

CONFERENCE SCHEDULE



AAAFM

American Association for Advances in
Functional Materials

Materials For Life

UNIVERSITY OF CALIFORNIA
LOS ANGELES, USA
19-22 AUGUST 2019



About AAAFM

World's leading functional materials community, advancing excellence in the materials sciences.

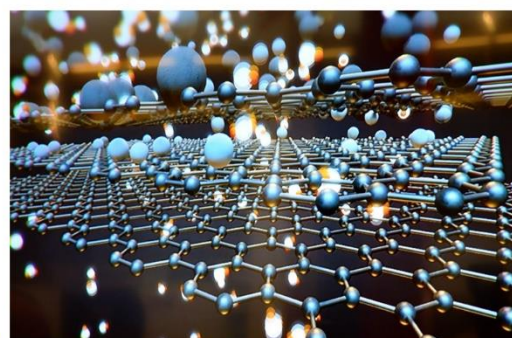
American Association for Advances in Functional Materials

With foundations rooted in innovation and research, the AAAFM is a globally recognized, functional materials membership society. We are a group of individuals working together for the advancement and benefit of humanity by furthering the focus on functional materials. Being active in this area of study for many years, we have gained members with diverse backgrounds from around the world. Amongst our esteemed members, you will find seasoned professionals at the peak of their careers from fields like education, government and entrepreneurship as well as amateurs who are simply enthusiastic about functional materials.

The purpose of this gathering is to create a platform where people sharing a passion for materials can inspire and guide each other. Since we are a charity, we take measures to use materials in such a way that they can deliver their exceptional potential to benefit the society long-term. Besides enabling enthusiasts to receive professional support from the AAAFM members, we also make a point of connecting with policymakers and the public quite frequently. The main purpose of doing so is to spread awareness about materials and make people understand the potential it holds for the benefit of all humankind.

The core aim of AAAFM Publishing's effort is to transform into a global leader in scientific education and communication. By publishing articles, journals, magazines, online data silos, and e-books, we enable people from around the world to have access to scientific knowledge.

You can also become a part of this advancing movement and help us build the foundation of our discipline's future. You can invest in materials today to see exceptional results tomorrow. By supporting AAAFM's mission to scale up its activities, you will play a proactive role in assisting us to establish a better foundation for future generations.



<https://aaafm.org>

1544 – Sutter Avenue, Simi valley California. 93065, USA



AAAFM

American Association for Advances in
Functional Materials

Materials For Life

American Association for Advances Functional Materials

Shaping a Better Future by Innovating Market Research and Promoting, Supporting, and Accelerating Functional Materials.

AAAFM deals in the following areas:

Publishing

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- AAAFM Energy
- AAAFM Material Communications
- AAAFM-Catalysis



Research Competitive Program

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- Short Courses
- Proposal Evaluations



Careers

- Materials Jobs
- AAAFM Jobs
- Material Today Jobs
- Interview Strategies



Award & Research Grants

- Innovative Science Award
- Inspiring Science Award
- AAAFM Heegar Award
- AAAFM Nakomura Award
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- Awards FAQs



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Nakamura Award

is a prestigious prize conferred on an outstanding, dynamic researcher for their outstanding achievements and contributions to the field of Functional Materials. The age of the candidates must fall within this age bracket 46-65 years.

Shuji Nakamura Nobel Prize in Physics 2014



AAAFM honors and recognizes international scientists who have shown, during the course of their professional careers, outstanding achievements in the fields of Functional Materials.

Award Winners



Chad A. Mirkin

Mirkin receives the Nakamura Award for his contributions to nanoscale functional materials and the commercial products and process that are based upon them, including the invention and development of spherical nucleic acids and can tilever-free, scanning probe-based, and 3D printing methodologies.



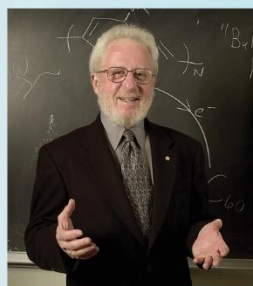
John A. Rogers

Rogers receives a Nakamura Award for his pioneering contributions to the flexible, stretchable, and wearable electronic systems for health care and exploratory neuroscience.

Heeger Award

is a prestigious prize conferred on an outstanding, dynamic young researcher for their outstanding achievements and contributions to the field of Functional Materials. The maximum age considered is 45 years.

Alan J. Heeger Nobel Prize in Chemistry 2000



AAAFM honors and recognizes international scientists who have shown, during the course of their professional careers, outstanding achievements in the fields of Functional Materials.

Award Winners



Julia R. Greer

Julia R. Greer receives the Heeger Award for her pioneering research in creating and applying multi-scale 3D architected materials in chemical and biological devices, ultra-light weight energy storage systems, damage-tolerant fabrics, and additive manufacturing.



Xiaodong Xu

Xiaodong Xu receives the Heeger Award for his seminal contributions in fundamental understanding the optical, electronic, and quantum properties of novel solid state materials through an elegant integration of nanoscale device design, optical spectroscopy, electrical transport, and scanning photocurrent measurements.

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AAAFM

American Association for Advances in
Functional Materials

Materials For Life

International Conference

"Functional Materials for Industrial Revolution"

August 19-22, 2019.

Plenary Speakers



Shuji Nakamura
University of California,
Santa Barbara, USA



Ali Khademhosseini
University of California,
Los Angeles, USA



Dae Joon Kang
Sungkyunkwan University,
Suwon, Korea



Jinlian Hu
The Hong Kong Polytechnic
University, Hung Hom,
Hong Kong



Pulickel Ajayan
Rice University
Houston, Texas



Richard B. Kaner
University of California,
Los Angeles, California,
USA



Yunqi Liu
Institute of Chemistry,
Chinese Academy of Sciences,
China



Yury Gogotsi
Drexel University,
Philadelphia, USA

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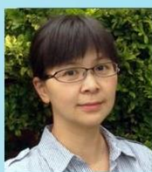
Materials For Life

International Conference “Functional Materials for Industrial Revolution” August 19-22, 2019.

Conference Co-Chairs



Xiangfeng Duan,
University of
California
Los Angeles



Yu Huang,
University of
California
Los Angeles



Imran Shakir,
UCLA,
KSU. Saudi Arabia

Session Chairs



Adviye Gulcin
Sagdicoglu Celep,
Gazi University



Balasubramanian
Sengottuvelan,
University of
Madras



Choima Awuzie,
Federal Polytechnic
OKO Anambr State
Nigeria



Gary A. Williams,
University of
California
Los Angeles



Maria Visa,
Transilvania
University of Brasov



Oskar Paris,
Montanuniversitaet
Leoben



Pnina Ari-Gur,
Western Michigan
University



Richard Motlhaletsi
Moutloali,
University of
Johannesburg



Roberta Sburlati,
University of
Genoa



Stavroula Alina
Kampouri, Ecole
Polytechnique
Federal de Lausanne



Tan Sui,
University
of Surrey

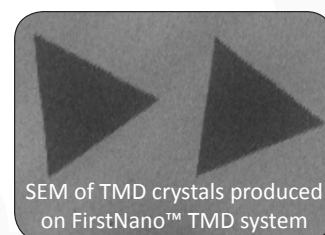
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FirstNano® EasyTube® TMD MOCVD systems

Flexible Chemistry • Ease of Operation • Safety Focus

Two-dimensional layers of transition metal dichalcogenides (TMDs) such as molybdenum disulfide (MoS_2) and tungsten diselenide (WSe_2) exhibit extraordinary optoelectronic properties. Applications for these materials include high speed electronics, flexible devices, next generation solar cells, and touch screen display panels.

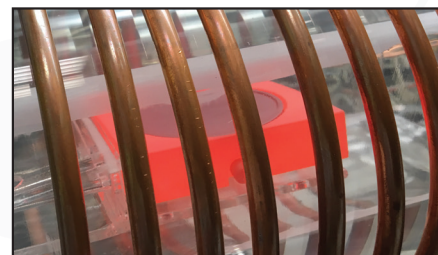


FirstNano® EasyTube® 3000TMD Single Chamber System

The EasyTube® 3000TMD is designed for wafer-scale growth of uniform 2D TMD layers with abrupt interfaces for the advanced optoelectronics research and development user. The system includes metal organic vapor and hydride gas delivery. Our EasyTube® MOCVD platform is widely used in universities and industry. With >37 years of equipment design and fabrication experience, our company brings a level of know-how that ensures high-performance and usability.

Features & Options:

- Horizontal cold-wall reactor
- RF induction heating
- Wafer rotation
- Metal organic vapor delivery for transition metal sources
- Metal organic vapor and/or hydride gas delivery of chalcogen sources
- Flexible source delivery options for dopants/functionalizers/modifiers
- Run and vent manifolds for abrupt interfaces
- Resistance heating up to 1100°C
- Vacuum system
- Safety system
- Our proprietary advanced industrial **CVDWinPrC™** system control and process editing software
- On-site startup assistance
- Optional gas delivery cabinets and panels
- Optional exhaust abatement system
- Many other modules available, contact factory



TMDC™ Multi Chamber Cluster Tool

The TMDC™ cluster system for wafer scale growth of uniform 2D TMD layers includes a central robotic transfer chamber, up to three (3) process modules, and either a loadlock or glovebox at the load station. Each process module is configured for a particular process and material. By keeping chemistries isolated to each chamber, heterostructures can be synthesized while minimizing risk of cross-contamination. Process modules are independent and can be operated in sequence or in parallel.



Features & Options:

- Stainless Steel MOCVD growth chamber for single wafer up to 100 mm
 - » System configured with up to three (3) process chambers
 - » Process chambers can be added as a future upgrade
 - » Graphite resistance heating up to 1100° C
 - » Wafer rotation
 - » Metal organic vapor delivery for transition metal sources
 - » Metal organic vapor and / or hydride gas delivery of chalcogen sources
 - » Flexible source delivery options for dopants / functionalizers / modifiers
 - » Run and vent manifolds for abrupt interfaces
 - » Vacuum system
- Central robotic transfer chamber
- Safety system
- Additional process chambers can be configured for different processes
 - » MOCVD
 - » ALD
 - » RTP
 - » Annealing
 - » Other options available, consult factory
- Loading station options:
 - » Open to room
 - » Loadlock
 - » Glovebox
- Our proprietary advanced industrial **CVDWinPrC™** system control and process editing software
- Other modules available, contact factory

We provide turnkey operation by offering gas delivery cabinets and exhaust abatement systems that are integrated with the main system control architecture. For both the EasyTube® 3000TMD and the TMDC, we offer a process development service where we install and run process on your system at our headquarters on Long Island, NY. Advantages of this service include an advanced process training course and expedited process dial-in and time-to-production.

CVD
Equipment
Corporation

CVD Equipment Corporation
355 South Technology Drive, Central Islip, NY 11722
Tel: +1 631-981-7081 | Fax: +1 631-981-7095
E-mail: sales@cvdequipment.com
www.cvdequipment.com



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Conference Overview

Date: Monday, 19/Aug/2019

3:00pm - 6:00pm Registration

CARNESALE
COMMONS

Date: Tuesday, 20/Aug/2019

8:00am - 5:00pm Registration

CARNESALE
COMMONS

8:20am - 8:30am Opening Ceremony

NORTHWEST
AUDITORIUM
Session Chair: **Yu Huang**

8:30am - 10:00am Keynote Session-1

NORTHWEST
AUDITORIUM
Session Chair: **Yu Huang**

10:00am - 10:20am Coffee Break

NORTHWEST
AUDITORIUM

10:20am - 12:00pm Keynote Session-2

NORTHWEST
AUDITORIUM
Session Chair: **Xiangfeng Duan**

12:00pm - 1:00pm Lunch Break

De Neve Dining Hall

1:00pm - 3:20pm Functional Composite Materials-1

NORTHWEST
AUDITORIUM
Session Chair: **Tan Sui**

3:20pm - 3:40pm Coffee Break

CARNESALE
COMMONS

4:00pm - 6:00pm Poster Session

CARNESALE
COMMONS:
Session Chair: **Dae Joon Kang**
Session Chair: **Pulickel M. Ajayan**

PALISADES ABCF

Date: Wednesday, 21/Aug/2019

8:00am - 8:10am AAAFM-Award Ceremony

NORTHWEST
AUDITORIUM
Session Chair: **Yu Huang**
Session Chair: **Xiangfeng Duan**

8:00am - 5:00pm Registration

CARNESALE
COMMONS

8:10am - 9:10am AAAFM-Award Presentations-1

NORTHWEST
AUDITORIUM
Session Chair: **Xiangfeng Duan**
Session Chair: **Yu Huang**



9:10am - 9:55am NORTHWEST AUDITORIUM	Plenary Session Session Chair: Yu Huang Session Chair: Xiangfeng Duan
9:55am - 10:15am NORTHWEST AUDITORIUM	Coffee Break
10:15am - 11:15am NORTHWEST AUDITORIUM	AAAFM-Award Presentations-2 Session Chair: Dae Joon Kang
11:15am - 11:45am NORTHWEST AUDITORIUM	Keynote Session-3
12:00pm - 1:00pm De Neve Dining Hall	Lunch Break
1:00pm - 3:20pm NORTHWEST AUDITORIUM	Functional Composite Materials-2 Session Chair: Adviye Gulcin Sagdicoglu Celep
1:00pm - 3:20pm CARNESALE COMMONS: Palisades AB	Functional Composite Materials-3 Session Chair: Stavroula Alina Kampouri
1:00pm - 3:20pm CARNESALE COMMONS: Palisades CF	Functional Materials for Energy Storage and Conversion Devices-1 Session Chair: Tan Sui
1:00pm - 3:20pm CARNESALE COMMONS: Palisades DE	Functional Thin Films-1 Session Chair: Balasubramanian Sengottuvelan
3:20pm - 3:40pm CARNESALE COMMONS	Coffee Break
3:40pm - 6:30pm CARNESALE COMMONS: Palisades AB	Functional Biomaterials and Biosensors-1 Session Chair: Imran Shakir
3:40pm - 6:30pm CARNESALE COMMONS: Palisades DE	Functional Biomaterials and Biosensors-2 Session Chair: Roberta Sburlati
3:40pm - 6:30pm CARNESALE COMMONS: Palisades CF	Functional Catalysis Session Chair: Richard Motlhaletsi Moutloali
3:40pm - 6:30pm	Functional Composite Materials and Energy Storage-2



NORTHWEST AUDITORIUM	Session Chair: Oskar Paris
Date: Thursday, 22/Aug/2019	
8:00am - 10:20am CARNESALE COMMONS: Venice	Functional Low dimensional, Nano and 2D materials-1 Session Chair: Pnina Ari-Gur
8:00am - 10:20am CARNESALE COMMONS: Hermosa	Functional Materials for Energy Storage and Conversion Devices-2 Session Chair: Stavroula Alina Kampouri
8:00am - 12:00pm CARNESALE COMMONS	Registration
10:20am - 10:40am CARNESALE COMMONS	Coffee Break
10:40am - 12:30pm CARNESALE COMMONS: Venice	Functional Low dimensional, Nano and 2D materials-2 Session Chair: Gary A. Williams
10:40am - 12:30pm CARNESALE COMMONS: Hermosa	Functional Thin Films-2 Session Chair: Maria VISA
12:30pm - 1:30pm De Neve Dining Hall	Lunch Break
1:30pm - 3:40pm CARNESALE COMMONS: Venice	Functional Low dimensional, Nano and 2D materials-3 Session Chair: Balasubramanian Sengottuvelan
1:30pm - 3:40pm CARNESALE COMMONS: Hermosa	Functional Materials for Energy Storage and Conversion Devices-3 Session Chair: CHIOMA IRENE AWUZIE

Keynote Session-1

Time: Tuesday, 20/Aug/2019: 8:30am - 10:00am. *Location:* NORTHWEST AUDITORIUM
Session Chair: **Yu Huang**

8:30am - 9:00am

Nano-and Microfabricated Hydrogels for Regenerative Engineering

Ali Khademhosseini

UCLA, United States of America.

9:00am - 9:30am

Rapid Large-area Replication of Nanostructures via Pulsed High-voltage Electrohydrodynamic Instability

Dae Joon Kang

Sungkyunkwan University,, Korea, Republic of (South Korea).

9:30am - 10:00am

Controlled preparation of graphene and its electronic properties

Yunqi LIU

Institute of Chemistry, Chinese Academy of Sciences, People's Republic of China.

Keynote Session-2

Time: Tuesday, 20/Aug/2019: 10:20am - 12:00pm. *Location:* NORTHWEST AUDITORIUM
Session Chair: **Xiangfeng Duan**

10:20am - 10:50am

Materials Science of Two-dimensional Structures

Pulickel M. Ajayan

Rice University, Houston, Texas, United States of America.

10:50am - 11:20am

Conjugated Nanostructured Polyaniline for Emergent Membrane Technologies

Richard B. Kaner

University of California, Los Angeles (UCLA),, United States of America.

11:20am - 11:50am

Spider Silks: A Source of Inspiration towards Revolutionary Functional Materials

Jinlian HU, Harun Venkatesan, Jianming Chen, Yuanzhang Jiang, Lin GU

Institute of Textiles and Clothing, The Hong Kong Polytechnic University, Hong Kong S.A.R. (China).

Functional Composite Materials-1

Time: Tuesday, 20/Aug/2019: 1:00pm - 3:20pm. *Location:* NORTHWEST AUDITORIUM
Session Chair: **Tan Sui**

1:00pm - 1:12pm

Cytocompatible chitosan-based bionanocomposites with antioxidant, electrically-conductive and superparamagnetic properties

Paula Ferreira

University of Aveiro, Portugal.

1:12pm - 1:24pm

Carbon nanotube-based composites and their thermoelectric performance

Wusheng Fan^{1,2}, Ni Feng¹, Guangming Chen², Lirong Liang¹, Cun-Yue Guo¹

¹University of Chinese Academy of Sciences, China, People's Republic of; ²Shenzhen University, Shenzhen 518052, People's Republic of China.

1:24pm - 1:36pm

Cu-Bi multifiber composite wire

Wojciech Głuchowski, Zbigniew Rdzawski, Marcin Maleta, Justyna Domagała-Dubiel

Institute of Non-Ferrous Metals, Poland.

1:36pm - 1:48pm

Enhanced processing and material properties for powder based Additive Manufacturing with Lanthanum hexaboride composites

Fabrizio Giovanni Ezio Verga¹, Alexandre Staub¹, Manfred Schmid¹, Konrad Wegener²

¹Inspire AG, Innovation Center for Additive Manufacturing Switzerland, St. Gallen, CH; ²Institute of Machine Tools and Manufacturing, ETHZ, Zürich CH.

1:48pm - 2:00pm

Modeling of Infiltration Processing of Interpenetrating Piezoelectric Composites

Zhihe Jin

University of Maine, United States of America.

2:00pm - 2:12pm

Modeling of short fiber reinforced composite using Extended Finite Element Method (XFEM)

Vikas Vinayak Chaudhari, Swadesh Sandesh Dixit

Birla Institute of Technology & Science, Pilani, K K Birla Goa Campus, India.

2:12pm - 2:24pm

Highly conductive carbon nanotube yarns with improved strength

Igor Maria De Rosa, Wenbo Xin, Larry Carlson

University of California, Los Angeles, United States of America.

2:24pm - 2:36pm

Multi-gradient electroconductive alumina

Irina Hussainova, Ali Saffarshamshirgar, Roman Ivanov

Tallinn University of Technology, Estonia.

2:36pm - 2:48pm

Multifunctional 3D-printing materials from modified lignins

Ngoc A. Nguyen, Christopher C. Bowland, Jong K. Keum, Lilin He, Amit K. Naskar

Oak Ridge National Laboratory, United States of America.

2:48pm - 3:00pm

One-pot synthesis of a lightweight effective electromagnetic wave absorber, Fe/Fe₃O₄@C, via in situ carbonization of Fe₃O₄-lignin framework

Chenglong Yuan¹, Zhichao Lou^{1,2}, Yao Zhang¹, Weikai Wang¹, Lintian Yang¹, Yanjun Li¹

¹College of Materials Science and Engineering, Nanjing Forestry University, Nanjing 210037, China; ²State Key Laboratory of Bioelectronics, Jiangsu Key Laboratory for Biomaterials and Devices, School of Biological Science and Medical Engineering, Southeast University, Nanjing 210096, China.

3:00pm - 3:12pm

Significant Improvement of Thermoelectric properties of PbTe Nanocomposite system in the Medium-Low Temperature Range.

Neeleshwar Sonnathi¹, Bayikadi Khasimsaheb¹, Sivaiah Bathula², Yang-Yuan Chen³, Sriparna Bhattacharya⁴, Apparao M. Rao⁴

¹University School of Basic & Applied Sciences, Guru Gobind Singh Indraprastha University, New Delhi; ²CSIR-Network of Institutes for Solar Energy 110078, India, Materials Physics and Engineering Division, CSIR-National Physical Laboratory, New Delhi 110012, India; ³Institute of Physics, Academia Sinica, Taipei 11529 Taiwan; ⁴Department of Physics and Astronomy, Clemson Nanomaterials Institute, Clemson University, Clemson, South Carolina 29634, USA.

3:12pm - 3:24pm

The effect of Al-based cellular structure on the thermal performance of the zeolite based hybrid heat accumulator

Jacek Wladyslaw Kaczmar, Krzysztof Naplocha, Anna Dmitruk, Jakub Grzeda

Politechnika Wroclawska, Poland.

3:24pm - 3:36pm

Three-dimensional (3D) warp interlock p-aramid fabrics for the development of seamless female soft body armour with better flexibility and ballistic impact performance

Mulat Alubel ABTEW^{1,2,3,4}, François BOUSSU^{2,3}, Pascal BRUNIAUX^{2,3}, Carmen LOGHIN¹, Irina CRISTIAN¹, Yan CHEN⁴, Lichuan WANG⁴

¹Faculty of Textiles, Leather and Industrial Management, “Gheorghe Asachi” Technical University of Iasi, 53, D. Mangeron Blv., 700050 Iasi, Romania; ²University of Lille 1, Nord de France, France; ³Ecole Nationale Supérieure des Arts et Industries Textiles (ENSAIT), GEMTEX, 2 allée Louise et Victor Champier, 59056 Roubaix Cedex 1, France; ⁴College of Textile and Clothing Engineering, Soochow University, 178 G.J. D. Road, Suzhou 215021, China.

3:36pm - 3:48pm

Structural, vibrational and enhanced the magnetoelectric properties of BiFeO₃-CoFe₂O₄ nanocomposites

Muneeswaran Muniyandi, Ali Akbari Fakhrabadi
Mechanical Engineering, University of Chile, Chile.

3:48pm - 4:00pm

Design of Novel Particulates from MAX and MAB Phases

Surojit Gupta
University of North Dakota, United States of America.

4:00pm - 4:12pm

Coatings with crude oil repellency

Xu Wu, Yichun Zhang
Guangzhou University, People's Republic of China.

4:12pm - 4:24pm

Beyond lithium ion batteries – Opportunities and challenges

Ramakrishna Podila, Chengxin Wang, Bingan Lu, Apparao Rao
Clemson University, United States of America.

4:24pm - 4:36pm

Specific Water/Vapor Uptake of Ultrathin Films of Cellulose: Paving the Way for New Responsive Materials from Renewable Polymers

Eero Kontturi¹, Zhuojun Meng¹, Minna Hakalahti², Elina Niinivaara^{1,3}, Tekla Tammelin¹
¹Aalto University, Finland; ²VTT Technical Research Centre of Finland; ³McMaster University, Canada.

4:36pm - 4:48pm

Superlattice Structures of Plant-sourced Nanomaterials Hybridized with Inorganic thin films for Thermoelectric Materials

Tekla Tammelin¹, Matti Putkonen¹, Marie Gestranus¹, Maarit Karppinen², Eero Kontturi²
¹VTT Technical Research Centre of Finland Ltd, Finland; ²Aalto University,

4:48pm - 5:00pm

Sculpting Photocatalysts on the Nano Scale

Lilac Amirav

Technion – Israel Institute of Technology, Israel.

5:00pm - 5:12pm

Correlation between laser spectroscopic studies and mechanical characterization of zirconia based multiwall carbon nanotube ceramic composites

Zeyad Almutairi, Kaleem Ahmad, Abdulaziz AlHazaa

KSU, Saudi Arabia;

Poster Session

Time: Tuesday, 20/Aug/2019: 4:00pm - 6:00pm. *Location:* CARNESALE COMMONS: PALISADES ABCF

Session Chair: **Dae Joon Kang**

Session Chair: **Pulickel M. Ajayan**

1. Nanoporous Metal Organic Frameworks for CO₂ capture and Heterogeneous catalysis

Thirunarayanan Ayyavu, Monica Soler, Francisco Gracia

University of Chile.

2. Biocellulose Nanocrystal-Assisted Fabrication of Uniform Urchin-like Gold Film for Using as SERS Substrate

Piboonwan Insiti¹, Attasith Parnsubsakul^{1,2}, Umphan Ngoensawat¹, Chaweewan Sapcharoenkun³, Sanong Ekgasit^{1,2}

¹Sensor Research Unit, Department of Chemistry, Faculty of Science, Chulalongkorn University, Bangkok 10330, Thailand; ²Research Network NANOTEC-CU on Advanced Structural and Functional Nanomaterials, Faculty of Science, Chulalongkorn University, Bangkok 10330, Thailand; ³National Nanotechnology Center (NANOTEC), National Science and Technology Development Agency (NSTDA), Pathum Thani 12120, Thailand.

3. Thermoelectric properties of Ge_{1-x}BixTe crystals

Yang-Yuan Chen¹, Pai-Chun Wei^{1,2}, Cheng-Lung Chen¹

¹Institute of Physics, Academia Sinica, Taiwan; ²King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabi.

4. A label-free electrochemical aptasensor based on magnetic biocomposites with Pb²⁺-dependent DNAzyme for the detection of thrombin

Chunhong Zhu, Wanying Zhu, xuemin zhou

Nanjing Medical University, People's Republic of China.

5. Application of N/S doping Graphene/TiO₂ on degradation of Sulfamethoxazole under visible irradiation

Ching Yuan¹, Chung-Hsuang Hung²

¹National University of Kaohsiung, Taiwan; ²National Kaohsiung University of Science and Technology, Taiwan.

6. Reobservation of GaN Nanostructures for Random Laser

Hyuk Jae Jang, Min Seok Kim, Gil Ju Lee, Young Min Song

Gwangju Institute of Science and Technology, Korea, Republic of (South Korea);

7. Raman spectroscopy characterization of ultrathin metal-chalcogenide and metal-halide nanowires encapsulated in single-walled carbon nanotubes – theory and experiment

Victor Genchev Ivanov¹, Eric Faulques², Jeremy Sloan³, Nataliya Kalashnyk⁴

¹Sofia University, Bulgaria; ²Institut des Matériaux Jean Rouxel (IMN), Nantes, France;

³Department of Physics, University of Warwick, United Kingdom; ⁴GeePs, CNRS UMR 8507 – CentraleSupélec – UPSud – UPMC, France.

8. Air-processed perovskite solar cells made with SnO₂ quantum dots

P.-J. Mo¹, James Wang², Hong Paul Wang¹

¹Department of Environmental Engineering, National Cheng Kung University, Tainan, Taiwan;

²Department of Nanoengineering, University of California, San Diego, CA, USA

9. Pulsed Laser Scribed Graphene/Polymer composites: A Potential Route to Print on-chip Carbon Nano-Coil Inductors

Kausiksankar Das¹, Benjamin Barnes², Nathan Bane¹, Ibrahim Elkholy¹, Samuel Olofin¹

¹University of Maryland Eastern Shore, United States of America; ²Department of Chemistry and Biochemistry, University of Maryland College Park, USA

10. Measurement of Protein Size in Concentrated Solutions by Small Angle X-Ray Scattering

Zhihong li

Institute of High Energy Physics, Chinese Academy of Sciences, People's Republic of China.

11. Transparent, thixotropic, and adhesive encapsulation for optoelectronic devices

Dong Jun Kang, Hyo Yul Park, Hyeon-Gyun Im

Korea Electrotechnology Research Institute (KERI), Korea, Republic of (South Korea).

12. Transparent encapsulation material using methyl-methacryl oligosiloxane nanocomposites for electrochromic devices

Hyeon-Gyun Im, Hyo Yul Park, Dong Jun Kang

Korea Electrotechnology Research Institute (KERI), Korea, Republic of (South Korea).

13. Heteroepitaxy of ϵ -Ga₂O₃ thin films by metal organic chemical vapor deposition

Zimin Chen, Zeqi Li, Gang Wang

Sun Yat-Sen University, People's Republic of China.

14. Self-Assembling Silver Nanoparticles on Surface of Activated Carbon as SERS Substrate for Detection of Formaldehyde

Shuhu Du

Nanjing Medical University, People's Republic of China.

15. Eco-friendly composite materials based on biodegradable polymers and surfactants

Natalia Stachowiak, Justyna Kozłowska, Halina Kaczmarek

Nicolaus Copernicus University in Torun, Poland.

16. First-Principles Study of Cubic SrTiO₃ with Perovskite-Type Materials MTaO₃ (M = Na, K) for Environmental Remediation

Penny Poomani Govender¹, Francis Opoku², Krishna Kuben Govender³, Cornelia Gertina Catharina Elizabeth van Sittert⁴

¹University of Johannesburg, South Africa; ²University of Johannesburg, South Africa; ³Center for High Performance Computing, South Africa; ⁴North-West University, South Africa.

17. pDNA-activated Electrospun PLGA Nanofibrous Scaffolds for Tissue Engineering

Shili Xiao^{1,2}, Qingyan Peng², Yongzhen Tao¹, Xiangyang Shi³, Weilin Xu¹

¹Key Laboratory of Green Processing and Functional Textiles of New Textile Materials, Ministry of Education, Wuhan Textile University, Wuhan 430073, P. R. China; ²School of Textile Science and Engineering, Wuhan Textile University, Wuhan 430073, P. R. China; ³College of Chemistry, Chemical Engineering and Biotechnology, Donghua University, Shanghai 201620, P. R. China.

18. Development and characterization of HPMC-TiO₂ and Gelatin- TiO₂ nanocomposites as ethylene scavengers for climacteric fruit application

Jessica de Matos Fonseca¹, Lenilton Santos Soares¹, German Ayala Valencia¹, Carlos Eduardo Maduro Campos², Regina FPM Moreira¹, Alcilene Rodrigues Monteiro Fritz¹

¹Federal University of santa Catarina, Brazil, Department of Chemical and Food Engineering; ²Federal University of santa Catarina, Brazil, Department of physics.

19. Antimicrobial activity and ethylene scavenging of food packaging based on hydroxypropyl methylcellulose and silver nanoparticles

Ana Carolina Flôr Vieira, Jéssica de Matos Fonseca¹, Germán Ayala Valencia¹ Fonseca, Germán Ayala Valencia, Alcilene Rodrigues Monteiro Fritz

Federal University of santa Catarina, Brazil.

20. Study on Visible Light Photo-Sensitized Metallo-Porphyrin/TiO₂ and its Photocatalytic Activities

Gisu Heo¹, Ramalingam Manivannan¹, Hyorim Kim¹, Ji Won Ryu¹, Seung Geol Lee², Young-A Son¹

¹Chungnam National University, Korea, Republic of (South Korea); ²Pusan National University, Korea, Republic of (South Korea).

21. The effects of Ar/O₂ ratio on the structure and properties of CaZrO₃/Ca_{0.15}Zr_{0.85}O_{1.85} composite films

Xiaoyang Chen, Ping Yu

Sichuan University, People's Republic of China.

22. Magneto-Sensitive Decellularized Bone Matrix as a Regenerative Biomaterial

Yaşar Murat Elçin^{1,2}, Mahmut Parmaksiz², Murat Taner Vurat^{1,2}, Özge Lalegül-Ülker², Serap Durkut², Aysel Koç-Demir², Ayşe Eser Elçin²

¹Biovalda Health Technologies, Inc., Ankara, Turkey; ²Tissue Engineering, Biomaterials and Nanobiotechnology Laboratory, Ankara University Faculty of Science, and Ankara University Stem Cell Institute, Ankara, Turkey.

23. Growth of nickel oxide on CeO₂ nanoparticles obtained in different morphologies applied as gas sensor

Rafael APARECIDO CIOLA AMORES¹, Regiane C Oliveira², Priscila B Almeida², Maria A Zaghe³, Julio Sambrano⁴, Miguel Ponce⁵, Elson Longo², Alexandre Z Simões¹

¹UNESP, Brazil; ²UFSCar, Brazil; ³UNESP, Chemical Institute-Ara, Brazil; ⁴UNESP, Bauru, Brazil; ⁵University of Mar del Plata (UNMdP), Argentina;

24. Controllable patterning designs of biomimetic thin film coatings induced by femtosecond laser texturing for cellular guidance

Albena Daskalova¹, Irina Bliznakova¹, Anton Trifonov², Liliya Angelova¹, Heidi Declercq³, Ivan Buchvarov²

¹Institute of Electronics-Bulgarian Academy of Science, Bulgaria; ²Faculty of Physics, St. Kliment Ohridski University of Sofia, Bulgaria; ³Department of Basic Medical Sciences, Ghent University, Belgium.

25. Effects of Several Fibers on the Friction Performance of Non-asbestos Organic Friction Composites

Sheng Yih Luo, Yu Hsiang Chung, Cheng Ru Wu
Huafan University, Taiwan.

26. Specific Detection and Visualization of Cyclooxygenase-2 by a Targeted Fluorescent Probe with Conformation-Induced Light Up Activity

Yuchao Luo
State Key Laboratory of Supramolecular Structure and Materials, People's Republic of China.

27. An elastomer for epidermal electronics with adjustable adhesion force and stretchability obtained via a reverse-micelle-induced process

Junhyung Kim^{1,2}, Yujin Hwang^{1,2}, Sunho Jeong¹, Su Yeon Lee¹, Youngmin Choi^{1,2}, Sungmook Jung¹

¹Korea Research Institute of Chemical Technology; ²Department of Chemical Convergence Materials, Korea University of Science and Technology;

28. Superhydrophobic Cementitious Materials

Dongfang Wang, Yongkang Wu, Guoping Zhang

University of Massachusetts Amherst, United States of America.

29. Adaptable Surface Plasmon Resonance Polarimetry System with variable levels of sensitivity and tunable dynamic ranges

Jing Wang¹, Bei Zhang², Yong Ren¹

¹University of Nottingham Ningbo China, China, People's Republic of; ²Beihang University China, People's Republic of China.

30. Needle based microfluidic formation of double emulsion structure encapsulating multiple cores

Yong Ren, Jing Wang

University of Nottingham Ningbo China, People's Republic of China.

31. SiC-conversion coating prepared from silica sol for improving oxidation resistance of carbon-fiber composites

Wooteck Kwon, Su-Bin Ahn, Yoonjoo Lee, Younghee Kim, Jung Hyun Kim

Korea Institute of Ceramic Engineering & Technology, Korea, Republic of (South Korea).

32. Negative Dielectric Constant Property of EuSr₂CaCu₂O_{6.5} Ceramic

Ibrahim Incedal, Yaşar Karabul, Mehmet Kılıç, Orhan İçelli, Zeynep Güven Ozdemir

Yildiz Technical University, Turkey.

33. Reinforcement and workability aspects of graphene-oxide-reinforced cement nanocomposites

Matan Birenboim

Ben Gurion University of the Negev, Israel.

34. Study on amorphous carbon coatings as a dielectric material for triboelectric nanogenerator

Jun Shimizu, Shreeharsha Ramaswamy, Junho Choi

The University of Tokyo, Japan.

35. Highly efficient conductive networks formed by selective localization of carbon black at the interface of sea-island structured polymer blends

Zhaoxia GUO, Hansong LI, Qiyang ZHANG, Boyuan ZHANG, Jian YU
Tsinghua University, China, People's Republic of China.

36. Glucose-Fuelled Photocatalytic Micromotors

Renfeng Dong¹, Biye Ren²

¹South China Normal University, China; ²South China University of Technology, China.

37. Detecting Heavy Metal Ions by Graphene Flakes-Based Microdevices

Xiaolu Zhu, Yingda Wang, Wenjie Zhao, Chunwang Xu

Hohai University, China, People's Republic of China.

38. Self-organizing Behaviors of Murine Myoblasts in the Dextran Hydrogel with Adjustable Configuration

Xiaolu Zhu, Zheng Wang

Hohai University, China, People's Republic of China.

39. A potential mediator for photodynamic therapy based on Silver nanoparticles functionalized with porphyrin

Prasad G. Mahajan¹, Nilam C. Dige², Balasaheb D. Vanjare¹, Ki Hwan Lee¹

¹Kongju National University, Korea, Republic of (South Korea); ²Shivaji University, India

40. Chemically functionalized amorphous silica nanoparticles equipped with uniform nanopores for removing hexavalent Chromium ions from wastewater

Eun-Hye Jang, Sungwook Chung

Pusan National University, Korea, Republic of (South Korea).

41. Effect of Thermo-Mechanical Densification on Surface Properties of Commercial Oriented Strand Boards

Matheus Couto Crisóstomo, Joaquim Carlos Gonçalves, Claudio Henrique Soares Del Menezzi

University of Brasilia, Brazil.

42. BIOSYNTHESIS OF MAGNETITE NANOPARTICLES USING *Aspergillus niger* BSC-1 ISOLATED FROM MANGROVE ECOSYSTEM

SHREOSI CHATTERJEE, SURAJIT DAS

Laboratory of Environmental Microbiology and Ecology (LEnME), Department of Life Science, National Institute of Technology, Rourkela, India.

43. Influence of various whitening agents upon biomaterials used in dentistry

Ionela - Amalia Mazilu¹, Marioara Moldovan², George Popescu³, Andrei Moldovan⁴, Codruta Sarosi², Violeta Popescu¹

¹Physics and Chemistry Department, Technical University of Cluj-Napoca, Cluj-Napoca; ²Babes Bolyai University- "Raluca Ripan" Chemistry Research Institute, Cluj-Napoca, Romania;

³Automotive Engineering and Transports Department, Technical University of Cluj-Napoca, Romania; ⁴Decembrie 1918" University of Alba Iulia, Romania.

44. Recent Applications of Nanoporous Gold to Glycoscience

Dharmendra Neupane, Jay Bhattarai, Alexei Demchenko, Keith Stine

University of Missouri - Saint Louis, United States of America.

45. Electromagnetic properties of YBCO superconducting composite for magnet application

Sang Heon LEE

Sunmoon University, Korea, Republic of (South Korea).

46. Efficient Photocatalytic Degradation of Methylene Blue and 2,4-DCP under UV and Visible light

Eswaran Prabakaran, Kriveshini Pillay

University of Johannesburg, South Africa.

47. Tuning the electronic structures, work functions, optical property and stability of bifunctional hybrid graphene oxide/V-doped NaNbO₃ type-II heterostructures: a promising photocatalyst for H₂ production

Francis Opoku¹, Krishna Kuben Govender², Cornelia Gertina Catharina Elizabeth van Sittert³, Penny Poomani Govender⁴

¹University of Johannesburg, South Africa; ²Center for High Performance Computing; ³North-West University, South Africa; ⁴University of Johannesburg, South Africa.

48. DFT Study of Skutterudite CoSb₃ and In_{0.2}Co₄Sb₁₂ Thermoelectric Heterostructures with 2D-WSe₂

Ephraim Muriithi Kiarii¹, Krishna Kuben Govender², Messai Adenew Mamo¹, Penny Poomani Govender¹

¹University of Johannesburg, South Africa; ²Council for Scientific and Industrial Research, National Integrated Cyber Infrastructure, Center for High Performance Computing, 15 Lower Hope Road, Rosebank, Cape Town 7700, South Africa.

49. Density functional theory study on polaron formation of Anatase and Brookite TiO₂ using hybrid functional and DFT+U methods

Jeffrey Roshan De Lile¹, Young-A Son², Seung Geol Lee¹

¹Pusan National University, Korea, Republic of (South Korea); ²Chungnam National University, Korea, Republic of (South Korea).

50. Effects of Zn and Ag ratio on cell adhesion and antibacterial properties of Zn/Ag co implanted TiN coatings

Dejun Li, Li Li

Tianjin Normal University, People's Republic of China.

51. Influence of temperature rise rates on the interfacial structure and mechanical stability of TiB₂/BN superlattice coatings

Dejun Li, Lei Dong

Tianjin Normal University, People's Republic of China.

52. Dual-functioning subwavelength vertical-structure multiple-quantum well diode

Yuan Jiang, Xumin Gao, Jialei Yuan, Yan Jiang, Zheng Shi, Linning Wang, Ruixue Jin, yongjin wang

Nanjing University of Posts and Telecommunications, China, People's Republic of;

53. 225-nm-thick vertical structure multiple-quantum-well diode

Shuyu Ni, Yan Jiang, Jialei Yuan, Xumin Gao, Zheng Shi, yongjin wang

Nanjing University of Posts and Telecommunications, People's Republic of China.

54. Contact force analysis of a circular cylindrical wedge wave ultrasonic motor

Tai-Ho Yu, Tung-Che Lu

National United University, Taiwan.

55. Vortex manipulation with dots and antidots on superconductivity of REBa₂Cu₃O_{7-δ} films growth by trifluoroacetate metal organic deposition method

Fang Li, Sansheng Wang

Beihang university, People's Republic of China.

56. Preparation of graphene oxide and graphene by two-step oxidation

Ying Wang, Sansheng Wang

Beihang University, People's Republic of China.

57. Sustainable energy harvesting technology based on triboelectric nanogenerators and loss-energy harvesting system

Dongseob Kim¹, Sangmin Lee²

¹Korea Institute of Industrial Technology(KITECH), South Korea; ²Chung-Ang University, South Korea.

58. Preparation of perovskite solar cells without a hole transport layer in ambient air

M.-X. Zhuang¹, P.-J. Mo¹, James Wang², Y.-L. Wei³, Hong Paul Wang¹

¹Department of Environmental Engineering, National Cheng Kung University, Tainan 70101, Taiwan; ²Department of Nanoengineering, University of California, San Diego, CA 92037, USA; ³Department of Environmental Science and Engineering, Tunghai University, Taichung 40704, Taiwan.

59. Violet-blue-shift of spectrum and enhanced luminescent properties of $\text{Ca}_3(\text{PO}_4)_2:\text{Ce}^{3+}$ phosphor induced by small amount of Gd^{3+} incorporation

Leelakrishna Reddy, Thabang Nkosi, Balakrishna Avula

University of Johannesburg, South Africa.

60. The Synthesis of Branched Amines with polyether and the Studies of Physical Properties of Epoxy Composites Including the Amines

Taehee Kim, Miri Kim, Wonjoo Lee, Choong-Sun Lim, Bongkuk Seo

Korea Research Institute of Chemical Technology, Korea, Republic of (South Korea).

61. Hydroxy Terminated Poly(dimethylsiloxane) as an Electrolyte Additive to Enhance the Cycle Performance of Lithium-Ion Batteries

Jang Myoun Ko, Mwemezi Manasi

Hanbat National University, Korea, Republic of (South Korea).

62. A Hierarchically Structured Carbon Electrodes Based on Intrinsically Microporous Polymer (PIM-1) Matrix for supercapacitor

Byoung Gak Kim, Jun Woo Jeon, Jae Hee Han, Minsu Kim, Yong Seok Kim, Tae-Ho Kim

Korea Research Institute of Chemical Technology (KRICT), Korea, Republic of (South Korea).

63. Carbon-sulfur composites derived from polymers of intrinsic microporosity for RT Na-S rechargeable batteries

Jun Woo Jeon^{1,2}, Dong-Min Kim², Minsu Kim¹, Yong Seok Kim¹, Jong-Chan Lee², Kyu Tae Lee², Byoung Gak Kim¹

¹Korea Research Institute of Chemical Technology (KRICT), Korea, Republic of (South Korea);

²Seoul National University (SNU), Korea, Republic of (South Korea).

64. Nanostructured boron carbide for cancer treatment by boron neutron capture therapy

Manjot Kaur¹, Hiroyuki Nakamura², Akshay Kumar¹

¹Sri Guru Granth Sahib World University, India; ²Laboratory for Chemistry and Life Science, Institute of Innovative Research, Tokyo Institute of Technology, Nagatsuta-cho, Midori-ku, Yokohama 226-8503, Japan.

65. Mechanical Properties and Thermal Stability of Basalt Fiber Reinforced Magnesium Oxychloride Cement

Xiang Li, Yuan Zhou, Chunxi Hai, Xiufeng Ren, Jinbo Zeng, Yue Shen, Yanxia Sun
Qinghai Institute of Salt Lakes, Chinese Academy of Sciences, Xining, China.

66. Preparation of Uniformly Dispersed Mn-based Oxide Ion Sieves with High Adsorption Capacity and Selectivity for Lithium separation from Brine

Chunxi Hai^{1,2}, Guicai Qi^{1,2,3}, Yuan Zhou^{1,2}, Yue Shen^{1,2}, Yanxia Sun^{1,2}, Shengde Dong^{1,2,3}, Xiang Li^{1,2}

¹Qinghai Institute of Salt Lakes, China, People's Republic of; ²Key Laboratory of Salt Lake Resources Chemistry of Qinghai Province, Xining 810008, China;; ³University of Chinese Academy of Sciences, Beijing 100049, China.

67. Charges storage and transfer behaviors of single layer reduced graphene oxide sheets

Yue Shen¹, Yanxia Sun¹, Chunxi Hai¹, Yuan Zhou¹, Yi Zhang²

¹Key Laboratory of Salt Lake Resources Chemistry of Qinghai Province, Qinghai Institute of Salt Lakes, Chinese Academy of Sciences, Xining, Qinghai 810008, China; ²Key Laboratory of Interfacial Physics and Technology of Chinese Academy of Sciences, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, Shanghai 201800, China.

68. Electrospun composite nanofiber membranes of poly(vinyl alcohol)/chitosan for selective lead(II) and cadmium(II) ions removal from wastewater

sahar saad shar, Mohammad Rezaul Karim
King Saud University, Saudi Arabia.

69. A Highly Sensitive and Stable Pressure Sensor by Conformal Nano-coating on Micro-pyramid arrays using Conducting Polymer

Jung Joon Lee¹, Srinivas Gandla¹, Byeongjae Lim², Sunju Kang¹, Sunyoung Kim², Sunjong Lee², Sunkook Kim¹

¹Sungkyunkwan university, Korea, Republic of (South Korea); ²Korea Institute of Industrial Technology, Korea, Republic of (South Korea).

70. Mechanically strong, shape memory polyurethane membrane for thermo-regulating textile

Md Anwar Jahid, Jinlian Hu

The Hong Kong Polytechnic University, Hong Kong S.A.R. (China).

71. Solubility, morphological and antibacterial properties of biomaterials with graphene

Marioara Moldovan¹, Marcela Rosu², Cristina Prejmorean¹, Doina Pordan¹, Violeta Popescu³, Codruta Sarosi¹, Rahela Carpa⁴

¹Babes Bolyai University-“Raluca Ripan” Chemistry Research Institute, Cluj-Napoca, Romania;

²National Institute for Research and Development of Isotopic and Molecular Technologies, Cluj-Napoca, Romania; ³Physics and Chemistry Department, Technical University of Cluj-Napoca, Romania; ⁴Babes Bolyai University -Faculty of Biology and Geology, Cluj-Napoca, Romania.

72. Deciphering the Route to Blinking Metal phase of electrical conductivity in touching semiconductor nanocrystals.

Anjali Panwar¹, Vikas Malik², Neeleshwar Sonnathi¹, Anjana Bagga¹

¹Guru Gobind Singh Indraprastha University, Delhi, India; ²Jaypee Institute of Information Technology, Noida, UP, India.

73. N-doped nanostructured carbon very thin films on quartz and sapphire substrate: Photo-electron emission properties

Jozef Huran^{1,2}, Nikolay I. Balalykin¹, Vlasta Sasinkova³, Angela Kleinova⁴, Mikhail A. Nozdrin¹, Alexander P. Kobzev¹, Eva Kovacova²

¹Joint Institute for Nuclear Research; ²Institute of Electrical Engineering, Slovak Academy of Sciences, Slovak Republic; ³Institute of Chemistry, Slovak Academy of Sciences; ⁴Polymer Institute, Slovak Academy of Sciences.

74. Optical Properties and Microstructure of Ti, TiNi and Al Thin Films before and after Oxidation

Hanan Abouarab², Amal Kassry¹, Iman Salah Eldin El-Mahallawi^{1,2}

¹Faculty of Engineering, The British University in Egypt, Egypt; ²Department of Metallurgical Engineering, Faculty of Engineering, Cairo University.

75. Thermoelectric behavior of polyaniline- based/ CNT- composite

Iman Salah Eldin El-Mahallawi^{2,1}, Ayat Abd-Elsalam², Ahmed Ashraf², Amr Hasanin², Hussein Badr², Mahmoud Sorour², Ahmed A. Abdel-Rehim¹, Fawzi A. Elrefaie²

¹The British University in Egypt, Egypt; ²Department of Metallurgical Engineering, Faculty of Engineering, Cairo University.



AAAFM-Award Presentations-1

Time: Wednesday, 21/Aug/2019: 8:10am - 9:10am. *Location:* NORTHWEST AUDITORIUM

Session Chair: **Xiangfeng Duan**

Session Chair: **Yu Huang**

8:10am - 8:40am

Soft, Biocompatible Optoelectronic Systems as Neural Interfaces

John A. Rogers

Northwestern University, United States of America.

8:40am - 9:10am

Megalibraries: Expanding and Exploring the Materials Genome

Chad A Mirkin

Northwestern University, United States of America.

Plenary Session

Time: Wednesday, 21/Aug/2019: 9:10am - 9:55am. *Location:* NORTHWEST AUDITORIUM

Session Chair: **Yu Huang**

Session Chair: **Xiangfeng Duan**

Invention of High Efficient blue LED and Future Solid State Lighting

Shuji Nakamura

University of California, Santa Barbara, United States of America;
yukina@engineering.ucsb.edu

AAAFM-Award Presentations-2

Time: Wednesday, 21/Aug/2019: 10:15am - 11:15am. *Location:* NORTHWEST AUDITORIUM

Session Chair: **Dae Joon Kang**

10:15am - 10:45am

Materials by Design: Three-Dimensional (3D) Nano-Architected Meta-Materials

J.R. Greer

California Institute of Technology, United States of America.

10:45am - 11:15am

2D Magnets

Xiaodong Xu

University of Washington, United States of America.

Keynote Session-3

Time: Wednesday, 21/Aug/2019: 11:15am - 11:45am. *Location:* NORTHWEST AUDITORIUM

Session Chair: **Dae Joon Kang**

11:15am - 11:45am

Electronic Properties of 2D Transition Metal Carbides and Nitrides (MXenes)

Kanit Hantanasirisakul, Yury Gogotsi

Drexel University,, United States of America; y.gogotsi@gmail.com

Functional Composite Materials-2

Time: Wednesday, 21/Aug/2019: 1:00pm - 3:20pm. *Location:* NORTHWEST AUDITORIUM
Session Chair: **Adviye Gulcin Sagdicoglu Celep**

1:00pm - 1:12pm

Fatigue Responses of Ti/APC-2 Nanocomposite Laminates with Inclined Cracks at Elevated Temperature Part I: Experiments

Ming-Hwa R. Jen, Guan-Ting Guo, Ying-Hui Wu, Ying-Jing Chen
National Sun Yat-Sen University, Taiwan.

1:12pm - 1:24pm

Extraction of Cellulose from Vitellaria paradoxa agro-waste for possible Water Filtration Polymer Composite preparation

Stephen Agwuncha¹, Shesan Owonubi², Neerish Revaprasadu²
¹Ibrahim Badamasi Babangida University, Lapai, Nigeria, Nigeria; ²Department of Chemistry, University of Zululand, Kwadlangezwa, Kwazulu Natal, RSA.

1:24pm - 1:36pm

Microstructure and properties of copper matrix composites fabricated by laser surface alloying

Justyna Domagała-Dubiel¹, Damian Janicki², Katarzyna Bilewska¹, Wojciech Głuchowski¹
¹Institute of Non-Ferrous Metals, 5 Sowińskiego Street, 44-100 Gliwice, Poland; ²Silesian University of Technology, Faculty of Mechanical Engineering, Welding Department, 18A Konarskiego Street, 44-100 Gliwice, Poland.

1:36pm - 1:48pm

Infrared Emitting Photonic Composites for Polymeric Waveguide Amplification

Mei Chee Tan¹, Xinyu Zhao¹, Yang Sun², George Chen¹, Chaobin He^{2,3}, Dawn Tan¹
¹Singapore University of Technology and Design, Singapore; ²National University of Singapore, Singapore; ³Institute of Materials Research and Engineering, Agency for Science, Technology and Research (A*STAR).

1:48pm - 2:00pm

Lignin-based and disulfate-linked aerogel as a selective, controllable, reusable superabsorbent

Shanyu Meng, Arianna Partow, zhaohui Tong
University of Florida, United States of America.

2:00pm - 2:12pm

Bioinspired wettability surfaces with micro- and nanostructures from design to functions

Yongmei Zheng

Beihang University, People's Republic of China.

2:12pm - 2:24pm

PHOTODEGRADATION OF ORGANIC DYES USING COBALT-BASED METAL ORGANIC FRAMEWORK (ZIF-67) CATALYSTS SUPPORTED ON GRAPHENE OXIDE UNDER SIMULATED SOLAR IRRADIATION

Thollwana Makhetha, Richard Motlhaletsi Moutloali

University of Johannesburg, South Africa.

2:24pm - 2:36pm

Fabrication and mechanical properties of Ti/Al₂O₃ composites with CeO₂, Y₂O₃, and ZrO₂ doped

Guopu Shi, Liu Zhang, Zhi Wang, Qinggang Li, Junyan Wu

University of Jinan, People's Republic of China.

2:36pm - 2:48pm

Eddy Current on Carbon Fiber Composite

Xiao-Zhang Zhang

Tsinghua University, People's Republic of China

2:48pm - 3:00pm

Tailoring emulsion polymerization for high-yield synthesis of Tween 80 stabilized magnetic polystyrene nanocomposite particles

Xiaojing Liu, Yangcheng Lu

Tsinghua University, People's Republic of China.

3:00pm - 3:12pm

Development of nano-structured hybrid hydrophobic-hydrophilic surface to improve condensation heat transfer

Mahmood Yaghoubi, M. Hormozi, S Fosehat

Shiraz University, Islamic Republic of Iran.

3:12pm - 3:24pm

On Hashin's bounds for elastic properties of spherical particle-reinforced composites with graded interphase

Roberta Sburlati, Roberto Ciani

University of Genoa, Italy.

3:24pm - 3:36pm

Mechanical, Thermal and Dielectric Properties of Poly Propylene Blended with Lignocellulosic for Insulating Biocomposites Material

Harmaen Ahmad Saffian¹, Mohd Aizam Talib², Ainun Zuriyati Mohamad Asa'ari¹, Paridah Md Tahir¹, Seng Hua Lee¹

¹Institute of Tropical Forestry and Forest Products, Universiti Putra Malaysia, Malaysia; ²TNB Research Sdn Bhd., No.1, Lorong Ayer Itam, Kawasan Institusi Penyelidikan, 43000 Kajang, Selangor, Malaysia.

Functional Composite Materials-3

Time: Wednesday, 21/Aug/2019: 1:00pm - 3:20pm. *Location:* CARNESALE COMMONS: Palisades AB

Session Chair: **Stavroula Alina Kampouri**

1:00pm - 1:12pm

A novel Carbon Nanotubes based grease formulation and its unique lubricating performance

Jaroslav Kaluzny¹, Krzysztof Kempa⁵, Andrzej Kulczycki⁴, Tomasz Runka², Marek Nowicki², Adam Piasecki³, Bartosz Gapinski³, Grzegorz Kinal¹, Aleksander Stepanenko¹, Dawid Gallas¹, Jerzy Merksiz¹

¹Poznan University of Technology, Poznan, Poland, Faculty of Transport Engineering; ²Poznan University of Technology, Poznan, Poland, Faculty of Technical Physics; ³Poznan University of Technology, Poznan, Poland, Faculty of Mechanical Engineering and Transport; ⁴Air Force Institute of Technology, Warsaw, Poland; ⁵Department of Physics, Boston College, Boston, USA.

1:12pm - 1:24pm

Wave propagation in magnetic functional fluids

Victor V. Sokolov

MIREA- Russian Technological University, Moscow, Russia, Russian Federation.

1:24pm - 1:36pm

Innovative bioactive resin infiltrant

Abeer ElEmbaby¹, Mohamed Nassar²

¹Imam Abdulrahman University, Saudi Arabia,; ²British University, Egypt.

1:36pm - 1:48pm

Effect of ceramic grain size on fabrication of porous ceramic parts using Solvent Based Slurry Stereolithography

Jia Chang Wang^{1,2}, Hitesh Dommati³

¹Department of Mechanical Engineering, Additive Manufacturing Center for Mass Customization and Production, National Taipei University of Technology; jcw@mail.ntut.edu.tw; ²Additive Manufacturing Center for Mass Customization and Production, National Taipei University of Technology; ³College of Mechanical & Electrical Engineering, National Taipei University of Technology.

1:48pm - 2:00pm

Ultrasensitive broadband photodetector using electrostatically conjugated MoS₂-upconversion nanoparticles nanocomposite

Sandip Ghosh, Wen Cheng Chiang, Surojit Chattopadhyay
National Yang-Ming University, Taiwan.

2:00pm - 2:12pm

Modification of sodium alginate/starch films by addition of microspheres

Justyna Kozłowska, Weronika Prus, Natalia Stachowiak
Nicolaus Copernicus University, Poland.

2:12pm - 2:24pm

Hybrid Zn coatings with incorporated modified PANI particles – preparation and corrosion characterization

Nikolai Stoyanov Boshkov¹, Neli Dimitrova Boshkova¹, Kamelia Pavlova Kamburova¹, Nadezhda Vladimirova Tabakova², Tsetska Borisova Radeva¹

¹Institute of Physical Chemistry, Bulgarian Academy of Sciences, Bulgaria; ²Institute of Organic Chemistry, Bulgarian Academy of Sciences, Bulgaria.

2:24pm - 2:36pm

Enhancing wellbore stability of water-based drilling fluid using a novel catechol-chitosan biopolymer encapsulators

Zhichuan Tang¹, Zhengsong Qiu¹, Hanyi Zhong¹, Baoyu Guo², Xudong Wang², Yujie Kang¹

¹School of petroleum engineering, China university of petroleum(East China), Qingdao, China, People's Republic of; ²Drilling engineering technology company of Shengli Petroleum Administration Bureau, Dongying, China.

2:36pm - 2:48pm

Preparation and study on thermal-response and intelligent composite lost circulation material based on shape memory polymer in drilling engineering

Dan Bao¹, Zhengsong Qiu¹, Haiyi Zhong¹, Xin Zhao¹, Ganghua Chen²

¹School of Petroleum Engineering, China University of Petroleum (East China), China; ²School of Geoscience, China University of Petroleum (East China), China.

2:48pm - 3:00pm

Nanocellulose based Functional Composite Materials

Kadhiravan Shanmuganathan^{1,2}, Farsa Ram^{1,2}, Prashant Yadav^{1,2}, Tushar Ambone^{1,2}, Sandeep Kadam^{1,2}

¹CSIR-National Chemical Laboratory, India; ²Academy of Scientific and Innovative Research, India.

3:00pm - 3:12pm



Infrared stealth and phase change microcapsules based on stearic acid and nano-iron

Weidong Ke¹, Xiuwen Wu^{1,2}, Jinlin Zhang¹

¹School of Science, China University of Geosciences, Beijing 100083, PR China; ²National Laboratory of Minerals Materials, China University of Geosciences, Beijing 100083, PR China.

3:12pm - 3:24pm

MoS₂ based nanocomposites for photocatalytic degradation of industrial dyes

Akshay Kumar, Unni Krishnan, Manjot Kaur

Sri Guru Granth Sahib World University, India.

Functional Materials for Energy Storage and Conversion Devices-1

Time: Wednesday, 21/Aug/2019: 1:00pm - 3:20pm · *Location:* CARNESALE COMMONS: Palisades CF

Session Chair: **Tan Sui**

1:00pm - 1:12pm

Synthesis of One-dimensional multi-Niobate composited and their Application of Flexible Piezoelectric Films

Lihong Li

Institute of Chemistry, Chinese Academy of Sciences, China.

1:12pm - 1:24pm

Use of ZrO₂ Stimulated PVDF HFP Composite Flexible Thin Film in developing High Performance Piezoelectric Nanogenerator and Transparent Single Electrode Triboelectric Nanogenerator

Sukhen Das¹, Minarul Shaikh², Nur Amin Hoque¹, Prosenjit Biswas¹, Pradip Thakur³

¹Jadavpur University, India; ²Government General Degree College at Pedong, Kalimpong, India;

³Netaji Nagar College for Women, Kolkata, India.

1:24pm - 1:36pm

Carbon modified Iron oxide magnetic nanoparticles - negative electrode material for supercapacitor applications

Arun Thirumurugan¹, Ali Akbari-Fakhranadi¹, Prabakaran K²

¹University of Chile, Chile; ²SRM Research Institute, SRM Institute of Science and Technology, Tamil Nadu, India.

1:36pm - 1:48pm

A simple route for the synthesis of high-quality silicon-carbon composites for lithium-ion batteries

Giorgio Nava, Joseph Schwan, Lorenzo Mangolini

University of California Riverside, United States of America.

1:48pm - 2:00pm

Flexible solid-state supercapacitors based on graphene/polypyrrole composites inkjet printed on textile substrates

Zbigniew Stempień¹, Mohammad Khalid², Marek Kozicki¹

¹Lodz University of Technology, Poland; ²University of São Paulo, Brazil.

2:00pm - 2:12pm

3D Nanoporous Conductor-Insulator-Conductor (CIC) Capacitor

Samuel S. Welborn¹, John S. Corsi¹, Eric Detsi^{1,2}

¹University of Pennsylvania, Philadelphia, PA, USA.; ²Vagelos Institute for Energy Science and Technology (VIEST), Philadelphia, PA, USA.

2:12pm - 2:24pm

An Overview of Research on Lithium Iron Phosphate Battery

John S. Liu, Mei Hsiu-Ching Ho

National Taiwan University of Science and Technology, Taiwan.

2:24pm - 2:36pm

Photoconversion of CO₂: Controllable Transition from C1 to C2 Products

SU-IL IN

DGIST, Korea, Republic of (South Korea).

2:36pm - 2:48pm

A Long Cycle-Life and High-Rate Magnesium-Ion Battery Anode Enabled by Self-Healing through Near-Room-Temperature Solid-Liquid Phase Transition

Lin Wang¹, Samuel Welborn¹, Eric Detsi^{1,2}

¹Department of Materials Science & Engineering, University of Pennsylvania, Philadelphia PA 19104-6272, USA; ²Vagelos Institute for Energy Science and Technology (VIEST), Philadelphia, PA 19104, USA.

2:48pm - 3:00pm

Polypyrrole Nanoparticles Doped with Fullerene and Fullerene/Pd Coordination Polymer Uniformly Distributed in the Polymeric Phase

Krzysztof Winkler, Monika Wysocka-Zolopa, Jakub Goclon

University of Bialystok, Poland.

3:00pm - 3:12pm

Operando TEM Investigation of Lithium Storage Mechanisms in Nanoporous Alloy-Type Lithium-Ion Anodes

John Corsi^{1,2}, Eric Stach^{1,2}, Eric Detsi^{1,2}

¹Department of Materials Science and Engineering, University of Pennsylvania, Philadelphia, USA; ²Vagelos Institute for Energy Science and Technology (VIEST), Philadelphia, USA.

3:12pm - 3:24pm

Chemically Activated Hydrophilic Carbon Cloth as an Electrode Material for Energy Storage Device

Manu Saji Samuel, Chirag Mevada, Mausumi Mukhopadhyay

SVNIT Surat Gujarat India, India.

Functional Thin Films-1

Time: Wednesday, 21/Aug/2019: 1:00pm - 3:20pm. *Location:* CARNESALE COMMONS: Palisades DE

Session Chair: Balasubramanian Sengottuvelan

1:00pm - 1:12pm

Novel Pi-Electron Molecular Scaffolds for Mesophase Semiconductors

Ke-Qing Zhao

Sichuan Normal University, People's Republic of China.

1:12pm - 1:24pm

Programmable High-Efficiency Quasi-Random Nanostructures for Light Harvesting Devices

Shengjie Zhai, Yihong Zhao, Hui Zhao

University of Nevada Las Vegas, United States of America.

1:24pm - 1:36pm

CuO/TiO₂ p-n thin film nanoheterostructures for gas sensing applications

Katarzyna Ewa Zakrzewska¹, Wojciech Maziarz¹, Marta Radecka², Michał Mazur³, Damian Wojcieszak³, Danuta Kaczmarek³

¹AGH-University of Science and Technology, Faculty of Computer Science, Electronics and Telecommunications, Poland; ²AGH-University of Science and Technology, Faculty of Materials Science and Ceramics; ³Wroclaw University of Science and Technology, Faculty of Microsystem Electronics and Photonics.

1:36pm - 1:48pm

Structuring polymer solutions upon liquid-vapor mass exchange

Jasper Joost Michels

Max Planck Institute for Polymer Research, Germany.

1:48pm - 2:00pm

Transparent and Conductive ITO/Au/ITO Multilayer Thin Films with Enhanced EMI Shielding Properties

Nursev Erdogan¹, Aziz Taner Astarlıoğlu¹, Salih Ozbay¹, Fuat Erden¹, Remzi Ecmel Ece¹, Mehtap Ozdemir², Gulnur Aygun³, Lutfi Ozyuzer³

¹Turkish Aerospace Industries Inc., Turkey; ²Teknoma Technological Materials Inc., Turkey;

³Izmir Institute of Technology, Turkey.

2:00pm - 2:12pm

Amorphous silicon carbide thin films doped with P or B for the Photoelectrochemical water splitting devices

Jozef Huran^{1,5}, Pavol Bohacek¹, Vlasta Sasinkova², Angela Kleinova³, Miroslav Mikolasek⁴, Alexander P. Kobzev⁵, Maria Sekacova¹, Juraj Arbet¹

¹Institute of Electrical Engineering, Slovak Academy of Sciences, Slovak Republic; ²Institute of Chemistry, Slovak Academy of Sciences; ³Polymer institute, Slovak Academy of Sciences; ⁴Faculty of Electrical Engineering and Information Technology, Slovak University of Technology; ⁵Joint Institute for Nuclear Research.

2:12pm - 2:24pm

Appearance and Disappearance of Ferroelectric Phase in Crystalline HfO₂ Thin Films Induced by Annealing Procedure

Shinji Migita, Hiroyuki Ota
AIST, Japan.

2:24pm - 2:36pm

Fabrication of Super-Hydrophobic Micro-Tube and Studies on Water Convective Heat Transfer in the Micro-Tube

Zhijia Yu
Dalian University of Technology, People's Republic of China.

2:36pm - 2:48pm

Functional materials derived from exceptionally stable π -delocalized radicals

Kilingaru I. Shivakumar¹, Szymon Kapusciński², Marcin Jasiński², Martin Cigl¹, Jacek Szczytko³, Hirosato Monobe⁴, Damian Pocięcha⁵, Piotr Kaszynski^{1,2,6}

¹Centre of Molecular and Macromolecular Studies, Polish Academy of Sciences, 90-363 Łódź, Poland; ²Faculty of Chemistry, University of Łódź, 91-403 Łódź, Poland; ³Institute of Experimental Physics, University of Warsaw, 02-093 Warsaw, Poland; ⁴National Institute of Advanced Industrial Science and Technology (AIST), Kansai Centre, Ikeda, Osaka 563-8577, Japan; ⁵Faculty of Chemistry, University of Warsaw, 02-089 Warsaw, Poland; ⁶Department of Chemistry, Middle Tennessee State University, Murfreesboro, TN 37123, USA.

2:48pm - 3:00pm

Nanocomposite ion exchange membranes and free-standing graphene oxide membrane in salinity gradient energy generation

Haiping Gao, Xin Tong, Su Liu, Bopeng Zhang, Yongsheng Chen
Georgia Institute of Technology, United States of America.

3:00pm - 3:12pm

Efficient regulation of nitrogen-vacancy center ensembles in diamond through nitrogen-oxygen co-doping technique

Shulin Gu

Nanjing University, People's Republic of China.

3:12pm - 3:24pm

Scanning tunneling microscopy study of the possible topological surface states in MBE grown Ag₂Se

Samira Daneshmandi, Yan-Feng Lyu, Hanming Yuan, Ching-Wu Chu

Texas Center for Superconductivity, University of Houston, United States of America;
samira_daneshmandi@yahoo.com

3:24pm - 3:36pm

Preparation and Characterization of horizontally-aligned porous Ta, TaON, and Ta₂O₅ films synthesized by co-sputtering and de-alloying approach

Jang-Hsing Hsieh¹, S. H. Wu¹, C. Li², Y. C. Lin¹

¹Ming Chi University of Technology, Taiwan; ²National Yang Ming University.

3:36pm - 3:48pm

Synthesis of Nanomaterials for Energy Applications on the pilot-plant scale: Energy Storage

Frederik Kunze¹, Sophie Schnurre¹, Tim Huelser¹, Hartmut Wiggers²

¹Institute for Energy and Environmental Technology e. V. (IUTA), Germany; ²Institute for Combustion and Gas Dynamics – Reactive Fluids and Center for Nanointegration Duisburg-Essen (CENIDE), Germany.

Functional Biomaterials and Biosensors-1

Time: Wednesday, 21/Aug/2019: 3:40pm - 6:30pm · *Location:* CARNESALE COMMONS: Palisades AB

Session Chair: **Imran Shakir**

3:40pm - 3:52pm

Bacterial development on functionalized surfaces: from first steps of adhesion to biofilm growth

Elena Yunda^{1,2}, Fabienne Quilès², David Horwat¹, Halima Alem¹

¹Université de Lorraine, CNRS, Institut Jean Lamour (UMR 7198); ²Université de Lorraine, CNRS, Laboratory of Physical Chemistry and Microbiology for Materials and the Environment (LCPME).

3:52pm - 4:04pm

Direct measurement of human derived cardiomyocyte cluster contraction force using piezoelectric cantilever sensor

Juhani Virtanen¹, Maria Toivanen², Tarja Toimela², Tuula Heinonen², Sampo Tuukkanen¹

¹Tampere University of Technology, Finland; ²University of Tampere, Finland.

4:04pm - 4:16pm

Flexible Biomimetic Sensors for Extracellular Monitoring Based on Freestanding MXene Film with In-situ Growing Noble Metal Nanoparticles

Yao Yao, Jianfeng Ping, Yibin Ying

Zhejiang University, People's Republic of China.

4:16pm - 4:28pm

Multilayer lab-on-a-chip materials for simultaneous digital microfluidic operation and optical chemical sensing and imaging

Wenting Qiu¹, Zhangdi Lu¹, Yanxiu Li², Yuan Xiong², Andrey L. Rogach², Stefan Nagl¹

¹Hong Kong University of Science and Technology, Hong Kong S.A.R. (China); ²City University of Hong Kong, Hong Kong S.A.R. (China).

4:28pm - 4:40pm

A Systematic Approach to Compare Commercial Near-Infrared Dyes for Photoacoustic Imaging

Kirsten Lauren Cardinell^{1,2}, Neeru Gupta^{2,3}, Xun Zhou^{2,3}, Paola Luciani⁴, Carl Kumaradas¹, Yeni Yucel^{1,2,3,5}

¹Department of Physics, Ryerson University, Toronto, Canada; ²Keenan Research Centre for Biomedical Science, St. Michael's Hospital, Toronto, Canada; ³Department of Ophthalmology and Vision Sciences, University of Toronto, Toronto, Canada; ⁴Department of Pharmaceutical Technology, Friedrich Schiller University Jena, Jena, Germany.; ⁵Institute for Biomedical Engineering, Science & Technology, St. Michael's Hospital, Toronto, Canada.

4:40pm - 4:52pm

Development of 3D engineered cell derived matrices by topological stimuli to assess how matrix anisotropy regulates tumoral cell proliferation and migration

Enrico Almici^{1,2}, Susanna Martín-Vañó^{3,4}, Joan Montero¹, David Caballero^{5,6}, Rosa Noguera^{3,4}, Josep Samitier^{1,2,3}

¹Institute for Bioengineering of Catalonia, Spain; ²Department of Electronics and Biomedical Engineering, University of Barcelona, Spain; ³Networking Biomedical Research Center (CIBER), Madrid, Spain; ⁴Dpt Pathology, Medical School, University of Valencia (DP-UV)/INCLIVA, Spain; ⁵3B's Research Group - Biomaterials, Biodegradables and Biomimetics, University of Minho, Headquarters of the European Institute of Excellence on Tissue Engineering and Regenerative Medicine, AvePark - Parque da Ciência e Tecnologia, 4805-017 Barco, Guimarães, Portugal; ⁶ICVS/3B's - PT Government Associate Laboratory, Braga/Guimarães, Portugal.

4:52pm - 5:04pm

Polypyrrole nanoparticles synthesized by plasma as promoters of rat pancreatic islets capsules

Omar Uribe¹, R. Godinez¹, J. Morales², Myrian Velasco³, R. Olayo²

¹Department of Electrical Engineering, Universidad Autónoma Metropolitana, Ciudad de México, México; ²Department of Physics, Universidad Autónoma Metropolitana, Ciudad de México, México; ³Department of Physics, Universidad Autónoma Metropolitana, Ciudad de México, México; ⁴Department of Neural Development and Physiology, Instituto de Fisiología Celular, Universidad Nacional Autónoma de México, Ciudad de México, México.

5:04pm - 5:16pm

A New Antimicrobial Method Against Indwelling Catheter-related Infection

Fangfei Lin, Songmei Yuan, Wenliang Han

School of Mechanical Manufacturing and Automation, Beihang University, Beijing, China.

5:16pm - 5:28pm

An inexpensive and robust PCB platform for molecular diagnostics

Geeta Bhatt, Shantanu Bhattacharya

IIT Kanpur, India.

5:28pm - 5:40pm

Biocompatibility dependence of metallic biomaterials on microstructural mechanisms

Sidika Mine Toker

Eskisehir Osmangazi University, Turkey.

5:40pm - 5:52pm

Fluorinated poly(ethylene glycol)@graphene oxide platform for nitric oxide gas delivery system and their antibacterial activity

Yitayal Admassu Workie¹, Toyoko Imae¹, Marie Pierre Krafft²

¹Graduate Institute of Applied Science and Technology, National Taiwan University of Science and Technology, Taipei 10607, Taiwan; ²University of Strasbourg, Charles Sadron Institute (CNRS), 23 rue du Loess. 67034 Strasbourg, France.

5:52pm - 6:04pm

Synthesis, Characterization and Anti-Shigellosis Potency of Cu-Ag Bimetallic Nanoparticle

Tarakdas Basu, Sanchita Nandy

University of Kalyani, India.

6:04pm - 6:16pm

functionalized dehydrated carbons from date palm leaflets for pollution control of organic compounds

El-Said Ibrahim El-Shafey, Haider Al lawati, Saleh Al-Busafi, Syeda nahed furqan Ali

Sultan Qaboos University, Oman.

6:16pm - 6:28pm

In situ diagnosis of human enamel demineralisation using advanced time-resolved synchrotron X-ray techniques

Tan Sui

University of Surrey, United Kingdom.

6:28pm - 6:40pm

Performance Evaluation of Particle Separation Impactor with an Additional Compound Structure

Pan Wang, Ning Yang, Shouqi Yuan

Jiangsu University, People's Republic of China.

6:40pm - 6:52pm

Engineering Living Functional Materials with Synthetic Biology

Chao Zhong

ShanghaiTech University, People's Republic of China.

Functional Biomaterials and Biosensors-2

Time: Wednesday, 21/Aug/2019: 3:40pm - 6:30pm · *Location:* CARNESALE COMMONS:
Palisades DE

Session Chair: **Roberta Sburlati**

3:40pm - 3:52pm

Enzyme assisted nanopore detection of Zn(II) ions

Golbarg MohammadiRoozbahani¹, Xiaohan Chen¹, Youwen Zhang¹, Mona H Soflaee², Xiyun Guan¹

¹Illinois Institute of Technology, United States of America; ²University of Illinois at Chicago.

3:52pm - 4:04pm

Fluorescent potassium ion sensors

Yanqing Tian

Southern University of Science and Technology, People's Republic of China.

4:04pm - 4:16pm

High accurate bio-fluid based electrical biosensor for commercialization

Hye Jin Kim, Hee Ju Ahn, Kyo Seon Hwang

Department of Clinical Pharmacology and Therapeutics, Kyung Hee University, Korea, Republic of (South Korea).

4:16pm - 4:28pm

Tailoring Electrical Conductivity of Carbon Nanotube Threads During Assembly

Noe Alvarez¹, Peter Miller¹, Rui Lobo², Vesselin Shanov¹

¹University of Cincinnati, United States of America; ²Universidade Nova de Lisboa.

4:28pm - 4:40pm

A universal biosensing platform based on carbon nanomembrane (CNM)/graphene heterostructures

Andrey Turchanin

Friedrich Schiller University Jena, Germany.

4:40pm - 4:52pm

Thermal Influence of Laser Irradiation on Human Breast with Tumor

Hamdy Youssef, Najat Alghamdi

Umm Al-Qura University, Saudi Arabia.

4:52pm - 5:04pm

The Applications of Nanotechnology Based Biosensors

CHIOMA IRENE AWUZIE, EMEKA MARTIN UCHEONYE

FEDERAL POLYTECHNIC OKO ANAMBRA STATE NIGERIA, Nigeria.

5:04pm - 5:16pm

Effect of Flexibility on the Microswimmers Made of Functional Fluid

Yan-Hom Li, Shao-Chun Chen

National Defense University, Taiwan.

5:16pm - 5:28pm

A Portable Enzymatic Biosensor Based on Bimetallic Nanoparticles Modified Two-dimensional MXene Nanocarriers for Pesticide Detection

Fengnian Zhao, Jianfeng Ping

Zhejiang University, People's Republic of China.

5:28pm - 5:40pm

Nanopatterned substrates to promote chondrogenesis and tenogenesis in mesenchymal stem cells

Ignasi Casanellas^{1,2}, Anna Lagunas^{3,1}, Sergi Casanova^{1,2}, Yolanda Vida^{4,5}, Ezequiel Pérez-Inestrosa^{4,5}, Cristina Rodríguez-Pereira⁶, Joana Magalhaes^{3,6}, José A. Andrades^{7,3}, José Becerra^{7,3,5}, Josep Samitier^{1,3,2}

¹Institute for Bioengineering of Catalonia (IBEC), Barcelona Institute of Science and Technology (BIST), Spain; ²Department of Electronics and Biomedical Engineering, University of Barcelona, Spain; ³Networking Biomedical Research Center (CIBER), Madrid, Spain; ⁴Instituto de Investigación Biomédica de Málaga (IBIMA), Department of Organic Chemistry, Universidad de Málaga (UMA), Spain; ⁵Andalusian Centre for Nanomedicine and Biotechnology-BIONAND, Málaga, Spain; ⁶Unidad de Bioingeniería Tisular y Terapia Celular (GBTTC-CHUAC), Instituto de Investigación Biomédica de A Coruña (INIBIC), Complejo Hospitalario Universitario de A Coruña (CHUAC), Sergas, Universidade da Coruña (UDC), Spain; ⁷Instituto de Investigación Biomédica de Málaga (IBIMA), Department of Cell Biology, Genetics and Physiology, Universidad de Málaga (UMA), Spain.

5:40pm - 5:52pm

Nano-patterned Bilineage Scaffolds Coated by Self-assembly Peptide Hydrogels for Simultaneous Osteochondral Regeneration

Lan Li¹, Jiayi Li², Jiamin Guo³, Huikang Zhang², Xin Zhang¹, Caiyun Yin¹, Liming Wang², Yishen Zhu¹, Qingqiang Yao²

¹Nanjing Tech University, China, People's Republic of; ²Nanjing First Hospital, China, People's Republic of; ³China Pharmaceutical University, People's Republic of China.

5:52pm - 6:04pm

Robust Pyrenyl Carbon Nanostructures for Biomarker Sensors and Enzyme Electrocatalysis

Sadagopan Krishnan, Charuksha Walgama, Vini Singh, Gayan Premaratne, Rajasekhara Nerimetla, Jinesh Niroula

Oklahoma State University, United States of America.

6:04pm - 6:16pm

Zebrafish embryos as a tool to study the in vivo behavior of nanomedicines

Alexander Kros

leiden university, Netherlands.

6:16pm - 6:28pm

Dextran-based hydrogel layers for label-free biosensing and cell micropatterning

Andras Saftics¹, Barbara Türk¹, Tamás Gerecsei¹, Attila Sulyok², Norbert Nagy³, Inna Szekacs¹, Sándor Kurunczi¹, Robert Horvath¹

¹Nanobiosensorics Laboratory, EK MTA, Hungary; ²Thin Film Physics Department, EK MTA, Hungary; ³Photonics Department, EK MTA, Hungary.

6:28pm - 6:40pm

SS01 - Functional Biomaterials and Biosensors (FBB)

Aslıhan Demirkaya¹, Ebru Kondolot Solak², Adviye Gulcin Sagdicoglu Celep³

¹Department of Advanced Technologies, Gazi University, Turkey; ²Vocational School of Technical Sciences, Gazi University Ankara, TURKEY; ³Department of Nutrition and Dietetics, Gazi University Ankara, TURKEY; gulcin.celep@gmail.com

6:40pm - 6:52pm

Electrostriction, capacitive susceptibility, and neuromorphic computing in biomembranes

Charles Patrick Collier¹, Joseph Najem¹, Graham Taylor¹, Ryan Weiss², Md. Sakib Hasan², Garrett Rose², Catherine Schuman¹, Alex Belianinov¹, Stephen Andy Sarles²

¹Oak Ridge National Laboratory, United States of America; ²University of Tennessee.

Functional Catalysis

Time: Wednesday, 21/Aug/2019: 3:40pm - 6:30pm · *Location:* CARNESALE COMMONS: Palisades CF

Session Chair: **Richard Motlhaletsi Moutloali**

3:40pm - 3:52pm

Replacing Platinum with a Better Performance For HER by the Metal of Wilkinson's Choice

Ameeunisha Begum

Jamia Hamdard University, India.

3:52pm - 4:04pm

Fe-based amorphous/nanocrystalline alloys with high efficiency in degradation of oze-dye containing wastewater

Ke-Fu Yao, Shuang-Qin Chen, Ji-Li Jia, Yao Tang, Yang Shao, Na Chen

Tsinghua University, People's Republic of China.

4:04pm - 4:16pm

Electrochemical Conversion of Energy and Chemicals Using Conductive Nanomaterials and Wettability

Ying Zhu

Beihang University, People's Republic of China.

4:16pm - 4:28pm

Simple solvent-free preparation of heterometallic composites and their applications in catalysis

Elisabete Alegria^{1,2}, Ana Ribeiro², Maximilian Kopylovich², Armando Pombeiro²

¹Instituto Superior de Engenharia de Lisboa, Portugal; ²Centro de Química Estrutural, Complexo I, Instituto Superior Técnico, Universidade de Lisboa, Portugal.

4:28pm - 4:40pm

Photocatalyst designed in core-shell or three-dimensional nanostructure for enhanced photon-to-conversion efficiency for Hydrogen production

Mohamed-Nawfal Ghazzal, Cong Wang, Hynd Remita, Christophe Colbeau-Justin

Université Paris-Sud, France.

4:40pm - 4:52pm

Silicon Nanoparticles-based Photocatalysts for Efficient CO₂ Reduction

Chandra Veer Singh¹, Kulbir Kaur Ghuman², Geoffrey A. Ozin¹

¹University of Toronto, Canada; ²International Institute for Carbon Neutral Research, Kyushu University, Japan.

4:52pm - 5:04pm

Facial fabrication of carbon quantum dots (CDs)-modified N-TiO_{2-x} nanocomposite for the efficient photoreduction of Cr(VI) under visible light

Lu Xu, Xue Bai, Pengkang Jin

Xi'an University of Architecture and Technology, People's Republic of China.

5:04pm - 5:16pm

Synthesis and characterization of sub 1 nm poly(acrylic acid) capped copper nanoparticles using high intensity (30 KHz) ultrasound sonication and their catalytic study

Balasubramanian Sengottuvelan, Abiraman Tamilselvan, Rajavelu Kannan, Rajakumar Perumal
University of Madras, India.

5:16pm - 5:28pm

Concurrent Photocatalytic Hydrogen Generation and Dye Degradation Using MIL-125-NH₂ under Visible Light Irradiation

Stavroula Alina Kampouri, Kyriakos C. Stylianou

Laboratory of Molecular Simulation (LSMO), Institute of Chemical Sciences and Engineering (ISIC), Ecole Polytechnique Fédérale de Lausanne (EPFL Valais) Rue de l'industrie 17, 1951 Sion (Switzerland).

5:28pm - 5:40pm

Copper and Copper Oxides Based Materials for Solar Energy Conversion

Luo Yu, Xin Ba, Ying Yu

Central China Normal University, People's Republic of China.

5:40pm - 5:52pm

Carbon nitride-support Single Mn atom as catalyst for Mercury removal in flue gas by first-principles calculations

Shuai Liu, Xueliang Mu, Jiahui Yu, Gang Yang, Xiang Luo, Haitao Zhao, Mengxia Xu, Tao Wu
The University of Nottingham Ningbo, People's Republic of China.

5:52pm - 6:04pm

Promoting efficient spatial charge separation and transfer for enhanced photocatalytic hydrogen production from water splitting

Jian-Wen Shi, Dandan Ma, Yajun Zou

Xi'an Jiaotong University, China.

6:04pm - 6:16pm

Hemin (Fe³⁺-porphyrin) anchored V₂O₅ nanowires for solar light based photocatalytic decolourization of MB dye and Industrial wastewater

Pankaj Singh Chauhan, Shantanu Bhattacharya
Indian Institute of Technology Kanpur, India.

6:16pm - 6:28pm

Sonohydrothermal synthesis of noble metal-free Ti@TiO₂ core-shell nanoparticles with advanced photothermal catalytic activity

Sergey Nikitenko, Tony Chave, Xavier Le Goff
CNRS France, France.

6:28pm - 6:40pm

Graphene-nickel interface-induced dipole layer catalytic mechanism on metal deposition and electrochemical energy harvesting

Ha-Young Lee¹, Chunfei Zhang^{1,2}, Cheol-hwan Shin¹, Jong-Sung Yu¹

¹Daegu Gyeongbuk Institute of Science and Technology (DGIST), Korea, Republic of (South Korea); ²Faculty of Maritime and Transportation, Ningbo University, Ningbo 315832, China.

6:40pm - 6:52pm

Transient photoinduced phenomena in graphitic carbon nitride as measured at a temporal resolution of a few nanoseconds by step-scan FTIR

Yaron Paz, Alon Ben Refael, Itamar Benisti
Technion, Israel.

6:52pm - 7:04pm

Coordination chemistry of organometallic molecules with carbon-based materials and their catalytic applications

Sungjin Park
Inha University, Korea, Republic of (South Korea).

7:04pm - 7:16pm

Efficient Cota Laccase Immobilization on Magnetic Graphene Oxide Sheets for Enhancing Biocatalysis

Chunzhao Liu
Institute of Process Engineering, Chinese Academy of Sciences, China, People's Republic of China.

7:16pm - 7:28pm

Tackling Unusual Selectivity of Photocatalytic Trifluoromethylation for Protection of Metabolic Sites of Drugs by Enzyme-Mimicking Dye-based Metal-Organic Frameworks

Tiexin Zhang, Chunying Duan
Dalian University of Technology, China, People's Republic of China.

Functional Composite Materials and Energy Storage-2

Time: Wednesday, 21/Aug/2019: 3:40pm - 6:30pm. *Location:* NORTHWEST AUDITORIUM
Session Chair: **Oskar Paris**

3:40pm - 3:52pm

Decolorization of Brilliant Green in Aqueous Phase by the Ordered Mesoporous Pd-Fe/RGO Nanocomposites Using an Artificial Intelligence Aided Modeling and Optimization

Yu Hou¹, Jimei Qi¹, Jiwei Hu¹, Fei Huang², Wenqian Ruan¹, Yiqiu Xiang¹, Xionghui Wei³

¹Guizhou Provincial Key Laboratory for Information Systems of Mountainous Areas and Protection of Ecological Environment, Guizhou Normal University, Guiyang 550001, PR China.; ²College of Resources and Environmental Engineering, Yibin University, Yibin 644000, PR China.; ³Department of Applied Chemistry, College of Chemistry and Molecular Engineering, Peking University, Beijing 100871, PR China.

3:52pm - 4:04pm

Microstructure, magnetic behavior and nanomechanical characterization of NiMnGa-based multifunctional ferromagnetic shape memory alloys

Amadeusz Łaszczyk, Mariusz Hasiak, Jerzy Kaleta

Wroclaw University of Science and Technology, Poland.

4:04pm - 4:16pm

Responsive Ionogel with Switchable Surface Properties

Werner Steffen, Ye Lijun, Chen Fei, Jie Liu, Aiting Gao, Gunnar Kircher, Julian Mars, Kamal Asadi, Markus Mezger, Michael Kappl, Seraphine Wegner, Hans-Jürgen Butt
Max Planck Institute for Polymer Research, Germany.

4:16pm - 4:28pm

Nanocomposite WO₃-TiO₂ /fly ash with dual functionality in simultaneous removal of pollutants from wastewater

Maria VISA

Transilvania University of Brasov, Romania.

4:28pm - 4:40pm

Self-assembly Composites of HKUST-1 MOFs with MoS₂ for CO₂ adsorption

Xueliang Mu, Shuai Liu, Yipei Chen, Tao Wu

The University of Nottingham Ningbo. People's Republic of China.

4:40pm - 4:52pm

Polymer Derived Ceramic Composites with Graphene

Lei Zhai

University of Central Florida, United States of America.

4:52pm - 5:04pm

Vibration Analysis of Functionally Graded Thin Plates with Linearly Varying Thickness using Variational Method

Ankit Saxena, Kiran D. Mali

BITS-Pilani, K.K. Birla Goa Campus, India.

5:04pm - 5:16pm

Stimuli-Responsive Carbon Nanotube Membranes for Chemical Warfare Protection

Chiatai Chen¹, Yifan Li², Eric Meshot¹, Ngoc Bui¹, Rong Zhu², Myles Herbert², Sei Jin Park¹, Steven Buchsbaum¹, Melinda Jue¹, Kuang Jen Wu¹, Timothy M. Swager², Francesco Fornasiero¹

¹Lawrence Livermore National Laboratory, United States of America; ²Massachusetts Institute of Technology.

5:16pm - 5:28pm

Zirconium-Bipyridine MOF for the Selective Separation of Propane from Propylene

Yufan Zhang, Zhong Li, Xin Zhou

South China University of Technology, People's Republic of China.

5:28pm - 5:40pm

Epoxy/WO₃ Nano Composites as an Eco-Friendly Gamma Ray Shielding Materials

Isa Emin Ongun¹, Yaşar Karabul¹, Mustafa Çağlar², Mehmet Kılıç¹, Zeynep Güven Ozdemir¹, Orhan İçelli¹

¹Yildiz Technical University, Turkey; ²Istanbul Medipol University, Turkey.

5:40pm - 5:52pm

Development of a new radiative coating for buildings to achieve passive cooling and energy saving

Jianheng CHEN, Lin Lu, Hong Zhong, Yaxiong Ji

The Hong Kong Polytechnic University, Hong Kong S.A.R. (China).

5:52pm - 6:04pm

Multiscale modelling of Piezoelectric Porous Architectures for design of smeared peristaltic fluid pumps

Eduard Rohan, Vladimír Lukeš, Jan Heczko

University of West Bohemia, Czech Republic.

6:04pm - 6:16pm

Enhancing Thermal Conductivity of Polymers

Michael Shtein, Roey Nadiv, Matat Buzaglo, Oren Regev
Ben-Gurion University of the Negev, Israel.

6:16pm - 6:28pm

ZnO/G nano composite and CTAB surface modified carbon paste electrode architecture as an electrochemical sensor for the detection of endocrine disruptor Bisphenol F

Manasa G¹, Ronald Jerald Mascarenhas¹, Ashis K Satpati², Basavanakote M Basavaraja³, Sriram Kumar²

¹St. Joseph's College (Autonomous), Bangalore, India; ²Bhabha Atomic Research Centre, Trombay, Mumbai, India; ³PES University, Bangalore, India.

6:28pm - 6:40pm

Improving properties of Polymer electrolyte membranes for fuel cell applications - Role of nanostructured materials

Phumlani Msomi¹, Vhahangwele Mudzunga¹, Rudzani Sigwadi², Patrick Nonjola³

¹Department of Applied Chemistry, Johannesburg, South Africa; ²Department of Chemical Engineering, University of South Africa, Johannesburg, South Africa; ³Council of Scientific and Industrial Research, Pretoria, South Africa.

Functional Low dimensional, Nano and 2D materials-1

Time: Thursday, 22/Aug/2019: 8:00am - 10:20am · *Location:* CARNESALE COMMONS:
Venice

Session Chair: **Pnina Ari-Gur**

8:00am - 8:12am

Zeolites as low-dimensional materials combining nanopores and nanolayers

Wieslaw J Roth

Jagiellonian University, Poland.

8:12am - 8:24am

Graphene-Templated Growth of Surfactant-free Anisotropic Gold Nanocrystals

Wenbo Xin, Igor M De Rosa, Larry Carlson, Jenn-Ming Yang

University of California, Los Angeles, United States of America.

8:24am - 8:36am

Superfluid Onset and Compressibility of 4He Films Adsorbed on Multiwall Carbon Nanotubes

Gary A. Williams, Emin Menachekanian, Vito Iaia, Mingyu Fan, Jingjing Chen, Chaowei Hu, Ved Mittal, Gengming Liu, Raul Reyes, Fufang Wen

UCLA, United States of America.

8:36am - 8:48am

The Strength of Mechanically-Exfoliated Monolayer Graphene

Xin Zhao^{1,2}, Dimitrios Papageorgiou¹, Wen Zhao^{3,4}, Feng Ding^{3,4}, Robert Young^{1,3}

¹National Graphene Institute and School of Materials, University of Manchester, Oxford Road, Manchester M13 9PL, UK; ²Shenzhen Institute of Advanced Graphene Application and Technology, BTR Industrial Park, Xitian, Gongming, Guangming New District, Shenzhen, P. R. China; ³Institute of Textiles and Clothing, Hong Kong Polytechnic University, Hung Hom, Hong Kong; ⁴Center for Multidimensional Carbon Materials, Institute for Basic Science (IBS-CMCM)/School of Material Science and Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan 44919, Korea.

8:48am - 9:00am

Room-temperature 3D integration of low-dimensional nano and 2D materials on flexible substrates by transfer printing methods

Sam-Soo Kim, Sung-Eun Park, Gyuseok Choi, Yoonkap Kim

Gumi Electronics & Information Technology Research Institute (GERI), Korea, Republic of (South Korea).

9:00am - 9:12am

Synthesis of nitrogen doped graphene/carbon nanotubes nanocomposite using urea and humic acid

Ali Almaqwashi¹, Aly Fouda^{1,2}, El Shazly Duraia²

¹KAU, Saudi Arabia; ²Suez Canal University, Egypt.

9:12am - 9:24am

Super Atom Complexes with Antiviral and Bactericidal Activity

David Michael Black¹, Priscilla Lopez¹, Elizabeth Orr², Humberto Herman Lara³, Marcos Miguel Alvarez², Glen Baghdesarian², Jose Luis Lopez Ribot³, Robert Loyd Whetten³, Christine Moon²

¹Department of Physics & Astronomy, University of Texas, San Antonio, Texas 78249;

²Department of Chemistry Los Angeles City College, United States of America; ³Department of Biology and South Texas Center for Emerging Infectious Diseases, University of Texas, San Antonio, Texas 78249.

9:24am - 9:36am

Modified Multiscale Computational Framework for the Nonlinear Dynamics Response of the Two-Dimensional Nanomaterials

Sandeep Singh

BITS Pilani, K K Birla Campus Goa, India.

9:36am - 9:48am

Single nanoparticle electrochromism measurements reveal heterogeneous coloration rates and ion trapping sites in smart windows

Justin Sambur

Colorado State University, United States of America.

9:48am - 10:00am

Flexoelectric effect of low-dimensional graphene nanosheets

Dan Tan^{1,2}, Morten Willatzen^{1,2}

¹Beijing Institute of Nanoenergy and Nanosystem, China, People's Republic of; ²School of Nanoscience and Technology, University of Chinese Academy of Sciences, Beijing 100049, P. R. China.

10:00am - 10:12am

Solution-Phase Synthesis of Noble Metal (Ag, Au, Pd) Nano-plates Decorat-ed 2D Metal-Organic Frame-work Hybrid Nanomaterials

Qiming Qiu, Yixian Wang, Huayun Chen

Zhejiang University, China, People's Republic of China.

10:12am - 10:24am

Selectively enhanced ion transport in graphene oxide membrane/PET conical nanopore system

Huijun Yao

Institute of Modern Physics, Chinese Academy of Sciences, People's Republic of China.

10:24am - 10:36am

The Effect of Processing on the Structure and Texture of Melt-spun Ti₂NiCu Shape Memory Ribbons

Pranav Bhale¹, Pnina Ari-Gur¹, Victor Koledov², Vladimir Shavrov²

¹Western Michigan University, United States of America; ²Kotelnikov Institute of Radio-engineering and Electronics of RAS, 125009 Moscow, Russia.

10:36am - 10:48am

Investigation of effect of lithium doping in silver nanowires

Jing Wang, Mustafa EGINLIGIL

Nanjing Tech University, China, People's Republic of China.

Functional Materials for Energy Storage and Conversion Devices-2

Time: Thursday, 22/Aug/2019: 8:00am - 10:20am. *Location:* CARNESALE COMMONS: Hermosa

Session Chair: Stavroula Alina Kampouri

8:00am - 8:12am

Enabling Low Energy Photons Harvesting for Efficient H₂ Production Employing PbS Nanocrystals Modified Anatase TiO₂ Microspheres

Tianyou Peng, Jinming Wang, Dong Liu, Chun Wu
Wuhan University, People's Republic of China.

8:12am - 8:24am

High-Rate and Long Cycle-Life of Bulk Na_{2/3}[Ni_{1/3}Mn_{2/3}]O₂ Sodium-ion Battery Cathode Enabled through Structural Inclusions

Jintao Fu¹, John Corsi^{1,2}, Manni Li^{1,3}, Eric Detsi^{1,2}

¹Department of Materials Science and Engineering, University of Pennsylvania, Philadelphia, USA; ²Vagelos Institute for Energy Science and Technology (VIEST), Philadelphia, USA;

³School of Materials Science and Engineering, Harbin Institute of Technology, Harbin 150001, China.

8:24am - 8:36am

Machine-washable flexible supercapacitors based on laminate composites

Nasim Anjum, Caiwei Shen

University of Massachusetts Dartmouth, United States of America.

8:36am - 8:48am

Watching ions in nanoporous supercapacitor electrodes at work using in-situ small-angle X-ray scattering

Oskar Paris¹, Christian Koczwar¹, Christian Prehal²

¹Montanuniversitaet Leoben, Austria; ²Graz University of Technology, Austria.

8:48am - 9:00am

Mesoporous Electrodes and Polymer supported Electrolytes for efficiency of Electrochemical Energy Storage Devices

Bilge Saruhan-Brings¹, Masud Rana¹, Jan Petersen², Sebastian Geier²

¹German Aerospace Center (DLR), Inst of Mat Research, Germany; ²German Aerospace Center (DLR), Inst of Adaptive and Comp, Germany.

9:00am - 9:12am

Three-Dimensional Nitrogen-Doped Graphene/TiN Nanowire Composite as a Strong Polysulfide Anchor for Lithium-Sulfur Batteries

Zhaohuai Li, Qiu He, Xu Xu, Liqiang Mai

Wuhan University of Technology, China, People's Republic of China.

9:12am - 9:24am

Layer-by-layer fabrication of multilayer hybrids composed of graphene/polyaniline nanofiber for high-energy electrode materials for supercapacitors

Yaping Zhao, Huijun Tan

Shanghai Jiao Tong University, People's Republic of China.

9:24am - 9:36am

Inkjet printing-assisted growth of Ni_2CO_3 nano-rods over fabric substrates for flexible and wearable supercapacitor applications

Poonam Sundriyal, Shantanu Bhattacharya

IIT Kanpur, India.

9:36am - 9:48am

Quenching cathode electrolyte interphase on Ni-rich cathode materials for preventing short circuit problem in lithium ion battery

Fu-Ming Wang

National Taiwan University of Science and Technology, Taiwan.

9:48am - 10:00am

Structural Chemistry Study on Strontium Tantalate Photocatalysts for Their Water-Splitting Properties: (1) Synchrotron X-ray Diffraction and Neutron Diffraction

Ippei Kawanishi¹, Hirotaka Fujimori¹, Masatomo Yashima²

¹Yamaguchi University, Japan; ²Tokyo Institute of Technology, Japan.

10:00am - 10:12am

Flexible chitosan-based BaTiO_3 piezoelectric composites

Paula Ferreira, Dayana Sierra, Cláudia Nunes, Paula Vilarinho

University of Aveiro, Portugal.

10:12am - 10:24am

Holistic approach for low-cost synthesis of Fe-based Metal-organic frameworks (MOFs) using Fe derived from acid mine drainage and PET-derived organic linker

Nicholas Musyoka, Jianwei Ren, Henrietta Langmi, Mkhulu Mathe

HySA Infrastructure Centre of Competence, Energy Centre, Council for Scientific and Industrial Research (CSIR), P.O. Box 395, Pretoria 0001, South Africa.

Functional Low dimensional, Nano and 2D materials-2

Time: Thursday, 22/Aug/2019: 10:40am - 12:30pm · *Location:* CARNESALE COMMONS: Venice

Session Chair: **Gary A. Williams**

10:40am - 10:52am

Chemical Sensor Fabrication by Direct Deposition of Organic Nanowires

Xuecheng Yu, Mohamed Kilani, Evan Schaefer, Long Luo, Guangzhao Mao
Wayne State University, United States of America.

10:52am - 11:04am

A Molecular Dynamics Study of Perovskite Structure Crystal Correlations

Saeed Sameer Ibrahim AlMishal¹, Tarek Moustafa Hatem², Iman Salah Eldin El-Mahallawi³

¹Faculty of Engineering Mechanical Engineering Department-The British University in Egypt;

²Faculty of Energy and Environmental Engineering- The British University in Egypt; ³Faculty of Engineering Metallurgical Engineering- Cairo University, Faculty of Engineering Mechanical Engineering Department-The British University, Egypt.

11:04am - 11:16am

Emission Properties of Organic Fluorophores in Solid and Solution

Jubaraj Bikash Baruah

Indian Institute of Technology, India; juba@iitg.ac.in

11:16am - 11:28am

Encapsulation of red-light-emitting phosphors in single-walled carbon nanotubes – from experiments to models

Eric Faulques¹, Jeremy Sloan², Victor Genchev Ivanov³, Stéphane Cordier⁴, Yann Molard⁴, Karine Costuas⁴, Jean-Luc Duvail¹, Florian Massuyeau¹, Nataliya Kalashnyk⁵

¹CNRS, IMN, University of Nantes, France; ²University of Warwick, United Kingdom; ³Sofia University, Bulgaria; ⁴Institut des Sciences Chimiques de Rennes, University of Rennes, France;

⁵GeePs, CNRS UMR 8507 – CentraleSupélec – UPSud – UPMC, Gif sur Yvette, France.

11:28am - 11:40am

Size effects and electronic properties of graphene-based systems

Wojciech Kempański¹, Mateusz Kempański²

¹Institute of Molecular Physics, Polish Academy of Sciences, Poland; ²Faculty of Physics and NanoBioMedical Centre Adam Mickiewicz University, Poland.

11:40am - 11:52am

Highly Conductive Composite Film of Silver Nanowires Network “Nanosoldered” by Metallic MoS₂ Nanosheets for Stretchable Strain Sensor and Self-powered Triboelectric Nanogenerator

Lingyi Lan, Jianfeng Ping, Yibin Ying
Zhejiang University, China, People's Republic of China.

11:52am - 12:04pm

Van der Waals Semiconductors: Towards New and Emerging Electronic and Photonic Devices

Moh Amer
King Abdulaziz City for Science and Technology, University of California Los Angeles;

12:04pm - 12:16pm

Electrically conductive textile sensors made by silver and copper nanoparticles

AZAM ALI
Technical University of liberec, Czech Republic.

12:16pm - 12:28pm

Pseudo-spherical Organic-inorganic Hybrid Nanomolecular Clusters Exhibiting Redox-controlled Fluorescence Switching and Electrochromism

Mark Wayne Lee Jr., Teng-Wei Wang, Dronareddy Madugula, Madison Clark
University of Missouri, United States of America.

12:28pm - 12:40pm

Self-healing Catalysis for the Hydrolytic Dehydrogenation of Ammonia Borane

Fatma Pelin Kinik, Kyriakos Stylianou
Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland.

Functional Thin Films-2

Time: Thursday, 22/Aug/2019: 10:40am - 12:30pm. *Location:* CARNESALE

COMMONS: Hermosa

Session Chair: **Maria VISA**

10:40am - 10:52am

Tailoring the properties of polyamide thin film membrane with layered double hydroxide nanoclay for enhancement in water separation

Muhammad Hanis Tajuddin^{1,2}, Norhaniza Yusof^{1,2}, Wan Norharyati Wan Salleh^{1,2}, Ahmad Fauzi Ismail^{1,2}, Juhana Jaafar^{1,2}, Farhana Aziz^{1,2}

¹Advanced Membrane Technology Research Centre (AMTEC), Universiti Teknologi Malaysia, 81310 Skudai, Johor Bahru, Malaysia; ²School of Chemical and Energy Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, 81310 Skudai, Johor Bahru, Malaysia.

10:52am - 11:04am

Layer-by-Layer Assembled Graphene Multilayers: Applications for Flexible Energy Harvesting Generators

Yong Tae PARK¹, Dongseob KIM², Kyungwho CHOI³, Dukhyun CHOI⁴

¹Myongji University, Korea, Republic of (South Korea); ²KITECH, Korea, Republic of (South Korea); ³Korea Railroad Research Institute, Korea, Republic of (South Korea); ⁴Kyung Hee University, Korea, Republic of (South Korea).

11:04am - 11:16am

Organically functionalized sol-gel silica coatings on polymers for reduction of gas leakage

Anna Szczurek, Jerzy Kaleta, Justyna Krzak

Wroclaw University of Science and Technology, Poland.

11:16am - 11:28am

Superwettability of Colloidal Photonic Crystals

Jingxia Wang^{1,2}

¹Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing, China,;

²School of Future Technology, University of Chinese Academy of Sciences, Beijing, China.

11:28am - 11:40am

Radiation processing of functional materials with XUV/x-ray laser pulses

Libor Juha

Institute of Physics and Institute of Plasma Physics, Czech Academy of Sciences, Czech Republic.

11:40am - 11:52am

Raman spectroscopy of doped single crystalline films of perovskites grown using liquid-phase epitaxy method

Tomasz Runka¹, Jaroslav Kaluzny², Wioletta Dewo¹, Yuriy Zorenko³, Vitaliy Gorbenko³

¹Faculty of Technical Physics, Poznan University of Technology, Poznan, Poland; ²Faculty of Transport Engineering, Poznan University of Technology, Poznan, Poland; ³Institute of Physics, Kazimierz Wielki University in Bydgoszcz, Bydgoszcz, Poland.

11:52am - 12:04pm

Molecular Precursors for the Phase-Change Material Germanium-Antimony-Telluride, Ge₂Sb₂Te₅ (GST)

Nicole Harmgarth, Florian Zörner, Phil Liebing, Edmund P. Burte, Mindaugas Silinskas, Felix Engelhardt, Frank T. Edelmann

Otto-von-Guericke-Universität Magdeburg, Germany.

12:04pm - 12:16pm

Specific Water/Vapor Uptake of Ultrathin Films of Cellulose: Paving the Way for New Responsive Materials from Renewable Polymers

Eero Kontturi¹, Zhuojun Meng¹, Minna Hakalahti², Elina Niinivaara^{1,3}, Tekla Tammelin¹

¹Aalto University, Finland; ²VTT Technical Research Centre of Finland; ³McMaster University, Canada.

12:16pm - 12:28pm

The DAGS-Chemistry: Droplet Assisted Growth and Shaping for Synthesis of Polymeric Nano- And Microstructures

Stefan Seeger, Sandro Oliveira, Georg Artus, Naeem Saddiqi

University of Zurich, Switzerland.

12:28pm - 12:40pm

Roll-to-roll processing of supported lipid bilayers: flexible substrates, rapid-prototyped inking, and shippable membranes

Khadijah Thibodeaux^{1,2}, Gabriella Kimmerly^{1,3}, Bethany Reim^{1,4}, Jensina Froland^{1,3}, Babak Sani^{1,3,4,5}

¹Keck Science Department, Claremont, CA; ²Pomona College, Claremont, CA, USA; ³Scripps College, Claremont, CA, USA; ⁴Pitzer College, Claremont, CA, USA; ⁵Claremont McKenna College, Claremont, CA, USA.

12:40pm - 12:52pm

Superlattice Structures of Plant-sourced Nanomaterials Hybridized with Inorganic thin films for Thermoelectric Materials

Tekla Tammelin¹, Matti Putkonen¹, Marie Gestranus¹, Maarit Karppinen², Eero Kontturi²

¹VTT Technical Research Centre of Finland Ltd, Finland; ²Aalto University, Finland.

12:52pm - 1:04pm

Time-response limits on vanadium dioxide micrometer-sized actuators

Jose Figueroa, Yunqi Cao, Juan Pastrana, Nelson Sepulveda

Michigan State University, United States of America.

1:04pm - 1:16pm

Orthogonal fractal growth of CsI domains forming a ladder-like structure

Yaron Paz, Omry Dinner, Gideon Grader

Technion, Israel.

Functional Low dimensional, Nano and 2D materials-3

Time: Thursday, 22/Aug/2019: 1:30pm - 3:40pm · *Location:* CARNESALE

COMMONS: Venice

Session Chair: **Balasubramanian Sengottuvelan**

1:30pm - 1:42pm

Self-healing Catalysis for the Hydrolytic Dehydrogenation of Ammonia Borane

Kyriakos Stylianou

EPFL Valais, Switzerland.

1:42pm - 1:54pm

Strong Damping of the Localized Surface Plasmon Resonance of Metal Nanoparticles and its Applications

Hongliang Hao, Shuai Wang, Huanhuan Li, Qingmeng Wu, Yingcui Fang

Hefei University of Technology, People's Republic of China.

1:54pm - 2:06pm

Epitaxial Growth and Properties of 2D Topological Antimonene and & Heterostructures

Yeliang WANG^{1,2}

¹Beijing Institute of Technology, China; ²Institute of Physics, Chinese Academy of Sciences, Beijing 100190, China.

2:06pm - 2:18pm

High responsivity broadband photo detection by graphene engineered core, and core-shell upconversion nanoparticles

Mukesh Kumar Thakur, Akash Gupta, Surojit Chattopadhyay

Natioanl Yang-Ming University, Taiwan.

2:18pm - 2:30pm

Sculpting Photocatalysts on the Nano Scale

Lilac Amirav

Technion – Israel Institute of Technology, Israel.

2:30pm - 2:42pm

Wafer-scale nanofiltration membranes with a high density of narrow SWNT pores

Melinda Jue, Chiatai Chen, Steven Buchsbaum, Eric Meshot, Sei Jin Park, Kuang Jen Wu, Francesco Fornasiero

Lawrence Livermore National Laboratory, United States of America.

2:42pm - 2:54pm

Chemistry on and with Graphene: Introducing Selectivity, Functionality and Motion

Petr Kovaricek

J. Heyrovsky Institute of Physical Chemistry of the CAS, Czech Republic.

2:54pm - 3:06pm

Reversible 2H to 1T' Phase Change in Monolayer to Bulk MoTe₂ by Ionic Liquid Gating

Dante Zakhidov, Daniel Rehn, Evan Reed, Alberto Salleo

Stanford University, United States of America.

3:06pm - 3:18pm

Fast ion diffusion in carbon nanotube pores

Steven Buchsbaum, Melinda Jue, April Marie Sawvel, Chiatai Chen, Eric Meshot, Sei Jin Park, Kaung Jen Wu, Edmond Y. Lau, Tuan Anh Pham, Francesco Fornasiero

Lawrence Livermore National Laboratory, United States of America.

3:18pm - 3:30pm

Preparation and physico-chemical properties of suspensions of graphene oxide in solvent with ionic liquid

Daša Paulenová, Ján Marták, Štefan Schlosser

Slovak University of Technology, Slovak Republic.

3:30pm - 3:42pm

Deposition and optical properties of crystallographically oriented porous ZnO nanostructures

Ankit Soni, Komal Mulchandani, Krushna R Mavani

Indian Institute of Technology Indore, India.

3:42pm - 3:54pm

Green Printing Technology for Manufacturing Functional Devices

Yanlin Song

Key Laboratory of Green Printing, Institute of Chemistry, Chinese Academy of Sciences, China.

Functional Materials for Energy Storage and Conversion Devices-3

Time: Thursday, 22/Aug/2019: 1:30pm - 3:40pm. *Location:* CARNESALE COMMONS: Hermosa

Session Chair: **CHIOMA IRENE AWUZIE**

1:30pm - 1:42pm

Poly-ynes and Poly(metalla-ynes) for Opto-Electronic (O-E) Applications

Muhammad S Khan¹, Ashanul Ashanul Haque², Rayya A Al-Balushi³, Idris J Al-Busaidi¹

¹Sultan Qaboos University, Sultanate of Oman; ²University of Hail, Kingdom of Saudi Arabia;

³A'Sharqiyah University, Sultanate of Oman.

1:42pm - 1:54pm

Continuum model for gas storage in nanoporous materials

Yungok Ihm¹, Valentino Cooper², Lukas Vlcek², Pieremanuele Canepa³, Timo Thonhauser³, Ji Hoon Shim¹, James Morris²

¹Pohang University of Science and Technology, Korea, Republic of (South Korea); ²Oak Ridge National Laboratory, Oak Ridge, USA; ³Wake Forest University, Winston-Salem, USA.

1:54pm - 2:06pm

Structural Chemistry Study on Strontium Tantalate Photocatalysts for Their Water-Splitting Properties: (2) High-Temperature Ultraviolet Raman Spectroscopy

Hirotaka Fujimori¹, Ippei Kawanishi¹, Nobuhiro Matsushita²

¹Yamaguchi University, Japan; ²Tokyo Institute of Technology, Japan.

2:06pm - 2:18pm

All-Electrospun Flexible Triboelectric Nanogenerator Based on Metallic MXenes Nanosheets

Chengmei Jiang, Jianfeng Ping

Zhejiang University, People's Republic of China.

2:18pm - 2:30pm

Atomistic Simulations of Energy Dissipation in Amorphous Silica Nanoresonators

Sankha Mukherjee, Chandraveer Singh

University of Toronto, Canada.

2:30pm - 2:42pm

Electrochemical Characterization of Bipolar Electrochemically Exfoliated Graphene

Iman Khakpour¹, Amin Rabiei Baboukani¹, Anis Allagui², Chunlei Wang¹

¹Florida International University, United States of America; ²University of Sharjah, UAE;

2:42pm - 2:54pm

Fabrication of flexible thin film Piezoelectric Nanogenerator and Single Electrode Triboelectric Nanogenerator for Energy Harvesting by using CuS nanoparticle doped PVDF

Ruma Basu¹, Nur Amin Hoqu², Prosenjit Biswas², Sukhen Das², Pradip Thakur³

¹Jogamaya Devi College, Kolkata, India; ²Jadavpur University, India; ³Netaji Nagar College for Women, Kolkata, India.

2:54pm - 3:06pm

Graphene Based Green Supercapacitor for Energy Storage

Leonardo Vivas¹, Adrian Jara Cornejo², Dinesh Pratap Singh³

¹University of Santiago, Chile; ²University of Santiago, Chile; ³University of Santiago, Chile.

3:06pm - 3:18pm

Beyond lithium ion batteries – Opportunities and challenges

Ramakrishna Podila, Chengxin Wang, Bingan Lu, Apparao Rao

Clemson University, United States of America.

3:18pm - 3:30pm

Intrinsic energy conversions for photon-generation in piezo-phototronic materials: A case study on alkaline niobates

Bolong Huang

The Hong Kong Polytechnic University, Hong Kong S.A.R. (China).

3:30pm - 3:42pm

Fuel Breathing Microfluidic fuel cell: fuel solubility effect to the anode selection

Yu Ho, Holly Kwok¹, Yifei Wang¹, Yingguang Zhang¹, Huimin Zhang², Yiu Cheong, Dennis Leung¹

¹The University of Hong Kong, Hong Kong; ²East China Jiao Tong University, Nanchang, China.

3:42pm - 3:54pm

Titanium suboxides synthesis by direct oxidation method

Simonas Ramanavicius, Arunas Jagminas

SRI Center for Physical Sciences and Technology, Lithuania; simonas.



