua Robinson, presiding)

**O13-1 (Keynote)**

**GROWTH, CHARACTERIZATION, AND GAS SENSING CAPABILITIES OF CVD-GROWN BORON-DOPED GRAPHENE**

Amber McCreary<sup>1</sup>, Ruitao Lv<sup>1,2</sup>, Gugang Chen<sup>3</sup>, Qing Lie<sup>4</sup>, Andrés Botello-Méndez<sup>5</sup>, S. V. Morozov<sup>6</sup>, Liangbo Liang<sup>7</sup>, Xavier Declerck<sup>5</sup>, Nestor Perea-López<sup>1</sup>, Ana Laura Elías<sup>1</sup>, Rodolfo Cruz-Silva<sup>8</sup>, Morinobu Endo<sup>8</sup>, Feiyu Kang<sup>2</sup>, Jean-Christophe Charlier<sup>5</sup>, Vincent Meunier<sup>7</sup>, Minghu Pan<sup>9</sup>, Avetik R. Harutyunyan<sup>3</sup>, Konstantin S. Novoselov<sup>6</sup> and Mauricio Terrones<sup>1,8</sup>

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<sup>3</sup>*Honda Research Institute USA Inc.*

<sup>4</sup>*Institute of Functional Nano and Soft Materials and Collaborative Innovation Center of Suzhou Science and Technology, Soochow University, China*

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<sup>6</sup>*School of Physics & Astronomy, University of Manchester, UK*

<sup>7</sup>*Department of Physics, Applied Physics and Astronomy, Rensselaer Polytechnic Institute, USA*

<sup>8</sup>*Research Center for Exotic Nanocarbons, Shinshu University, Japan*

<sup>9</sup>*School of Physics, Huazhong University of Science and Technology, China.*

**O13-2**

**CRUMPLED TWO-DIMENSIONAL MATERIALS FOR MULTIFUNCTIONAL SENSOR DEVICES**

Pilgyu Kang<sup>1</sup>, Michael Cai Wang<sup>1</sup>, and SungWoo Nam<sup>1,2</sup>

<sup>1</sup>*Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA*

<sup>2</sup>*Materials Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA.*

**O13-3**

**ENERGY MANIPULATION IN GRAPHENE RESONATORS**

Jeremy T Robinson, Maxim Zalalutdinov, Cory D Cress, Jim C Culbertson, Adam L. Friedman

*Naval Research Laboratory, Washington, DC 20375, USA.*

**S8: Graphene - 10**

(S Das, presiding)

**O14-1**

**USING GRAPHENE AS A SUBSTRATE IN ADVANCED 2D HETEROSTRUCTURES**

Joshua A. Robinson

*The Pennsylvania State University, University Park, PA 16802, USA.*

**O14-2**

**GRAPHENE DISPERSIONS FOR PRINTING, COMPOSITES, AND ENERGY**

David Ager and John Texter

*School of Engineering Technology, Eastern Michigan University, Ypsilanti, MI 48197, USA.*

**014-3**

**LATERAL HETEROSTRUCTURES BASED ON EPITAXIAL GRAPHENE**

Shruti Subramanian, Kehao Zhang, Donna Deng, and Joshua A. Robinson  
*The Pennsylvania State University, University Park, PA 16802, USA.*

**014-4**

**SUSTAINED AND REPRODUCIBLE SUPERLUBRICITY AT MACROSCALE USING GRAPHENE-NANODIAMOND ENSEMBLES**

Anirudha V. Sumant<sup>1</sup>, Diana Berman<sup>1</sup>, Sanket A. Deshmukh<sup>1</sup>, Subramanian K.R.S. Sankaranarayanan<sup>1</sup>, Ali Erdemir<sup>2</sup>

<sup>1</sup>*Center for Nanoscale Materials and* <sup>2</sup>*Energy Systems Division,*  
*9700 S. Cass Ave, Argonne National Laboratory, Argonne, IL, 60439, USA.*

**S8: Graphene - 11**

(J Ortiz-Mendez, presiding)

**015-1 (Keynote)**

**RECENT PROGRESS IN LARGE-SCALE GRAPHENE SYNTHESIS AND ITS WEARABLE AND BIOMEDICAL APPLICATIONS**

Byung Hee Hong<sup>1,2</sup>

<sup>1</sup>*Department of Chemistry, Seoul National University, 151-747, Seoul, Korea.*

<sup>2</sup>*Graphene Square Inc., Seoul National University, 151-747, Korea.*

**015-2**

**CaO-TEMPLATED GROWTH OF HIERARCHICAL POROUS GRAPHENE FOR HIGH-POWER LITHIUM-SULFUR BATTERY APPLICATIONS**

Cheng Tang, Bo-Quan Li, Qiang Zhang, Lin Zhu, Hao-Fan Wang, Jia-Le Shi, and Fei Wei  
*Department of Chemical Engineering, Tsinghua University, Beijing 100084, China.*

**015-3**

**DIRECT OBSERVATION OF CROWN ETHER IN GRAPHENE OXIDE**

Junjie Guo<sup>1</sup>, Bingshe Xu<sup>1</sup>, Matthew F. Chisholm<sup>2</sup>, Stephen J. Pennycook<sup>3</sup>

<sup>1</sup>*Key Laboratory of Interface Science and Engineering in Advanced Materials of Ministry of Education, Taiyuan University of Technology, Taiyuan 030024, P.R.China*

<sup>2</sup>*Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831-6065, USA*

<sup>3</sup>*Department of Materials Science and Engineering, National University of Singapore, Singapore 117576, Singapore.*

**015-4**

**KINETIC TRAPPING OF UNSTABLE TWO-PHASE LIQUID SYSTEMS USING SELF-ASSEMBLED GRAPHENE MOLECULAR BARRIERS**

Megan A. Creighton, Wenpeng Zhu, Finn Van Krieken, Robert A. Petteruti, Huajian Gao, Robert H. Hurt  
*School of Engineering, Brown University, 182 Hope Street, Providence, RI 02912, USA.*

## **S8: Graphene - 12**

(R Lv, presiding)

### **O16-1**

#### **FROM GRAPHENE TO 2D TRANSITION METAL CARBIDES: SYNTHESIS AND APPLICATIONS**

Wencai Ren<sup>1</sup>

<sup>1</sup>*Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang 110016, P.R. China.*

### **O16-2**

#### **GRAPHITE OXIDE AS A POLARIZABLE ELECTRICAL CONDUCTOR IN THE THROUGH-THICKNESS DIRECTION**

Xinghua Hong<sup>1,2</sup>, Andi Wang<sup>1</sup>, Weidong Yu<sup>2</sup>, and D.D.L. Chung<sup>1</sup>

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<sup>2</sup>*Key Laboratory of Textile Science & Technology, Ministry of Education, College of Textiles, Donghua University, Shanghai 201620, China.*

### **O16-3**

#### **DISTORTED GRAPHENE STACKING-DERIVED INACCESSIBLE NANOPOROSITY**

Shuwen Wang<sup>1</sup>, Dániel Ábrahám<sup>2</sup>, Fernando Vallejos-Burgos<sup>1</sup>, Krisztina László<sup>2</sup>, Kenji Takeuchi<sup>3</sup>, Morinobu Endo<sup>3</sup>, and Katsumi Kaneko<sup>1</sup>

<sup>1</sup>*Center for Energy and Environmental Science, Shinshu University, Nagano, 380-8553, Japan.*

<sup>2</sup>*Department of Physical Chemistry and Materials Science, Budapest University of Technology and Economy, Budapest, Hungary.*

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## **S8: Graphene – Poster Session 1**

### **P3-51**

#### **ROBUST POROUS ELECTRICALLY CONDUCTIVE COMPOSITE BY SELF-ASSEMBLY OF 2D GRAPHENE SURFACTANTS**

Jennifer L. Bento<sup>1</sup>, Steven J. Woltornist<sup>2</sup>, Elizabeth Brown<sup>1</sup>, Deepthi Varghese<sup>2</sup>, Andrey V. Dobrynin<sup>3</sup>, and Douglas H. Adamson<sup>1,2</sup>

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### **P3-52**

#### **ELECTRICAL AND MECHANICAL PROPERTIES OF POLYMER-GRAPHENE COMPOSITES AS RELATED TO DENSITY**

Elizabeth E. V. Brown<sup>1</sup>, Steven J. Woltornist<sup>2</sup>, and Douglas H. Adamson<sup>1,2</sup>

<sup>1</sup>*Polymer Program, Institute of Materials Science, University of Connecticut, Storrs, Connecticut 06269, United States*

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**P3-53**

**PERSPECTIVE APPLICATION OF GRAPHENE STRUCTURES OBTAINED USING AROMATIC HYDROCARBONS**

Baitimbetova B.A.<sup>1</sup>, Ryabikin Yu.A.<sup>2</sup>, Sultanov F.<sup>3</sup>, Nikulin V.E.<sup>4</sup>, N.G. Prikhodko<sup>3</sup>, Mansurov S.A.<sup>3</sup>

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**P3-54**

**EFFECT OF SURFACE CHEMISTRY OF GRAPHENE OXIDE ON ITS COMPATIBILITY WITH ORGANIC MATRIX**

Barbara Berke<sup>1,2</sup>, László Sós<sup>1</sup>, Richárd Czippán<sup>1</sup>, Orsolya Czakkel<sup>2</sup> and Krisztina László<sup>1</sup>

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**P3-55**

**INTERFACIAL-FRICTION-DERIVED VISCOUS BEHAVIOR OF EXFOLIATED GRAPHITE, AS SUPPORTED BY THEORY AND EXPERIMENTS**

Lifeng Xiao<sup>1,2</sup>, Po-Hsiu Chen<sup>1</sup>, and D.D.L. Chung<sup>1</sup>

<sup>1</sup>*Composite Materials Research Laboratory, University at Buffalo, State University of New York, Buffalo, NY 14260-4400, USA*

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**P3-56**

(withdrawn)

**P3-57**

(now O15-4 in S8)

**P3-58**

**GRAPHENE OXIDE/GRAPHENE STACKING TRANSPARENT CONDUCTIVE ELECTRODES FOR HIGHLY EFFICIENT ORGANIC LIGHT EMITTING DIODES**

Jinhong Du<sup>1</sup>, Shuai Jia<sup>1</sup>, Hengda Sun<sup>2</sup>, Zhikun Zhang<sup>1</sup>, Dingdong Zhang<sup>1</sup>, Jiangshan Chen<sup>2</sup>, Dongge Ma<sup>2</sup>, Hui-Ming Cheng<sup>1</sup>, Wencai Ren<sup>1</sup>

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**P3-59**

**POROUS Co-AI LDH-GRAPHENE FOR ULTRA HIGH RATE SUPERCAPACITORS**

Xiaoliang Wu, Tong Wei

*College of Material Science and Chemical Engineering, Harbin Engineering University, Harbin 150001, China.*

### **P3-60**

#### **SYNTHESIS AND CHARACTERIZATION OF CVD-GROWN MULTILAYER GRAPHENE NANORIBBONS**

Kazunori Fujisawa<sup>1</sup>, Yu Lei<sup>2</sup>, Cheon-Soo Kang<sup>3</sup>, Ana Laura Elias<sup>1,4</sup>, Hiroyuki Muramatsu<sup>3</sup>, Takuya Hayashi<sup>3</sup>, and Mauricio Terrones<sup>1,2,4,5</sup>

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<sup>5</sup>*Department of Chemistry, The Pennsylvania State University, University Park, Pennsylvania 16802, USA.*

### **P3-61**

#### **MOLECULAR SELECTIVITY OF GRAPHENE-ENHANCED RAMAN SCATTERING**

Shengxi Huang<sup>1</sup>, Xi Ling<sup>1</sup>, Liangbo Liang<sup>2</sup>, Jing Kong<sup>1</sup>, Vincent Meunier<sup>2</sup>, Mildred Dresselhaus<sup>1</sup>

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### **P3-62**

#### **GRAPHENE OXIDE AS AN EFFECTIVE FILLER IN ANION EXCHANGE ALKALINE POLYMER MEMBRANES**

Leticia García-Cruz<sup>1</sup>, Clara Casado-Coterillo<sup>2</sup>, Vicente Montiel<sup>1</sup>, Ángel Irabien<sup>2</sup> and Jesus Iniesta<sup>1</sup>

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<sup>2</sup>*Departamento de Ingenierías Química y Biomolecular, Universidad de Cantabria, 39005 Santander, Cantabria, Spain.*

### **P3-63**

#### **A MULTI-LAYER GRAPHENE ATOMIC GATE FOR HIGHLY FOCUSED ELECTRON SOURCES FROM CARBON NANOTUBE FIELD EMITTERS**

Hyojin Jeon<sup>1,2</sup>, Min-Sik Shin<sup>1,2</sup>, Jun-Tae Kang<sup>1</sup>, Sora Park<sup>1</sup>, Young-Chul Choi<sup>1</sup>, Jae-Woo Kim<sup>1</sup>, Eunsol Go<sup>1,2</sup>, Jin-Woo Jeong<sup>1</sup>, Ji-Hwan Yeon<sup>1</sup>, Sunghee Kim<sup>1</sup> and Yoon-Ho Song<sup>1,2</sup>

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<sup>2</sup>*Department of Advanced Device Technology, University of Science and Technology, 217 Gajeong-ro, Yuseong-gu, Daejeon 34113, Republic of Korea.*

### **P3-64**

#### **THREE-DIMENSIONAL Fe<sub>3</sub>O<sub>4</sub>/GRAPHENE AEROGEL AS ANODE FOR LITHIUM ION BATTERIES**

Yu Wang, Mengqiu Jia and Yuhao Duan

*Beijing Key Laboratory of Electrochemical Process and Technology for Materials, Beijing University of Chemical Technology, Beijing 100029, China.*



**P3-65**

**NITROGEN-DOPED GRAPHENE STUDIED BY SCANNING TUNNELING MICROSCOPY/SPECTROSCOPY AND ANGLE-RESOLVED PHOTOEMISSION SPECTROSCOPY**

Frédéric Joucken<sup>1</sup>, Yann Tison<sup>2</sup>, Patrick Le Fèvre<sup>3</sup>, Antonio Tejada<sup>3</sup>, Amina Tale-Ibrahimi<sup>3</sup>, Edward Conrad<sup>4</sup>, Vincent Repain<sup>2</sup>, Cyril Chacon<sup>2</sup>, Amandine Bellec<sup>2</sup>, Yann Girard<sup>2</sup>, Sylvie Rousset<sup>2</sup>, Jacques Ghijsen<sup>1</sup>, Robert Sporken<sup>1</sup>, Hakim Amara<sup>5</sup>, François Ducastelle<sup>5</sup> and Jérôme Lagoute<sup>2</sup>

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**P3-66**

(now O12-2 in S8)

**P3-67**

**HEATING-ASSOCIATED STRUCTURAL CHANGE OF GRAPHENE NANORIBBONS OBTAINED BY UNZIPPING DOUBLE-WALLED CARBON NANOTUBES**

Dukeun Kim<sup>1,2</sup>, Hiroyuki Muramatsu<sup>3</sup>, and Yoong Am Kim<sup>1,2</sup>

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**P3-68**

**FLUORINATION OF GRAPHENE OXIDE FOR DETECTING NH<sub>3</sub> GAS**

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**P3-69**

**FRACTIONATION OF GRAPHENE OXIDE ON THE BASIS OF OXIDATION, SHEET SIZE, AND SHEET STACKING**

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**P3-70**

**MULTILAYER GRAPHENE-BASED TRANSPARENT ELECTRODES FOR ENHANCED LIGHT EXTRACTION IN III-NITRIDE LIGHT-EMITTING DIODES**

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**P3-71**

**TOWARDS AN EFFICIENT SYNTHESIS OF Ni/HETEROATOM (N, S or B)-DOPED GRAPHENE NANOMATERIALS**

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**P3-72**

**COMPARISON OF HEAVY METAL ADSORPTION PROPERTIES USING MAGNETITE-GRAPHENE OXIDE AND MAGNETITE-REDUCED GRAPHENE OXIDE**

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**P3-73**

**SYNTHESIS OF CARBON NANOMATERIALS IN ALTERNATIVE FLAME**

Bakhytzhhan T. Lesbayev<sup>1,2</sup>, Nikolay G. Prikhodko<sup>1,3</sup>, Nurgali B. Rakhimzhan<sup>1</sup>, MeruyertNazhipkyzy<sup>1,2</sup>, Aidana Nurgozhayeva<sup>1</sup>, Zubayrov Nursultan<sup>1</sup> and Zulkhair A. Mansurov<sup>1,2</sup>

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**P3-74**

**ENHANCING VOLUMETRIC PERFORMANCE OF ENERGY STORAGE DEVICES BY GRAPHENE**

Huan Li<sup>1,2</sup>, Ying Tao<sup>1,2</sup>, Xiaoyu Zheng<sup>1,2</sup>, Jiayan Luo<sup>1,2</sup>, Feiyu Kang<sup>3</sup> and Quan-Hong Yang<sup>1,2,3</sup>

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**P3-75**

**MOLECULAR WELDED GRAPHENE FILM WITH HIGH THERMAL CONDUCTIVITY AND FLEXIBILITY**

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**P3-76**

**GRAPHENE SYNTHESIS VIA ELECTROCHEMICAL EXFOLIATION OF GRAPHITE NANOPATELETS IN AQUEOUS SULFURIC ACID**

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**P3-77**

**ULTRASENSITIVE MOLECULE DETECTION OF LARGE-AREA DOPED GRAPHENE**

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**P3-78**

**INFLUENCE OF THE ELECTROPHORETIC DEPOSITION PARAMETERS ON THE FORMATION OF GRAPHENE-BASED FILMS**

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**P3-79**

**CONTROLLING THE STRUCTURE AND PROPERTIES OF CARBON NANOTUBES/GRAPHENE OXIDE BUCKYPAPERS**

Ana M. Pérez-Mas<sup>1,2</sup>, Karwei So<sup>2</sup>, Seyyed Shayan Meysami<sup>2</sup>, Ricardo Santamaría<sup>1</sup>, Patricia Álvarez<sup>1</sup>, Rosa Menéndez<sup>1</sup>, and Nicole Grobert<sup>2</sup>

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**S8: Graphene – Poster Session 2**

**P4-49**

**THREE-DIMENSIONAL GRAPHENE-BASED ULTRA-LIGHTWEIGHT AEROFOAM**

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**P4-50**

**HYBRID GRAPHENE OXIDE/GRAPHENE BASED FILMS VIA SELF-ASSEMBLY**

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**P4-51**

**FABRICATION OF GRAPHENE ON THE ELECTROPLATING Cu/GRAPHITE SHEET FOR IMPROVING THERMAL PROPERTIES**

ChanWoong Park<sup>1,2</sup>, Yena Kim<sup>1,3</sup>, Sungkyun Lee<sup>1,3</sup>, ChangUk Seo<sup>1,3</sup>, YoungJoon Hong<sup>2</sup>, WooSeok Yang<sup>1</sup>

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**P4-52**

**SYNTHESIS OF MONO-, BI- AND MULTI-LAYER GRAPHENES ON NICKEL FILMS BY OXY-ACETYLENE TORCH**

Sanat Sabitov<sup>1,2</sup>, Batyr Mansurov<sup>1</sup>, Botagoz Medyanova<sup>1,2</sup>, Gulmaira Partizan<sup>1,2</sup>, Aizhan Koshanova<sup>1,2</sup>, Bauyrzhan Zhumadylov<sup>1,2</sup>, Bakhytzhan Lesbayev<sup>1,2</sup>, Zulkhair Mansurov<sup>1,2</sup>

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**P4-53**

**SYNTHESIS OF GRAPHENE IN ALTERNATIVE FLAME AND FUNCTIONALIZATION**

Nikolay G. Prikhodko<sup>1,2</sup>, Nurgali B. Rakhimzhan<sup>1</sup>, Meruyert Nazhipkyzy<sup>1,3</sup>, Moldir Auyelkhankyzy<sup>1,3</sup>, Tolganay S. Temirgaliyeva<sup>1,3</sup>, Bakhytzhan T. Lesbayev<sup>1,3</sup>, and Zulkhair A. Mansurov<sup>1,3</sup>

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**P4-54**

**STUDY ON SYNTHESIZING GRAPHENE WITH PLANT LEAVES**

Jianguo Zhao<sup>1,2,3</sup>, Baoyan Xing<sup>1,3</sup>, Wenshan Qu<sup>2</sup>, Qiliang Pan<sup>1</sup>, Hui Yang<sup>1</sup>, Lihua Wang<sup>1</sup>, Ling Gu<sup>2</sup>, Haiqing Wang<sup>1,2</sup>

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**P4-55**

**SYNTHESIS OF REDUCED GRAPHENE OXIDE FILMS BY CATHODIC ELECTROPHORETIC DEPOSITION FOR PROTECTING CARBON STEEL FROM CORROSION**

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**P4-56**

**TUNING THE NATURE OF NITROGEN ATOMS IN N-CONTAINING RGO: ENHANCED THERMAL OXIDATION STABILITY BY NITROGEN DOPING**

Stefania Sandoval<sup>1</sup>, Nitesh Kumar<sup>2</sup>, A. Sundaresan<sup>2</sup>, C. N. R. Rao<sup>2</sup>, Amparo Fuertes<sup>1</sup> and Gerard Tobias<sup>1</sup>

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**P4-57**

**MULTIPLE COLOR GRAPHENE AND TRANSITION-METAL DICHALCOGENIDES QUANTUM DOTS**

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**P4-58**

**CARBON NANOMATERIALS FROM HEXAYNE SURFACTANTS**

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**P4-59**

**GRAPHENE-BASED COMPOSITES USING THE MONOMERS AS A REDUCING AGENT**

Chang Uk Seo<sup>1,2</sup>, Su Yeon Choi<sup>1</sup>, Sung Kyun Lee<sup>1,2</sup>, Chan Woong Park<sup>1,3</sup> and Woo Seok Yang<sup>1</sup>

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**P4-60**

**THERMAL CONDUCTIVITY OF POLYMER-DERIVED CARBON NANOSHEETS MEASURED BY RAMAN SPECTROSCOPY**

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**P4-61**

**BREATHABLE GRAPHENE OXIDE TOXICANT BARRIERS**

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**P4-62**

**CARBON-GRAPHENE FLEXIBLE FILM FOR HIGH ENERGY DENSITY SUPERCAPACITORS**

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**P4-63**

**PREPARATION OF NANOCARBON-BASED FLEXIBLE TOP ELECTRODES FOR POLYMER SOLAR CELLS WITH IMPROVED LIFETIME**

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**P4-64**

**TAILORING GRAPHENE OXIDE AS A REDOX MEDIATOR TO PROMOTE THE CHEMICAL TRANSFORMATION OF IOPROMIDE**

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**P4-65**

**FORMATION OF 3D GRAPHENE FOAMS ON SOFT TEMPLATED METAL MONOLITHS**

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**P4-66**

**FLEXIBLE GRAPHENE-Mn<sub>3</sub>O<sub>4</sub> NANOCOMPOSITE PAPER FOR EFFICIENT ENERGY STORAGE**

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**GRAPHENE OXIDE-Cu<sub>2</sub>Se NANOCOMPOSITES SYNTHESIZED VIA HYDROTHERMAL TECHNIQUE FOR PHOTOCATALYTIC CO<sub>2</sub> REDUCTION**

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**P4-68**

**CVD GROWTH OF LARGE AREA GRAPHENE AND CNT/GRAPHENE COMPOSITE AT LOW TEMPERATURE AND ITS POTENTIAL APPLICATION**

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**P4-69**

**FABRICATION OF rGO/ZnO HYBRID FOR ROOM-TEMPERATURE GAS SENSING**

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**P4-70**

**PREPARATION OF GRAPHENE-BASED ELECTRODE MATERIALS FROM COAL PYROLYSIS GAS VIA CVD METHOD**

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**P4-71**

**FEW-LAYERED GRAPHENE PREPARED VIA EXFOLIATION OF GRAPHITE INTERCALATION COMPOUNDS WITHOUT SONICATION AND ITS CHARACTERISTICS**

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**P4-73**

**ULTRAHIGH VOLUMETRIC SODIUM STORAGE ON FOLDED GRAPHENE ELECTRODES**

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**P4-74**

**GRAM-SCALE PREPARATION OF POROUS GRAPHENE OXIDE WITH HIGH QUANTUM YIELD AND DUAL-WAVELENGTH PHOTOLUMINESCENCE**

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**P4-75**

**DUAL-WAVELENGTH PHOTOLUMINESCENCE OF GRAPHENE QUANTUM DOTS**

Yue Dong<sup>1</sup>, Su Zhang<sup>1</sup>, Xiaohong Chen<sup>1</sup>, Jisheng Zhou<sup>1</sup>, Yu. V. Fedoseeva<sup>2,3</sup>, I. P. Asanov<sup>2,3</sup>, L. G. Bulusheva<sup>2,3</sup>, Huaihe Song<sup>1</sup>, A. V. Okotrub<sup>2,3</sup>

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**P4-76**

**SELF-ASSEMBLED TiO<sub>2</sub>/COAL-BASED-GRAPHENE MACROPOROUS AEROGELS FOR PHOTOCATALYTIC CONVERSION OF CARBON DIOXIDE**

Yating Zhang<sup>1</sup>, Keke Li<sup>1</sup>, Guoyang Liu<sup>1</sup>, Yongqiang Dang<sup>1</sup>, Anning Zhou<sup>1</sup>, Jieshan Qiu<sup>2</sup>

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**P4-77**

**REVERSIBLE REACTIONS BETWEEN METAL OXIDE/HYDROXIDE AND FUNCTIONAL GROUPS IN GRAPHENE OXIDE**

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## **S9: Modeling and Simulation - 1**

(J Sofo, presiding)

### **O6-1**

#### **DEGRADATION OF ORGANIC MATTER UNDER GEOLOGICAL CONDITIONS: A ROUTE TOWARDS THERMODYNAMIC SOLID/FLUID EQUILIBRIUM USING REPLICA EXCHANGE MOLECULAR DYNAMICS SIMULATIONS**

Roland Pellenq<sup>1,2,3</sup>, Léa Atmani<sup>2,3</sup>, Jean-Marc Leyssale<sup>2</sup>, Christophe Bichara<sup>3</sup>, Henri Van Damme<sup>2</sup> and Franz Ulm<sup>1</sup>

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### **O6-2**

#### **AN EXPLORATION OF CHAR REACTIVITY CAPTURING TEMPERATURE EFFECTS WITHIN A SIMPLISTIC BUT LARGE-SCALE ATOMISTIC SIMULATION**

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### **O6-3**

#### **SHOCK COMPRESSION OF POROUS GRAPHITE: A COMBINED MOLECULAR DYNAMICS AND EQUATION OF STATE APPROACH**

Nicolas Pineau<sup>1</sup>, Emeric Bourasseau<sup>1</sup>, Jean-Bernard Maillet<sup>1</sup>, Vincent Dubois<sup>1</sup>, Laurent Soulard<sup>1</sup>, and David Hébert<sup>2</sup>

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### **O6-4**

(tbd)

## **S9: Modeling and Simulation - 2**

(J Mathews, presiding)

### **O13-1 (Keynote)**

#### **STRUCTURE AND PROPERTY ALTERATIONS IN GRAPHITE UNDER HIGH ELECTRON DOSE: A COMBINED TEM/MD INVESTIGATION**

Baptiste Farbos<sup>1,2</sup>, Helen Freeman<sup>3</sup>, Trevor Hardcastle<sup>3</sup>, Jean-Pierre Da Costa<sup>2</sup>, Rik Brydson<sup>3</sup>, Patrick Weisbecker<sup>1</sup>, Andrew J. Scott<sup>3</sup>, Gérard L. Vignoles<sup>1</sup>, and Jean-Marc Leyssale<sup>1,4</sup>

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<sup>4</sup>*MultiScale Material Science for Energy and Environment, CNRS/MIT joint lab, MIT Energy Initiative, 77 Massachusetts Avenue, Cambridge MA 02139, USA.*



### **O13-2**

#### **DEDUCTIONS ABOUT RADIATION DAMAGE IN GRAPHITE FROM MOLECULAR DYNAMIC RESULTS**

Malcolm I. Heggie<sup>1,2</sup>, A.J. McKenna<sup>1</sup>, T. Trevethan<sup>1</sup>, P.J. Young<sup>1</sup> and C.D. Latham<sup>1</sup>

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<sup>2</sup>*BlackDogBytes, Brin Villa, Black Dog, Crediton, EX17 4QU United Kingdom.*

### **O13-3**

#### **QUANTIFICATION OF THE INFLUENCE OF SUBSTRATE COMPOSITION ON TITANIUM THIN FILM/GRAPHENE STABILITY**

Alexandre F. Fonseca<sup>1</sup>, Tao Liang<sup>2</sup>, Difan Zhang<sup>3</sup>, Kamal Choudhary<sup>3</sup>, Simon Phillpot<sup>3</sup>, and Susan B. Sinnott<sup>2</sup>

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### **S9: Modeling and Simulation - 3**

(M Heggie, presiding)

### **O14-1**

#### **ATOMISTIC MODELING INSIGHT INTO THE STRUCTURE OF LIGNITE-BASED ACTIVATED CARBON, AND BEHAVIOR OF BENZENE SORPTION**

Yang Huang<sup>1,2</sup>, Fred S. Cannon<sup>2</sup>, Jinsong Guo<sup>1,3</sup>, Justin K. Watson<sup>4</sup>, Jonathan P. Mathews<sup>5</sup>

<sup>1</sup>*Yang Huang, College of Urban Construction and Environmental Engineering, Chongqing University, Chongqing 400045, China*

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<sup>5</sup>*The EMS Energy Institute, and the Leone Family Department of Energy and Mineral Engineering, The Pennsylvania State University, University Park, PA 16802, USA.*

### **O14-2**

#### **THERMODYNAMIC ANALYSIS OF SORPTION WITH MSM IN TERMS OF SEQUESTRATION OF CO<sub>2</sub> AND CH<sub>4</sub> RECOVERY**

Grzegorz S. Jodłowski, Marta Wójcik, Magda Ziółkowska

*AGH University of Science and Technology, Faculty of Energy and Fuels Al. Mickiewicza 30, 30-059 Kraków, Poland.*

### **O14-3**

#### **UNDERSTANDING THE INTERACTIONS BETWEEN LITHIUM POLYSULFIDES AND N-DOPED GRAPHENE USING DENSITY FUNCTIONAL THEORY CALCULATIONS**

Li-Chang Yin<sup>1</sup>, Guang-Min Zhou<sup>1</sup>, Ji Liang, Feng Li<sup>1</sup>, Riichiro Saito<sup>2</sup>, Hui-Ming Cheng<sup>1</sup>

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<sup>2</sup>*Department of Physics, Tohoku University, Sendai 980-8578, Japan.*

**O14-4**

**STRUCTURE AND DYNAMICS OF WATER ADSORBED AT THE INTERFACE AND CONFINED IN BETWEEN OF TITANIUM-CARBIDE MXENE LAYERS: REACTIVE MOLECULAR DYNAMICS USING REAXFF**

Alireza Ostadhosseini<sup>1</sup> and Adri CT van Duin<sup>2</sup>

<sup>1</sup>*Department of Engineering Science and Mechanics, and* <sup>2</sup>*Department of Mechanical and Nuclear Engineering, The Pennsylvania State University, University Park, PA 16802, USA.*

**S9: Modeling and Simulation - 4**

(L Radovic, presiding)

**O18-1**

**HOT STRINGS, COLD STRINGS: THERMAL CONDUCTIVITY OF CARBYNE CHAINS**

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**O18-2**

(tbd)

**O18-3**

(tbd)

**O18-4**

(tbd)

**S9: Modeling and Simulation – Poster Session 1**

**P2-77**

**INFLUENCE OF CARBON SOLUBILITY ON THERMODYNAMIC PROPERTIES OF CATALYST NANOPARTICLES: A KEY PARAMETER TO GROW SWNTs**

Juan Manuel Aguiar-Hualde<sup>1</sup>, Yann Magnin<sup>2</sup>, Hakim Amara<sup>1</sup>, François Ducastelle<sup>1</sup>, and Christophe Bichara<sup>2</sup>

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**P2-78**

**SIMULATION OF FLUIDIZED BED WASTE PLASTICS GASIFICATION USING CO<sub>2</sub>**

Alli Ruth Damilola, Ahmed Al Shoaibi, Chandrasekar Srinivasakannan

*The Petroleum Institute, Chemical Engineering Department, Abu Dhabi, UAE.*

**P2-79**

**DEVELOPMENT OF A MATHEMATICAL MODEL FOR INVESTIGATION OF KINETIC PARAMETERS IN STABILIZATION PROCESS OF CARBON FIBER PRODUCTION LINE**

Khashayar Badii, Minoo Naebe, Gelayol Golkarnarenji, and Hamid Khayyam

*Institute for Frontier Materials, Carbon Nexus, Deakin University, VIC 3216, Australia.*

**P2-80**

**SIMULATING HEAT TRANSFER IN THE FLEXIBLE GRAPHITE HEAT SPREADERS THAT COOL MOBILE ELECTRONICS**

Rick Beyerle

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**P2-81**

**PORPHYRIN-LIKE MOLECULES IN THE LATTICE OF CARBON NANOTUBES AND GRAPHENE: ELECTRONIC, ADSORPTION AND TRANSPORT PROPERTIES**

Luis E. Jiménez-Ramírez<sup>1</sup>, Dulce C. Camacho-Mojica<sup>2</sup>, Emilio Muñoz-Sandoval<sup>2</sup>, Florentino López-Urías<sup>2</sup>

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**P2-82**

**NUMERICAL ANALYSIS OF THE EFFECTS OF PROCESS CONDITIONS ON THE POROUS STRUCTURE DEVELOPMENT OF ADSORBENTS PREPARED BY CHEMICAL ACTIVATION OF DEMINERALISED KRAFT LIGNIN**

Mirosław Kwiatkowski<sup>1</sup>, Vanessa Fierro<sup>2</sup>, Alain Celzard<sup>2</sup>

<sup>1</sup>*AGH University of Science and Technology, Faculty of Energy and Fuels, al. A. Mickiewicza 30, 30-059 Krakow, Poland*

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**P2-83**

**COMPUTER STUDIES OF THE INFLUENCE OF ACTIVATION TIME ON THE MICROPOROUS STRUCTURE OF CARBONACEOUS ADSORBENTS PREPARED BY ACTIVATION OF LIGNIN WITH ALKALI HYDROXIDES**

Mirosław Kwiatkowski<sup>1</sup>, Vanessa Fierro<sup>2</sup>, Alain Celzard<sup>2</sup>

<sup>1</sup>*AGH University of Science and Technology, Faculty of Energy and Fuels, al. A. Mickiewicza 30, 30-059 Krakow, Poland*

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**P2-84**

**INTERATOMIC POTENTIALS FOR CARBON: TRANSFERABILITY, PRACTICALITIES AND VALIDATION**

Carla de Tomas, Irene Suarez-Martinez, Nigel Marks

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**P2-85**

**H<sub>2</sub> DISSOCIATIVE CHEMISORPTION AT EDGES OF AROMATIC UNITS OF CHAR: DETAILED THERMODYNAMIC, KINETIC AND MOLECULAR VIEW**

Lucas A. Calderón<sup>1</sup>, Diana Lopez<sup>1</sup>, Eduardo Chamorro<sup>2</sup>, and Juan F. Espinal<sup>1</sup>

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**P2-86**

**COMPETITIVE ADSORPTION OF  $\beta$ -HCH AND CHLORDECONE ON ACTIVATED CARBON: MODELING OF PESTICIDE INTERACTIONS WITH SURFACE GROUPS**

Sarra Gaspard<sup>1</sup>, Kenia Melchor-Rodríguez<sup>2</sup>, Juan José Gamboa-Carballo<sup>2</sup>, Daniel Hernández-Valdés<sup>2</sup>, Ulises Javier Jáuregui-Haza<sup>2</sup>

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**P2-87**

**NEURAL NETWORK MODELLING OF COMPLEX STABILIZATION PROCESS IN CARBON FIBER PRODUCTION LINE**

Gelayol Golkarnarenji, Minoo Naebe, Khashayar Badii, and Hamid Khayyam

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**P2-88**

**ON THE HYDROPHILICITY OF N-DOPED CARBONS**

K. Vasanth Kumar and M. Magdalena Titirici

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**P2-89**

**THE SPECTRA OF SINGLE-ELECTRON STATES OF HEXAGON-SHAPED CARBON CLUSTERS  $C_{95}N$  AND  $C_{94}N_2$  WITH GRAPHENE-LIKE STRUCTURE**

Oksana Karpenko, Victor Lobanov, and Mykola Kartel

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**P2-90**

**STRUCTURE AND PROPERTIES OF NITROGEN-CONTAINING POLYCYCLIC MOLECULES WITH HEXAATOMIC VACANCY IN THE CENTER**

Oksana Karpenko, Victor Lobanov, and Mykola Kartel

*Chuiko Institute of Surface Chemistry of the National Academy of Sciences of Ukraine 17 General Naumov Street, Kyiv 03164, Ukraine.*

**P2-91**

**ONE-STEP SYNTHESIS OF CARBON DOT PHOSPHOR FILM FOR WHITE LED**

Feng Zhang<sup>1,2</sup>, Yuanfei Ding<sup>1,2</sup>, Yongzhen Yang<sup>1,2</sup>, and Xuguang Liu<sup>1,3</sup>

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*Taiyuan University of Technology, Taiyuan 030024, China.*

**P2-92**

**PEERING INTO THE EVOLUTION OF THE CARBON MICROSTRUCTURE OF GLASSY CARBONS DERIVED FROM PHENOL FORMALDEHYDE RESINS – BY AN ADVANCED EVALUATION METHOD OF WIDE ANGLE X-RAY SCATTERING**

M. O. Loeh<sup>1</sup>, S. Hintner<sup>2</sup>, F. Badaczewski<sup>1</sup>, J. Metz<sup>2</sup>, B. M. Smarsly<sup>1</sup>

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<sup>2</sup>Schunk Carbon Technology GmbH, 35452 Germany.

**P2-93**

**NICKEL-CARBON NANOPARTICLES: SIZE-DEPENDENT PHASE DIAGRAMS AND INTERACTION WITH GRAPHENIC LAYERS**

Yann Magnin<sup>1</sup>, Christophe Bichara<sup>1</sup>, Hakim Amara<sup>2</sup>, Roland Pellenq<sup>1,2,3</sup>

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<sup>3</sup>MultiScale Materials Science for Energy and Environment, UMI 3466 CNRS-MIT, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA.

**P2-94**

**REACTION MECHANISM OF BENZENE OXIDATION**

Moldir Auyelkhanzy<sup>1,2</sup>, Nadezda Slavinskaya<sup>3</sup>, Mhedi Abbasi<sup>3</sup>, Tatiyana Shabanova<sup>1,2</sup>, Nikolay Prikhodko<sup>1,4</sup>, and Zulkhair Mansurov<sup>1,2</sup>

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**P2-95**

**EVALUATION OF FUNCTIONAL GROUPS FOR EXFOLIATED CARBON FIBERS**

Kazuki Matsumura, Taro Kinumoto, Tomoki Tsumuta and Masahiro Toyoda

Department of Applied Chemistry, Faculty of Engineering, Oita University, 700 Dannoharu, Oita 870-1124, Japan.

**P2-96**

**PYROLYSIS OF BIOMASS WITH POLYSTYRENE AND POLYVINYLCHLORIDE: THERMAL DEGRADATION MECHANISM AND PRODUCT CHARACTERIZATION**

Gamzenur Özsin, Ayşe Eren Pütün

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**P2-97**

**MODELLING OF CO-PYROLYSIS OF OIL SHALES WITH POLYETHYLENE TEREPHTHALATE VIA DAEM APPROACH**

Gamzenur Özsin<sup>1</sup>, Murat KILIÇ, Esin Apaydin-Varol, Ayşe Eren Pütün<sup>1</sup>, Ersan Pütün<sup>2</sup>

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**P2-98**

**THE TEXTURE-TRANSPORT PROPERTIES RELATION IN KEROGEN PHASES**

Amaël Obliger<sup>1</sup>, Roland Pellenq<sup>1,2,3</sup>, Franz Ulm<sup>1,2</sup> and Benoit Coasne<sup>1</sup>

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**P2-99**

**CARBX – AN EVALUATION PROGRAMME FOR WIDE-ANGLE X-RAY AND NEUTRON SCATTERING DATA OF NON-GRAPHITIC CARBONS**

Torben Pfaff and Bernd M. Smarsly

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**P2-100**

**FIRST STEPS OF SIMULATION MODEL FOR THERMAL CONVERSION OF PAN PRECURSORS TO CARBON FIBRES**

Franz Pursche, Musa Akdere, Gunnar Seide, and Thomas Gries

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**P2-101**

**TOWARD A UNIFIED MECHANISM OF OXYGEN TRANSFER PROCESSES ON THE GRAPHENE SURFACE**

Ljubisa R. Radovic<sup>1,2</sup>, Andrea Oyarzún<sup>1</sup>, Adolfo Salgado<sup>1</sup>, and Camila Mora<sup>1</sup>

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**P2-102**

**MODEL FOR THE EFFECT OF POROSITY ON ELASTIC PROPERTIES OF SYNTHETIC GRAPHITE MATERIALS USING 3D IMAGING AND MULTIPHYSICS ANALYSIS**

Shadab Shaikh, Ryan Paul, Nathaniel May

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**P2-103**

**CATALYTIC POLYMERIZATION OF NAPHTHALENE BY HF/BF<sub>3</sub>: A DENSITY FUNCTIONAL THEORY STUDY**

Po-Yu Yang<sup>1</sup>, Shin-Pon Ju<sup>1,2</sup>, Hsing-Yin Chen<sup>2</sup>, Chia-Lin Chang<sup>3</sup>, Gao-Shee Leu<sup>3</sup>

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**P2-104**

**KINEMATIC AND THERMODYNAMIC VIEW ON LOCALIZED AND MOBILE ADSORPTION – COMPUTATIONAL STUDIES ON MOLECULE DOUBLETS PROPERTIES**

Magda Ziółkowska<sup>1</sup>, Janina Milewska-Duda<sup>1</sup>, Jan T. Duda<sup>2</sup>

<sup>1</sup>*AGH University of Science and Technology, Faculty of Energy and Fuels, Al. Mickiewicza 30, 30-059 Kraków, Poland*

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## **S10: Porous Carbons 1 - Electrochemical**

(C Thomson, presiding)

### **04-1**

#### **HIERARCHICALLY ORGANIZED POROUS CARBON MONOLITHS FOR ENERGY STORAGE APPLICATIONS**

Michael S. Elsaesser<sup>1</sup>, Simon Rumswinkel<sup>1</sup>, Christian Prehal<sup>2</sup>, Christian Koczwar<sup>2</sup>, Oskar Paris<sup>2</sup> and Nicola Hüsing<sup>1</sup>

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### **04-2**

#### **EXPLORING CO<sub>2</sub> REDUCTION ON HETEROATOM-DOPED NANOPOROUS CARBONS**

Wanlu Li<sup>1</sup>, Mykola Seredych<sup>2</sup>, Enrique Rodríguez-Castellón<sup>3</sup> and Teresa J. Bandosz<sup>1,2</sup>

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### **04-3**

#### **ACTIVATED CARBONS BY NITROGEN-DOPED CHEMICAL ACTIVATION AND THEIR PERFORMANCE IN ELECTRICAL DOUBLE LAYER CAPACITORS**

Masaaki Yoshikawa<sup>1</sup>, Hiroyuki Fujimoto<sup>1</sup>, and Junichi Hayashi<sup>2</sup>

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## **S10: Porous Carbons 2 - CO<sub>2</sub> Adsorption**

(T Bandosz, presiding)

### **05-1 (Keynote)**

#### **DEVELOPMENT OF MICROPOROUS CARBONS FOR CO<sub>2</sub> ADSORPTION AT AMBIENT CONDITIONS**

Mietek Jaroniec

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### **05-2**

#### **SULFUR-DOPED MICRO-MESOPOROUS CARBONS FOR CO<sub>2</sub> SEPARATION**

Dipendu Saha

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### **05-3**

#### **CO<sub>2</sub> ADSORPTION ON BANANA-PEEL-DERIVED HIERARCHICAL POROUS CARBON FOAMS**

Arash Arami-Niya, Zhonghua Zhu, and Thomas E. Rufford

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## **S10: Porous Carbons 3 - Advanced Characterization**

(J Olivier, presiding)

### **O6-1**

#### **NITROGEN INTERACTION WITH SINGLE WALL CARBON NANOTUBES PROBED VIA *IN SITU* VIBRATIONAL SPECTROSCOPY**

Paramita Ray<sup>1</sup>, Enshi Xu<sup>2</sup>, David Gidley<sup>3</sup>, Vincent H. Crespi<sup>2</sup>, John V. Badding<sup>1</sup> and Angela D. Lueking<sup>4</sup>

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### **O6-2**

#### **SEPARATION OF HYDROCARBONS BY ADSORPTION PROCESSES USING CARBON MOLECULAR SIEVES**

Vladimir Martis<sup>1</sup>, Daryl Williams<sup>1</sup> and Daniel J. Burnett<sup>2</sup>

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<sup>2</sup>*Surface Measurement Systems NA, 2125 28th Street SW, Suite 1, Allentown, PA 18103, USA.*

### **O6-3**

#### **PRODUCTION AND CHARACTERIZATION OF LIGNIN-BASED ACTIVATED CARBON FIBERS**

Nidia C Gallego, Cristian I Contescu, Yanfeng Yue, Chau Tran

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### **O6-4**

#### **ENVIRONMENT AND ENERGY APPLICATIONS OF POROUS CARBON ULTRAFINE FIBER PREPARED BY ELECTROSPINNING PROCESS**

Feiyu Kang<sup>1,2</sup>, Yu Bai<sup>2</sup>, Jiangan Wang<sup>3</sup>, Zeyu Guo<sup>2</sup>, Lin Zou<sup>2</sup>, Zheng-Hong Huang<sup>2</sup>, Ying Yang<sup>4</sup>

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## **S10: Porous Carbons 4 - Water Treatment**

(A Carvalho, presiding)

### **O7-1 (Keynote)**

#### **A RAPID KINETIC DYE TO PREDICT ADSORPTION OF ORGANIC CONTAMINANTS ONTO GRANULAR ACTIVATED CARBONS**

Adam Redding<sup>1</sup>, Michael Greenwald<sup>2</sup>, and Fred S. Cannon<sup>2</sup>

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## **07-2**

### **NITROGEN DOPING OF AMORPHOUS CARBON FOR REVERSE OSMOSIS MEMBRANES**

Josue Ortiz-Medina<sup>1</sup>, Hiroki Kitano<sup>1,2</sup>, Aaron Morelos-Gomez<sup>1</sup>, Zhipeng Wang<sup>3</sup>, Takumi Araki<sup>1,4</sup>, Cheon-Soo Kang<sup>3</sup>, Takuya Hayashi<sup>1,3</sup>, Kenji Takeuchi<sup>1,3</sup>, Takeyuki Kawaguchi<sup>1</sup>, Akihiko Tanioka<sup>1</sup>, Rodolfo Cruz-Silva<sup>1</sup>, Mauricio Terrones<sup>3,5</sup> and Morinobu Endo<sup>1,3</sup>

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## **07-3**

### **TAILOR-MADE MESOPOROUS CARBONS FOR THE REMOVAL OF LARGE ORGANIC POLLUTANTS FROM WATER**

Wannes Libbrecht<sup>1,2,3</sup>, Hilde Poelman<sup>2</sup>, An Verberckmoes<sup>1</sup>, Joris W. Thybaut<sup>2</sup>, Jeriffa De Clercq<sup>1</sup> and Pascal Van Der Voort<sup>3</sup>

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## **07-4**

### **LIGNIN WASTE TRANSFORMED TO COCONUT ACTIVATED CARBON PORE STRUCTURE**

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## **S10: Porous Carbons 5 - CO<sub>2</sub> Adsorption**

(M Jaroniec, presiding)

## **08-1**

### **PREPARATION AND CHARACTERIZATION OF CARBONIZED WOOD WITH METAL IONS FOR CO<sub>2</sub> CAPTURE**

Toshimitsu Hata<sup>1</sup>, Sensho Honma<sup>2</sup>, Yoshikazu Onishi<sup>3</sup>, Isamu Ide<sup>3</sup>, Sylvie Bonnamy<sup>4</sup>, and Paul Bronsveld<sup>5</sup>

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<sup>5</sup>*Department of Applied Physics, University of Groningen, Nijenborgh 4, 9747 AG Groningen, The Netherlands.*

## **08-2**

### **SYSTEMATIC STUDY OF THE ADSORPTION AND PHASE BEHAVIOR OF CARBON DIOXIDE IN ORDERED MICRO-MESOPOROUS CARBONS: TOWARDS AN ADVANCED PORE STRUCTURAL CHARACTERIZATION**

Katie Cychosz<sup>1</sup> Richard T. Cimino<sup>2</sup>, and Alexander V. Neimark<sup>2</sup>, Matthias Thommes<sup>1</sup>

<sup>1</sup>*Quantachrome Instruments, Boynton Beach, FL 33426*

<sup>2</sup>*Chemical and Biochemical Engineering, Rutgers, The State University, New Jersey, Piscataway, NJ, USA.*

**O8-3 (Keynote)**

**POTENTIAL OF LOW-TEMPERATURE CARBON-BASED SOLID SORBENTS IN CO<sub>2</sub> SEPARATIONS**

N. Álvarez-Gutiérrez, N. Querejeta, I. Durán, M.G. Plaza, F. Rubiera, C. Pevida  
*Instituto Nacional del Carbón, INCAR-CSIC. Apartado 73, 33080 Oviedo, Spain.*

**S10: Porous Carbons 6 - Advanced Characterization**

(M Thommes, presiding)

**O9-1 (Keynote)**

**WATER VAPOUR ADSORPTION COUPLED WITH n-OCTANE PREADSORPTION FOR THE ADVANCED CHARACTERIZATION OF ACTIVATED CARBONS**

Leticia F. Velasco<sup>1</sup>, Inna Berezovska<sup>1</sup>, Yasmine Boutillara<sup>1,2</sup>, and Peter Lodewyckx<sup>1</sup>

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**O9-2**

**GRAPHITIZED CARBONS: TAILORING SURFACE PROPERTIES AND MESOPOROSITY**

Mietek Jaroniec<sup>1</sup> and William R. Betz<sup>2</sup>

<sup>1</sup>*Department of Chemistry and Biochemistry, Kent State University, Kent, OH 44242, USA*

<sup>2</sup>*Sigma-Aldrich Corp., 595 North Harrison Road, Bellefonte, PA 16823, USA.*

**O9-3**

**TUNING THE MESOPOROSITY OF CARBON GELS BY WET IMPREGNATION OF ALKALINE SALTS**

Alicia Gomis-Berenguer<sup>1</sup>, Ana S. Mestre<sup>2</sup>, and Conchi O. Ania<sup>1</sup>

<sup>1</sup>*Instituto Nacional del Carbón (INCAR-CSIC) 33080 Oviedo, Spain*

<sup>2</sup>*Centro de Química e Bioquímica, Faculdade de Ciências, Universidade de Lisboa, 1749-016 Lisboa, Portugal.*

**S10: Porous Carbons 7 - NPM/Characterization**

(J Olivier, presiding)

**O10-1**

**OBSERVATION OF THE TRANSFORMATION OF SILICON DIOXIDE INTO SILICON CARBIDE IN A BIOMASS CARBON BY USING SCANNING ELECTRON MICROSCOPY AND RAMAN SPECTROSCOPY**

Francisco G. Emmerich, Rodolfo S. Tartaglia, Enrique R. Yapuchura, Alfredo G. Cunha, and Jair C. C. Freitas  
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**O10-2**

**FORCED H<sub>2</sub>O DESORPTION AND RE-UPTAKE IN ELASTIC MICROPOROUS CARBON BY MECHANICAL COMPRESSION/RECOVERY**

Keita Nomura,<sup>1</sup> Hiroto Nishihara,<sup>1</sup> Hideki Tanaka,<sup>2</sup> Minoru T. Miyahara,<sup>2</sup> Kyotani Takashi<sup>1</sup>

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<sup>2</sup>*Kyoto University, Katsura Campus, Nishikyo-ku, Kyoto 615-8510, Japan.*

### **O10-3**

#### **BIOMASS-DERIVED MICROPOROUS CARBON MATERIALS WITH OPEN STRUCTURE OF CROSS-LINKED SUBMICROFIBERS WITH ENHANCED ADSORPTION CHARACTERISTICS**

Francisco Heras<sup>1</sup>, Diana Jimenez-Cordero<sup>1</sup>, Miguel A. Gilarranz<sup>1</sup>, Tarik Smith<sup>2</sup>, Noelia Alonso-Morales<sup>1</sup>, Juan J. Rodriguez<sup>1</sup>

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<sup>2</sup>Koom Consulting, C/Topete #15, 08221 Terrasa, Spain.

### **O10-4**

#### **ORGANIC POROSITY OF GEOLOGICAL CARBONACEOUS MATERIALS**

Craig P. Marshall<sup>1,2</sup>, Brenden Keel<sup>1</sup>, Alison Olcott Marshall<sup>1</sup>

<sup>1</sup>Department of Geology and <sup>2</sup>Department of Chemistry

The University of Kansas, Lawrence, Kansas 66045-7613, USA.

## **S10: Porous Carbons 8 - Vapor/Gas-Phase Adsorption/Characterization**

(C Pevida, presiding)

### **O11-1 (Keynote)**

#### **HIGH-PRESSURE METHANE STORAGE IN PETROLEUM-PITCH DERIVED CARBONS**

Mirian E. Casco, Manuel Martínez-Escandell, Francisco Rodríguez-Reinoso, Enrique V. Ramos-Fernández, Joaquín Silvestre-Albero

Laboratorio de Materiales Avanzados, Departamento de Química Inorgánica-Instituto Universitario de Materiales, Universidad de Alicante, E-03690 San Vicente del Raspeig, Alicante, Spain.

### **O11-2**

#### **SYNTHESIS OF NANOSTRUCTURED NITROGEN-DOPED CARBON THROUGH SOFT-TEMPLATING**

Maryam Peer<sup>1</sup>, Marcella R. Lusardi<sup>2</sup> and Klavs F. Jensen<sup>1</sup>

<sup>1</sup>Department of Chemical Engineering, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, MA 02139, USA.

<sup>2</sup>Department of Materials Science and Engineering, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, MA 02139 (USA)

### **O11-3**

#### **A GENERAL SILICA-TEMPLATING SYNTHESIS OF ALKALINE MESOPOROUS CARBON FOR HIGHLY EFFICIENT H<sub>2</sub>S CATALYTIC OXIDATION AT ROOM TEMPERATURE**

Zixiao Zhang, Jitong Wang, Wenming Qiao, Donghui Long, Licheng Ling

State Key Laboratory of Chemical Engineering, East China University of Science and Technology, Shanghai 200237, China.

### **O11-4**

#### **TOXIC GAS SENSING ON NANOPOROUS CARBONS**

Nikolina Travlou<sup>1,2</sup>, Mykola Seredych<sup>1</sup>, Enrique Rodriguez-Castellon<sup>3</sup> and Teresa J. Bandosz<sup>1,2</sup>

<sup>1</sup>Department of Chemistry and Biochemistry, The City College of New York, USA.

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## **S10: Porous Carbons 9 - Advanced Characterization**

(P Lodewyckx, presiding)

### **O12-1**

#### **QUASI-WALL EFFECT IN GRAPHENE-BASED NANOWINDOWS**

Fernando Vallejos-Burgos and Katsumi Kaneko

*International Center for Science and Innovation at Shinshu University, 380-8553, Nagano, Japan.*

### **O12-2**

#### **THE CORRELATION BETWEEN POROUS STRUCTURE AND THERMAL CONDUCTIVITY OF EXPANDED GRAPHITE**

Olga Shornikova<sup>1,2</sup>, Alexey Kamaev<sup>1</sup>, Nickolay Taibarey, Artem Malakho<sup>1,2</sup>, Stanislav Filimonov<sup>1</sup> and Victor Avdeev<sup>1</sup>

<sup>1</sup>*Lomonosov Moscow State University, 119991 Leninskie gory, Moscow, Russia*

<sup>2</sup>*Institute of New Carbon Materials and Technologies, 119991 Leninskie gory, Moscow, Russia.*

### **O12-3**

#### **MODELLING THE PHYSICAL PROPERTIES OF GLASSLIKE CARBON FOAMS**

Maxime Letellier<sup>1</sup>, Jan Macutkevic<sup>2</sup>, Dzmitry Bychanok<sup>3</sup>, Polina Kuzhir<sup>3</sup>, Clara Delgado-Sanchez<sup>1</sup>, Hani Naguib<sup>4</sup>, Shahrzad Ghaffari Mosanenzadeh<sup>4</sup>, Vanessa Fierro<sup>1</sup> and Alain Celzard<sup>1</sup>

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<sup>3</sup>*Research Institute for Nuclear Problems BSU, 11 Bobruiskaya Str., 220030 Minsk, Belarus*

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## **S10: Porous Carbons 10 - Liquid-Phase Adsorption**

(A Redding, presiding)

### **O13-1 (Keynote)**

#### **SYNTHESIS, CAFFEINE ADSORPTION AND REGENERATION STUDY OF ACTIVATED CARBONS FROM RAPESEED WASTE OF BIODIESEL PRODUCTION**

Mary K.S. Batista<sup>1,2</sup>, Ana S. Mestre<sup>1</sup>, Inês Matos<sup>2</sup>, Isabel M. Fonseca<sup>2</sup>, and Ana P. Carvalho<sup>1</sup>

<sup>1</sup>*Centro de Química e Bioquímica, Faculdade de Ciências, Universidade de Lisboa, 1749-016 Lisboa, Portugal*

<sup>2</sup>*LAQV-REQUIMTE, Department of Chemistry, Faculty of Science and Technology, Universidade Nova de Lisboa, Quinta da Torre, 2829-516 Caparica, Portugal.*

### **O13-2**

#### **FROM LOW-DENSITY BIOMASS TO HIGH-GRADE ACTIVATED CARBONS: HIGH PERFORMING ADSORBENTS FOR IBUPROFEN AND IOPAMIDOL**

Ana S. Mestre<sup>1,2</sup>, Fabian Hesse<sup>1,3</sup>, Cristina Freire<sup>2</sup>, Conchi O. Ania<sup>4</sup>, and Ana P. Carvalho<sup>1</sup>

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<sup>4</sup>*Instituto Nacional del Carbón (INCAR-CSIC) 33080 Oviedo, Spain.*

**O13-3**

**GREEN MESOPOROUS CARBONACEOUS MATERIALS FOR THE SELECTIVE ADSORPTION AND RECOVERY OF CRITICAL METALS**

Andrea Munoz Garcia<sup>1</sup>, Andrew Hunt<sup>1</sup>, Peter Shuttleworth<sup>2</sup>, James Clark<sup>1</sup>, and Vitaliy Budarin<sup>1</sup>

<sup>1</sup>*Green Chemistry Centre of Excellence, Department of Chemistry, The University of York, Heslington, York, YO10 5DD, UK.*

<sup>2</sup>*Departamento de Física de Polímeros, Elastómeros y Aplicaciones Energéticas, Instituto de Ciencia y Tecnología de Polímeros, CSIC, c/Juan de la Cierva 3, 28006 Madrid, Spain.*

**S10: Porous Carbons 11 - Vapor/Gas-Phase Adsorption**

(M J Martín, presiding)

**O14-1**

**GRAPHITE OXIDE EXPLOSIVE THERMAL EXFOLIATION – THERMAL HAZARD OR OPPORTUNITY FOR LARGE-SURFACE-AREA GRAPHENE-BASED MATERIALS?**

Yang Qiu, Samuel Moore, Robert Hurt, and Indrek Külaots

*School of Engineering, Brown University, 184 Hope Street, Providence, RI, USA.*

**O14-2**

**ILLUMINATING METHANE HYDRATE FORMATION IN CONFINED SPACES - FUNDAMENTAL INVESTIGATIONS ON POROUS MODEL CARBONS**

Lars Borchardt<sup>1</sup> and Joaquin Silvestre-Albero<sup>2</sup>

<sup>1</sup>*Technische Universität Dresden, Department for Inorganic Chemistry, Bergstrasse 66, 01069 Dresden, Germany*

<sup>2</sup>*Universidad de Alicante, Laboratorio de Materiales Avanzados, E-03690 San Vicente del Raspeig, Spain.*

**O14-3**

**APPLICATIONS OF ACTIVATED CARBON HONEYCOMBS IN AUTOMOTIVE EVAPORATIVE EMISSION CONTROL**

Roger S. Williams, James R. Miller, Cameron I. Thomson, and Timothy M. Byrne

*Ingevity Corporation, 5255 Virginia Avenue, N. Charleston, SC, USA.*

**O14-4**

**EFFECT OF DESORPTION CONDITIONS AND ADSORBATE PROPERTIES ON HEEL FORMATION DURING REGENERATION OF ACTIVATED CARBON FIBER CLOTH**

Saeid Niknaddaf<sup>1</sup>, Monisha Alam<sup>1</sup>, Abedeh Gholidoust<sup>1</sup>, Mohammadreza Fayaz<sup>1</sup>, Zaher Hashisho<sup>1</sup>, John D. Atkinson<sup>2</sup>, John H. Phillips<sup>3</sup>, James E. Anderson<sup>4</sup>, and Mark Nichols<sup>4</sup>

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**S10: Porous Carbons 12 - Vapor/Gas-Phase Adsorption**

(J Silvestre-Albero, presiding)

**O15-1 (Keynote)**

**ACTIVATED CARBONS FOR THE REMOVAL OF SILOXANES: SEWAGE BIOGAS UPGRADING**

Alba Cabrera-Codony, Eric Santos-Clotas, Maria J. Martín

*LEQUIA, Institute of Environment, University of Girona, Campus Montilivi, E-17071 Girona, Catalonia, Spain.*

**O15-2**

**PROCESS CONTROL OF ACTIVATED CARBON INJECTION FOR POWER PLANT FLUE GAS MERCURY REMOVAL**

Xianxian Wu

*Emerson Process Management, 200 Beta Drive, Pittsburgh, PA 15238, USA.*

**O15-3**

**EFFECT OF DESORPTION PURGE GAS IMPURITY ON IRREVERSIBLE ADSORPTION OF ORGANIC VAPORS**

Masoud Jahandar Lashaki<sup>1</sup>, Seyed Mojtaba Hashemi<sup>1</sup>, John D. Atkinson<sup>2</sup>, Zaher Hashisho<sup>1</sup>, John H. Phillips<sup>3</sup>, James E. Anderson<sup>4</sup>, Mark Nichols<sup>4</sup>, and Tony Misovski<sup>4</sup>

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**O15-4**

**SULFUR-BASED CARBONS AND THEIR APPLICATION FOR GAS-PHASE MERCURY REMOVAL**

C. Srinivasakannan, Suresh Kumar Reddy, A. Prabhu, Ahmed Al Shoaibi

*Chemical Engineering Department, The Petroleum Institute, P.O. Box 2533, Abu Dhabi, UAE.*

**S10: Porous Carbons 13 - Electrochemical**

(T Badosz, presiding)

**O16-1**

**ORDERED MESOPOROUS CARBONS FOR HIGH-PERFORMANCE SUPERCAPACITORS**

Angela Sánchez-Sánchez<sup>1</sup>, Vanessa Fierro<sup>1</sup>, María Teresa Izquierdo<sup>2</sup>, and Alain Celzard<sup>1</sup>

<sup>1</sup>*Institut Jean Lamour-UMR Université de Lorraine-CNRS 7198, ENSTIB, 27 rue Philippe Seguin, CS 60036, 88026 Epinal Cedex, France*

<sup>2</sup>*Instituto de Carboquímica, ICB-CSIC, Miguel Luesma Castán, 4, 50018 Zaragoza, Spain.*

**O16-2**

**HIERARCHICALLY POROUS CARBON FOR SUPERCAPACITORS FROM ANTHRACITE WITH SIDERITE AND KOH ACTIVATION**

Dubin Huang, Xiuyun Chuan

*School of Earth and Space Sciences, Key Laboratory of Orogen and Crust Evolution, Peking University, Beijing 100871, China.*

**O16-3**

**PORE SIZE OPTIMIZATION OF HIGH VOLTAGE OPERATING EDLC ELECTRODE BASED ON QUANTITATIVE SOLID-STATE NMR ANALYSIS**

Keiko Ideta<sup>1</sup>, Chinami Morishima<sup>2</sup>, DooWon Kim<sup>2</sup>, Takashi Utsunomiya<sup>3</sup>, Koji Nakabayashi<sup>1,2</sup>, Jin Miyawaki<sup>1,2</sup>, and Seong-Ho Yoon<sup>1,2</sup>

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<sup>2</sup>*Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, Japan*

<sup>3</sup>*Technical Research Center, Mazda Motor Corporation, Japan.*

## **S10: Porous Carbons 14 - Liquid-Phase Adsorption**

(C Thomson, presiding)

### **O17-1 (Keynote)**

#### **MECHANISM STUDY OF THIOPHENIC ADSORPTION ON ACTIVATED CARBONS**

Zhijun Li, Shuangling Jin, Rui Zhang, Xia Shao, Shimin Zhang, Ning Jiang, Minglin Jin

*School of Materials Science and Engineering, Shanghai Institute of Technology, Shanghai 201418, China.*

### **O17-2**

#### **FAST AND EFFICIENT REMEDIATION OF SULFIDE FROM PETROLEUM EFFLUENTS USING ALGINATE-DERIVED POROUS GRAPHITIC CARBON**

Anjali Achazhiyath Edathil, Priyabrata Pal, and Fawzi Banat

*The Petroleum Institute, Department of Chemical Engineering, Abu Dhabi, UAE.*

### **O17-3**

#### **APPLICATION OF RAPESEED-BASED ACTIVATED CARBONS AS ADSORBENTS OF ANTI-INFLAMMATORY AND ANTIBIOTIC DRUGS**

Maria Bernardo<sup>1</sup>, Mary Batista<sup>1,3</sup>, Domingas Songo<sup>1</sup>, Inês Matos<sup>1</sup>, Nuno Lapa<sup>2</sup>,

Ana P. Carvalho<sup>3</sup>, Isabel Fonseca<sup>1</sup>

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## **S10: Porous Carbons 15 - Electrochemical and Thermal Applications**

(L Borchardt, presiding)

### **O18-1**

#### **MESOPOROUS CARBON BASED ELECTRODE MATERIALS FOR SUPERCAPACITORS**

Shih-Yuan Lu

*Dept. of Chemical Engineering, National Tsing Hua University, Hsinchu 30013, Taiwan.*

### **O18-2**

#### **THE PREPARATION AND ELECTROCHEMICAL PROPERTIES OF ORDERED NANOPOROUS CARBONS RESULTING FROM PTEPM-b-PS BLOCK COPOLYMERS BY THERMALLY INDUCED SELF-ASSEMBLY**

Junlong Huang, Yeru Liang, Yanhuan Lin, Yongming Chen, Dingcai Wu, Ruowen Fu

*Materials Science Institute, PCFM Lab and GDHPPC Lab, School of Chemistry and Chemical Engineering, Sun Yat-sen University, Guangzhou 510275, P. R. China.*

### **O18-3**

#### **NATURAL POLYPHENOLS AS VERSATILE CARBON PRECURSORS FOR ELECTROCHEMICAL APPLICATIONS**

Thomas Berthold, Markus Antonietti and Nina Fechner

*Max Planck Institute of Colloids and Interfaces, Department of Colloid Chemistry, Am Mühlenberg 1, 14476 Potsdam, Germany.*

**O18-4**

**CARBON FOAMS SPECIALLY DESIGNED FOR SEASONAL THERMAL STORAGE**

Alain Celzard<sup>1</sup>, Prasanta Jana<sup>1</sup>, Vanessa Fierro<sup>1</sup> and Ghouti Medjahdi<sup>2</sup>

<sup>1</sup>*Institut Jean Lamour-UMR Université de Lorraine-CNRS 7198, ENSTIB, 27 rue Philippe Seguin, CS 60036, 88026 Epinal Cedex, France*

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**S10: Porous Carbons - Poster Session 1**

**P2-105**

**EFFECT OF MECHANOCHEMICAL BALL-MILLING ON ACTIVATED CARBON DERIVED FROM AGRICULTURAL WASTE STREAMS**

Kofi Adu<sup>1,2</sup>, Angela Lueking<sup>2,3</sup>, David Essumang<sup>4</sup>, Joseph Tufour<sup>4</sup>, Joseph Koranteng-Addo<sup>4</sup>, Kwasi Opoku-Boadu<sup>4</sup>, Samuel Mensah<sup>5</sup>

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<sup>5</sup>*Department of Physics, Laser and Fibre Optics Centre, University of Cape Coast, Cape Coast, Ghana.*

**P2-106**

**EFFECT OF THE RELATION CATECHOL/POLYMERIZATION CATALYST ON THE TEXTURAL PROPERTIES OF AEROGELS OF CARBON**

Norberto Vera<sup>1</sup>, Eduard Romero<sup>1</sup>, Yazmin Agaméz<sup>1</sup>, José de Jesús Díaz<sup>1</sup>, Francisco Carrasco- Marín<sup>2</sup>

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**P2-107**

**PREPARATION OF CARBON XEROGELS USING SODIUM GLYCEROPHOSPHATE AS POLYMERIZATION CATALYST**

Daniel Peña-Camargo, Yazmin Agamez-Pertuz, Eduard Romero-Malagón, José de Jesús Díaz

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**P2-108**

**PREPARATION OF NITROGEN-DOPED MICROPOROUS CARBON FROM RESOL AND NOVOLAC RESINS**

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**P2-109**

**SYNTHESIS AND CHARACTERIZATION OF TEMPLATED CARBONS FROM DIFFERENT SILICA TEMPLATES**

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**P2-110**

**ADSORPTION OF Cu(II) FROM AQUEOUS SOLUTION BY SALACCA PEEL DERIVED ACTIVATED CARBONS**

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**TAILORED ACTIVATED CARBON ADSORBENTS WITH HIGH SURFACE AREA PREPARED VIA ACID-MEDIATED DEHYDRATION OF GLYCEROL**

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**EFFECT OF Cu IMPREGNATION ON THE SO<sub>2</sub> ADSORPTION CHARACTERISTICS OF CELLULOSE-BASED LYOCCELL ACTIVATED CARBON FIBERS**

Ji Hong Kim<sup>1,2</sup>, Byong Chol Bai<sup>1,3</sup>, Jae Uk Lee<sup>1</sup>, Chul Wee Lee<sup>1,4</sup>, Young-Seak Lee<sup>3</sup>, Ji Sun Im<sup>1,4</sup>

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**ADSORPTION OF METHYLENE BLUE BY ZINC CHLORIDE ACTIVATED CARBON FROM CASHEW NUT SHELLS**

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**CHARACTERIZATION OF POLYMER CARBON SIEVES, GRAPHITIZED POLYMER CARBONS AND GRAPHITIZED CARBON BLACKS FOR USE IN SAMPLE PREPARATION PROCESSES**

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**COMBUSTION AND CARBONIZATION OF OLIVE POMACES DRIED USING A SOLAR PROCESS**

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**ADVANCED OXIDATION PROCESSES FOR THE REGENERATION OF EXHAUSTED ADSORBENTS**

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**CO<sub>2</sub> ACTIVATED PINE WOOD PELLETS FOR BIOGAS UPGRADING**

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**NITROGEN AND BORON CO-DOPING IN ORDERED MICROPOROUS CARBON BY USING HARD TEMPLATE METHOD**

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**P2-119**

**CARBON PHOTONIC CRYSTALS FOR ELECTROMAGNETIC APPLICATIONS**

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**BIOINSPIRED MICROWAVE-ABSORBING COATING BASED ON CARBON HOLLOW SPHERES**

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**P2-121**

**HIERARCHICAL POROUS CARBONS DERIVED FROM LEATHER SOLID WASTES AS HIGH PERFORMANCE ELECTRODE MATERIAL FOR SUPERCAPACITORS: AN APPROACH TO SOLID WASTE MANAGEMENT**

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**P2-122**

**ECO-FRIENDLY SYNTHESIS OF ORDERED MESOPOROUS CARBONS BY SELF-ASSEMBLY OF TANNIN WITH DIFFERENT SURFACTANTS**

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**P2-123**

**ADSORPTION BEHAVIOR OF CO<sub>2</sub> ON AMINE SUPPORTED ON POROUS CARBON**

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**P2-124**

**EFFECT OF PHENOLIC RESIN ON THE CHARACTERISTICS OF ACTIVATED CARBON PREPARED USING LIGNIN EXTRACTED FROM INDUSTRIAL WASTE BLACK LIQUOR**

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**P2-125**

**ELECTROCHEMICAL REGENERATION OF NANOPOROUS CARBONS IN WATER TREATMENT PROCESSES**

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**P3-80**

**ADSORPTION OF CARBOFURAN AND CYMOXANIL OVER WASTE TIRE ACTIVATED CARBONS**

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**P3-81**

**ACTIVATED CARBON MONOLITHS FROM LIGNOCELLULOSICS-DERIVED MATERIAL: LIQUID AND GAS PHASE ADSORPTION**

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**P3-82**

**SELECTIVE NITROGEN FUNCTIONALIZATION OF P-CONTAINING CARBONS**

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**P3-83**

**ASSESSMENT OF HIGH ELECTRIC FIELD MICROWAVE SYSTEM IN THE PREPARATION OF CARBON ADSORBENTS**

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**P3-84**

**A HIERARCHICAL POROUS CARBON (HPC) SPECIFICALLY STRUCTURED FOR A COMBINATION OF HIGH SURFACE AREA AND PORE VOLUME**

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**P3-85**

**EXPERIMENTAL SETUP AND MEASUREMENT OF GAS DIFFUSION IN POROUS CARBONS**

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**P3-86**

**BIOMASS-DERIVED ADSORBENTS AS SUPPORT FOR THE CONTROLLED RELEASE OF UREA**

Margarida Galhetas<sup>1,2</sup>, Sandra Ventura<sup>1</sup>, Ana S. Mestre<sup>1</sup>, Marco Gaya<sup>2</sup>, and Ana P. Carvalho<sup>1</sup>

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**P3-87**

**PERFORMANCE AND CYCLEABILITY OF CHEMICALLY MODIFIED CARBONS FOR CO<sub>2</sub> REMOVAL IN INDOOR AIR ENVIRONMENTS IN MOISTURE CONDITIONS**

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**SYNTHESIS OF ACTIVATED CARBON FROM PYROLYSIS OF BABASSU COCONUT: IMPROVING THE SURFACE AREA WITH CHEMICAL ACTIVATION**

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**GRANULAR ACTIVATED CARBON ANCHORED WITH POLYIONIC LIQUIDS FOR SULFATE REMOVAL**

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**P3-90**

**POROUS STRUCTURED LIGNIN/POLYACRYLONITRILE CARBON FIBER ELECTRODES FOR SUPERCAPACITORS**

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**P3-91**

**EFFECT OF FLUORINATION ON THE TOLUENE GAS ADSORPTION PROPERTIES OF ACTIVATED CARBON**

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**WHEN FOOD WASTE IS NOT WASTED: NANOCARBON APPLICATIONS**

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**P3-93**

**DESULFURIZATION ORIENTED SURFACE MOLECULARLY IMPRINTED POLYMERS BASED ON ORDERED MESOPOROUS CARBON NANOSPHERES**

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**MECHANICALLY IMPROVED CARBON FOAM DERIVED FROM MELAMINE FOAM AND ITS APPLICATIONS AS FLEXIBLE ELECTRODE**

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**NEW INSIGHTS ON THE IMMOBILIZATION MECHANISM OF *ESCHERICHIA COLI* ONTO ACTIVATED CARBONS**

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**POROSITY AND MORPHOLOGY TRANSFORMATIONS OF PITTSBURGH No. 8 COAL CHAR IN CO<sub>2</sub> GASIFICATION UNDER PORE DIFFUSION LIMITATION**

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**TAILORED DESIGN OF 3D HIERARCHICALLY POROUS CARBON FROM METAL-OXOCARBON ANION COORDINATION COMPLEXES**

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**P4-78**

**CHARACTERISATION OF ACTIVATED CARBONS OBTAINED FROM RICE HUSK**

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**P4-79**

**BISPHENOL A REMOVAL BY NUTSHELL-BASED ACTIVATED CARBONS**

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**CORRELATION BETWEEN PORE SIZE OF ACTIVATED CARBONS AND CHEMICAL SHIFT OF <sup>129</sup>Xe-NMR**

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**P4-81**

**COMPARATIVE STUDY OF THE ADSORPTION OF PHENOL USING ADSORBENTS OF DIFFERENT ORIGINS**

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**P4-82**

**POROUS CARBON SUB-MICROCAPSULES APPLIED TO CARBON DIOXIDE CAPTURE VIA ENCAPSULATED IONIC LIQUIDS (ENILS)**

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**P4-83**

**EFFECT OF CHEMICAL VAPOR DEPOSITION OF TiCl<sub>4</sub> ON MESOPOROUS CARBON: STUDY OF POROSITY AND CHEMICAL SURFACE**

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**P4-84**

**MESOPOROUS CARBON AEROGELS TAILORED BY ROOM-TEMPERATURE IONIC LIQUIDS**

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**P4-85**

**IRON NANOPARTICLES ATTACHED TO CARBONIZED AGAVE BAGASSE FIBERS THROUGH CARBON NANOTUBES FOR ARSENIC REMOVAL FROM WATER**

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**P4-86**

**CARBON MATERIALS OBTAINED FROM BIOMASS WASTE AS ADSORBENTS OF CO<sub>2</sub> UNDER POST-COMBUSTION CONDITIONS**

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**P4-87**

**HIGH-SURFACE-AREA ACTIVATED CARBON PREPARED BY CHEMICAL ACTIVATION OF ALCELL LIGNIN WITH H<sub>3</sub>PO<sub>4</sub>**

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**EFFECT OF HYDROGEN PEROXIDE OXIDATION OF CARBON NANOTUBE ADDITIVES ON THE MICROSTRUCTURE OF PITCH-DERIVED ACTIVATED CARBON FOAM**

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**EFFICIENT REMOVAL OF LOW CONCENTRATED NO<sub>x</sub> OVER CELLULOSE-BASED ACTIVATED CARBON FIBER**

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**REMOVAL OF LOW-CONCENTRATED NITROGEN MONOXIDE BY UREA/NITRIC ACID CO-IMPREGNATED PITCH-BASED ACTIVATED CARBON FIBER**

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**TG-MS AND XPS ANALYSIS OF RICE HUSK DERIVED ACTIVATED CARBONS**

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**STARENE® A NANOCOMPOSITE ENHANCED NATURALLY DERIVED MESOPOROUS CARBON**

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**IMPROVED MECHANICAL STABILITY OF MOFs CONFINED IN THE CAVITIES OF NANOPOROUS CARBON MATERIALS**

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**P4-94**

**ULTRALIGHT 3D POROUS SYSTEMS BASED ON CARBON NANOMATERIALS**

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**POROSITY DESIGN IN HYDROTHERMAL CARBON SYNTHESIS**

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**CHARACTERIZATION AND INFLUENCE OF THE SPECIFIC SURFACE AREA OF THE MgO-TEMPLATED CARBON USING POLYIMIDE AS A CARBON SOURCE**

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**VALORIZATION OF SEWAGE SLUDGE BY HYDROTHERMAL CARBONIZATION**

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**FREESTANDING TWO-DIMENSIONAL MEMBRANES GROWN DIRECTLY ON MICROSCALE APERTURES**

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**CARBON FOAM FROM MIXTURE OF COAL TAR PITCH AND FURFURAL SYNTHESIZED WITHOUT PRESSURE AND STABILIZATION STEP**

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**P4-100**

**PREPARATION AND CAPACITANCE PROPERTIES OF POLYSTYRENE-BASED POROUS CARBON**

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**ULTRALIGHT CARBON FOAMS WITH SUPERIOR MECHANICAL AND ELECTROMAGNETIC INTERFERENCE SHIELDING PROPERTIES**

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**THE EFFECT OF THE CHEMICAL PREOXIDATION ON THE N-DOPING CARBON MATERIALS DERIVED FROM ASPHALTENE**

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**CAROB PROCESSING WASTES AS PRECURSORS OF SUPERACTIVATED CARBONS**

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