

# CONFERENCE SCHEDULE



George Washington University,  
Washington, D.C, USA  
July 22-24, 2019

Advances  
in Functional Materials



<https://functionalmaterials.org/afm2019/>

## AFM-19: Program at Glance

**Date: Monday, 22/July/2019**

**2:00pm - 6:00pm**

Lobby

**Reg: Registration**

**Date: Tuesday, 23/July/2019**

**8:00am – 6:00pm**

Lobby

**Reg: Registration**

**8:20am - 8:30am**

Grand Ballroom

**OPC: Opening Ceremony**

*Dae Joon Kang, Lijie Grace Zhang*

**8:30am - 10:30am**

Grand Ballroom

**Plen: Plenary Session**

**10:30am - 11:00am**

Grand Ballroom

**Coffee Break**

**11:00am - 1:00pm**

Grand Ballroom

**KEY: Keynote Session**

**1:00pm - 2:00pm**

Grand Ballroom

**Lunch Break**

**2:00pm - 4:00pm**

Grand Ballroom

**KEY: Keynote Session**

**4:00pm - 4:15pm**

Grand Ballroom

**Coffee Break**

**4:15pm - 6:00pm**

Grand Ballroom

**Oral Talks**

**4:15pm - 6:00pm**

Marvin Center 302

**Oral Talks**

**Date: Wednesday, 24/July/2019**

**8:00am – 6:00pm**

Lobby

**Reg: Registration**

**8:00am - 10:30am**

Grand Ballroom

**Plen: Plenary Session**

**10:30am - 11:00am**

Grand Ballroom

**Coffee Break**

**11:00am - 1:00pm**

Grand Ballroom

**Oral Talks**

**11:00am - 1:00pm**

Marvin Center 302

**Oral Talks**

**1:00pm - 2:00pm**

Grand Ballroom

**Lunch Break**

**2:00pm - 4:30pm**

Grand Ballroom

**Oral Talks**

**2:00pm - 4:30pm**

Marvin Center 302

**Oral Talks**



## **Presentations**

### **Plen: Plenary Session:**

*Time: Tuesday, 23/July/2019: 8:30am - 10:30am · Location: Grand Ballroom*

*Session Chair: Lijie Grace Zhang,*

**8:30am - 9:10am**

**Nanoscale Synthesis and Assembly to Smart Optical Materials**

**Yadong Yin**

University of California, Riverside, CA, 92521, USA

**9:10am - 9:50am**

**Electrochemical Artificial Muscle Yarns And Textiles That Harvest And Store Environmentally Available Energies**

**Ray H. Baughman**

Alan G. MacDiarmid NanoTech Institute, University of Texas at Dallas, Richardson, TX 75080

**9:50am - 10:30am**

**MXenes for Functional Applications**

**Michel W. Barsoum**

College of Engineering, Drexel University

**10:30am - 11:00am** Coffee break

### **KEY: Keynote Session:**

*Time: Tuesday, 23/July/2019: 11:00am - 1:00pm · Location: Grand Ballroom*

*Session Chair: Dae Joon Kang,*

**11:00am - 11:40am**

**Low energy bandgap semiconducting materials and their Applications**

**Hyoyoung Lee**<sup>1,2</sup>

<sup>1</sup>Center for Integrated Nanostructure Physics (CINAP), Institute for Basic Science (IBS),

<sup>2</sup>Department of Chemistry, Sungkyunkwan University

Republic of Korea

**11:40am - 12:20pm**

**Quantum-Sized Metal Nanoparticles Catalyzing the Selective Photon-to-Chemical Energy Conversion**

**Yugang Sun**

Department of Chemistry, Temple University, 1901 North 13th Street, Philadelphia, Pennsylvania 19122, USA

**12:20pm - 1:00pm**

**Cell-Matrix Interactions in Cancer and Fibrosis: Multiscale Chemo-Mechanical Models**

**Vivek Shenoy**

School of Engineering and Applied Sciences, University of Pennsylvania

**1:00pm - 2:00pm Lunch Break**

**KEY: Keynote Session:**

*Time:* Tuesday, 23/July/2019: 2:00pm - 4:00pm · *Location:* Grand Ballroom

*Session Chair:* Yugang Sun,

**2:00pm - 2:40pm**

**Goodbye Hospitals: Hello Implantable Nanosensors**

**Thomas J. Webster**

Art Zafiropoulo Chair, Department Chair, Chemical Engineering, Northeastern University

**2:40pm - 3:20pm**

**Lasers and their Applications in Materials**

**W Aslam Farooq**

Department of Physics and Astronomy, King Saud University, Riyadh, KSA .

**3:20pm - 4:0pm**

**Our ability to beat cancer cells to death and stop their migration by using hot gold nano-  
rods**

**El-Sayed, Mostafa A**

Julius Brown Chair and Regents Professor, Department of Chemistry and Biochemistry, Georgia Tech.

**4:00am - 4:30am** Coffee break

## ABB: Advances in Biosensors and Biomaterials

*Time: Tuesday, 23/July/2019: 4:30pm - 6:30pm · Location: Grand Ballroom*

*Session Chair: Prof. Vivek Shenoy,*

**4:30pm - 4:45pm**

**Meridian whispering gallery mode sensing with a deformed microdroplet on a superhydrophobic chip surface**

**Meng Zhang<sup>1</sup>, Weifeng Cheng<sup>2</sup>, Zheng Zheng<sup>1</sup>, Jiangtao Cheng<sup>2</sup> and Jiansheng Liu<sup>1</sup>**

<sup>1</sup>School of Electronic and Information Engineering, Beihang University, 37 Xueyuan Rd, Beijing 100083, China. <sup>2</sup>Department of Mechanical Engineering, Virginia Polytechnic Institute and State University, 635 Prices Fork Road, Blacksburg, VA 24061, USA.

**4:45pm - 5:00pm**

**Multifunctional pH Responsive Hyaluronic Acid based Nanoparticles for Targeted Combinational Atherosclerosis Therapy**

**Nihad Cheraga, Zheng Ye, Ning-Cong Sun, Ning-Ping Huang**

State Key Laboratory of Bioelectronics, School of Biological Science and Medical Engineering, Southeast University, Nanjing, China

**5:00pm - 5:15pm**

**Novel auto crosslinked chitosan-based microgels for glucose-responsive insulin delivery systems**

**F. DAMIRI, Y. BACHRA, C. BOUNACIR, A. LAARAIBI, N. KNOUZI, A. BENNAMARA, M. BERRADA**

Department of Chemistry, Laboratory of Biomolecules and Organic Synthesis (BIOSYNTHO), Faculty of Sciences Ben M'sik, University Hassan II of Casablanca, Morocco

**5:15pm - 5:30pm**

**Physicochemical properties of collagen films with PLGA nanocapsules inside fabricated by electrospinning with and without crosslinking**

**Liliana María Agudelo Gómez<sup>1,2</sup>, Jesús Antonio Carlos Cornelio<sup>2</sup>, Gabriel Jaime Colmenares Roldán<sup>1,2</sup>, Lina Marcela Hoyos Palacio<sup>1,2</sup>**

<sup>1</sup>Grupo de Investigación en Biología de Sistemas, Escuela de Ciencias de la Salud, Facultad de Medicina Universidad Pontificia Bolivariana, Calle 78B 72A-109 Robledo, Bloque B 5° piso, Medellín, Antioquia, Colombia. <sup>2</sup>Grupo de Investigación en Nanotecnología y Materiales, Nanomat, Medellín, Antioquia, Colombia.

**5:30pm - 5:45pm**

**Nanostructured Diatom Biosilica for Photonic and SERS Biosensing Applications**

**Paul LeDuff<sup>1</sup>, Alan X. Wang<sup>2</sup>, Gregory L. Rorrer<sup>1</sup>**

<sup>1</sup>School of Chemical, Biological, and Environmental Engineering, Oregon State University, Corvallis, OR, 97331, <sup>2</sup>School of Electrical Engineering and Computer Science, Oregon State University, Corvallis, OR, 97331

**5:45pm - 6:00pm**

**Antibacterial and Aggregation-Induced Imaging Properties of Broad-Spectrum Amphiphilic Cationic Polymers**

**JING QIAO, May P. Xiong**

University of Georgia

**6:00pm - 6:15pm**

**From nature-inspired all-in-one platforms to a versatile family of nanorattles: bio/cat applications of passion fruit-like nano-architectures**

**Melissa Santi**

Istituto Italiano di Tecnologia

**6:15pm - 6:30pm**

**Electrostriction, capacitive susceptibility, and neuromorphic computing in biomembranes**

**Charles Patrick Collier**

Oak Ridge National Laboratory

## AC: Advances in Catalysis

*Time: Tuesday, 23/July/2019: 4:30pm - 6:15pm · Location: Marvin Center 302*

*Session Chair: Hyoyoung Lee,*

**4:30pm - 4:45pm**

**Rational design of metal cocatalyst on electron lifetime and photocatalytic hydrogen evolution**

**Ji Yong Choi, Bumjin Park, Hyunjoon Song**

Department of Chemistry, Korea Advanced Institute of Science and Technology, Daejeon 34141, Republic of Korea

**4:45pm - 5:00pm**

**Catalytic CO<sub>2</sub> Conversion and photocatalytic reaction of I-deficient BiOI**

**Chechia Hu, Hui-Xin Huang, and Yi-Feng Lin**

Department of Chemical Engineering and R&D center for Membrane Technology Chung Yuan Christian University, Taoyuan 32023 Taiwan

**5:00pm - 5:15pm**

**Copper(I) oxide included colloidal hybrid nanocatalysts for selective photocatalytic carbon dioxide conversion**

**Chan Kyu (Lim), Hyunjoon (Song)\***

Department of Chemistry, KAIST, Daejeon, Korea

**5:15pm - 5:30pm**

**Pt/Ni bimetallic catalysts planted onto TiO<sub>2</sub> nanotube array bed and their electrocatalytic properties**

**Hongyi Li, Shaojing Liu, Anran Wu, Guannan Zu, Jinshu Wang**

<sup>1</sup>Grupo Key Laboratory of Advanced Functional Materials, Education Ministry of China School of Materials and Engineering, Beijing University of Technology, Beijing, 100124, P.R. China.

**5:30pm - 5:45pm**

**Preparation, Characterization and CO Oxidation Performance of Ag<sub>2</sub>O/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> and (Ag<sub>2</sub>O+RuO<sub>2</sub>)/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> Catalysts**

**Antony Ananth, Hyeon-Jin Seo, Rak Hyun Jeong, Jin-Hyo Boo\***

Department of Chemistry, Sungkyunkwan University, Suwon 16419, Republic of Korea.

**5:45pm - 6:00pm**

**Mechanistic Study on Metal-Semiconductor Hybrid Nanocatalyst for Photocatalytic Hydrogen Evolution**

**Ji Yong Choi, Hyunjoon Song\***

Department of Chemistry, Korea Advanced Institute of Science and Technology, Daejeon 34141, Republic of Korea

**6:00pm - 6:15pm**

**An efficient protocol for highly selective tetrahydropyranlation/depyranlation of alcohols and phenols using mesoporous polymeric acid catalyst**

Lalthazuala Rokhum

National Institute of Technology Silchar (An institute of National Importance)

## Plen: Plenary Session:

*Time: Wednesday, 24/July/2019: 8:00am - 10:40am · Location: Grand Ballroom*

*Session Chair: Ray Baughman,*

**8:00am - 9:00am**

**Dimensional Crossover of Spin Ordering in Artificial Oxide Superlattices**

**Woo Seok Choi**

Department of Physics, Sungkyunkwan University, Suwon 16419, Republic of Korea

**9:00am -10:00am**

**Tailored Nanostructures for Photo/Photothermal Energy Conversion Functionalities**

**Ho Ghim Wei**

National University of Singapore (NUS)

**10:30am - 11:00am** Coffee break

**KEY: Keynote Session:**

*Time: Wednesday, 24/July/2019: 11:00am - 11:40am · Location: Grand Ballroom*

*Session Chair: Anthony Guiseppi-Elie,*

**11:00am - 11:40am**

**Conjugated Nanostructured Polyaniline for Emergent Membrane Technologies**

**Richard B. Kaner**

University of California, Los Angeles, USA



## SPPC: Spintronics, Photonics, Polymers and Ceramics

*Time: Wednesday, 24/July/2019: 11:40am - 1:00pm · Location: Marvin Center 302*

*Session Chair: Prof. Imran Shakir,*

**11:40am - 11:55am**

### **Skyrmion Hosting $\text{Cu}_2\text{OSeO}_3$ Nanostructures**

**Priya R. Baral<sup>1</sup>, Benoît Truc<sup>1</sup>, Wen-Hua Bi<sup>1</sup>, Victor Ukleev<sup>2</sup>, J.W. Seo<sup>3</sup>, Ivica Zivkovic<sup>1</sup>, Henrik M. Ronnow<sup>1</sup>, Jonathan S. White<sup>2</sup>, Oleg Yazyev<sup>1</sup>, Arnaud Magrez<sup>1</sup>**

<sup>1</sup>Institute of Physics, Ecole Polytechnique Fédérale de Lausanne, Switzerland, <sup>2</sup>Paul Scherrer Institut, Villigen, Switzerland, <sup>3</sup>University of Leuven, Belgium.

**11:55pm - 12:10pm**

### **Strong and weak coupled fluorophores on DNA based molecular photonic wires for directed energy transfer**

**S. A. Díaz<sup>1</sup>, S. M. Oliver<sup>2</sup>, D. Mathur<sup>1</sup>, D. A. Hastman<sup>1,3</sup>, P. D. Cunningham<sup>4</sup>, J. S. Melinger<sup>4</sup>, P. M. Vora<sup>2</sup>, and I. L. Medintz<sup>1</sup>**

Department of Chemical Engineering and R&D center for Membrane Technology Chung Yuan Christian University, Taoyuan 32023 Taiwan

**12:10pm - 12:25pm**

### **A Broadband Absorber Based on One-dimensional Plasmonic Radial Sandwich Structures**

**Yang, Gui, Mao\*, Wang**

Institute of Microelectronics of Chinese Academy of Sciences, Beijing, P. R. China

**12:25pm - 12:40pm**

### **Thermal Property and Molecular Dynamics of Liquid Crystalline Polymers**

**Gi Tae Park, Jong Won Kim, Jin-Hae Chang\***

Department of Polymer Science and Engineering, Kumoh National Institute of Technology, Gumi 39177, Korea

**12:40pm - 12:55pm**

### **Plasma characterization of polyvinylchloride and methyl methacrylate polymers used in manufacturing of water and food containers using Laser Induced Breakdown Spectroscopy**

**W.A.Farooq<sup>1</sup>, Awatef. S. Al-Johani<sup>1</sup>, M. S. Alsalhi<sup>1</sup>, Walid Tawfiq<sup>2</sup>, R. Qindeel<sup>1</sup>**

<sup>1</sup>Department of Physics and Astronomy College of Science King Saud University Riyadh Saudi Arabia, <sup>2</sup>Department of Environmental Applications, NILES National Institute of Laser, Cairo University Cairo, Egypt

**12:55pm - 1:10pm**

### **Contemplating charge transport by modeling of DNA nucleobases based nano structures**

**Rajan Vohra, Ravinder Singh Sawhney, Kunwar Partap Singh**

Guru Nanak Dev University, Amritsar, India | Guru Nanak Dev University, Amritsar, India

**1:00pm - 2:00pm Lunch Break**

## MCEC: Multifunctional Composite Materials, Energy Storage and Conversion Devices

*Time: Wednesday, 24/July/2019: 11:40am - 1:00pm · Location: Grand Ballroom*

*Session Chair: Ghim Wei Ho,*

**11:40am - 11:55am**

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

**Lin Wang<sup>1</sup>, Sam Welborn<sup>1</sup> and Eric Detsi<sup>1,2,\*</sup>**

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

**11:55pm - 12:10pm**

**Enhancement of the performance of solar water splitting based on high-density single-crystal Fe<sub>2</sub>O<sub>3</sub> nanowire-array fabricated by stress-induced atomic-diffusion method**

**Pei Pei, Yiyuan Xie, Yuhki Toku, Yang Ju**

Department of Micro-Nano Mechanical Science and Engineering, Graduate School of Engineering, Nagoya University, Nagoya 464-8603, Japan.

**12:10pm - 12:25pm**

**Triboelectric Direct Current Generation based on Charge-conveying System**

**Minki Kang, Hong-Joon Yoon, Sang-Woo Kim\***

School of Advanced Materials Science and Engineering, Sungkyunkwan University (SKKU), Suwon 16419, Republic of Korea

**12:25pm - 12:40pm**

**Fabrication and characterization of magnetic drug-loaded osteoinductive Fe<sub>3</sub>O<sub>4</sub>/CaCO<sub>3</sub> hybrid microspheres system**

**Jingyi Xue<sup>1</sup>, Jiahong Lv<sup>1</sup>, Wei Wang<sup>2</sup>, Xiaolei Li<sup>1</sup>, Qianli Li<sup>1</sup>, Lin Zhuang<sup>2</sup>, Yue Xu<sup>1</sup>**

<sup>1</sup>Department of Orthodontics, Guanghua School of Stomatology, Hospital of Stomatology, Sun Yat-sen University, Guangdong Provincial Key Laboratory of Stomatology, Guangzhou, China.

<sup>2</sup>School of Physics, State Key Laboratory of Optoelectronic Materials and Technologies, Guangdong Provincial Key Laboratory of Photovoltaics Technologies, Institute for Solar Energy Systems, Sun Yat-sen University, Guangzhou, China

**12:40pm - 12:55pm**

**Photo-patternable SU8-C Nanostructures Composites**

**Maryam Majidian, Claudio Grimaldi, Laszlo Forro, Arnaud Magrez**

Institute of Physics, Ecole Polytechnique Fédérale de Lausanne, Switzerland.

**12:55pm - 1:10pm**

**Synthesis of magnetic CaCO<sub>3</sub> microspheres for bone regeneration**

**Mingjie Zhang, Han Lin, Xiaolei Li, Qianli Li, Lin Zhuang, Yue Xu**

Department of Orthodontics, Guanghua School of Stomatology, Hospital of Stomatology, Guangdong Provincial Key Laboratory of Stomatology, Sun Yat-sen University, Guangzhou, 510055, People's Republic of China

**1:00pm - 2:00pm Lunch Break**

*Time: Wednesday, 24/July/2019: 2:00pm - 6:00pm · Location: 302*

*Session Chair: W.A.Farooq,*

**2:00pm - 2:15pm**

**Design of multifunctional composites and their multi-material additive manufacturing**

**Therriault, Dermanaki Farahani**

Laboratory of Multiscale Mechanics, Mechanical Engineering Department, Polytechnique Montreal, C.P. 6079 Succ. Centre-ville, Montreal, QC, Canada, H3C 3A7.

**2:15pm - 2:30pm**

**Preparation and Properties of An Eco-friendly Polyurethane Conductive Composite Coating Modified with MWCNTs**

**Fangfang Wang<sup>1</sup>, Lajun Feng<sup>1,2,\*</sup>, Ali Lei<sup>1</sup>**

<sup>1</sup>School of Materials Science and Engineering, Xi'an University of Technology, China, <sup>2</sup>Key Laboratory of Corrosion and Protection of Shaanxi Province, China.

**2:30pm - 2:45pm**

**Evaluation of long-term behavior of CFRP tendons in prestressed near surface mounted reinforcement girder**

**Hee Beom Park, Woo-tai Jung, Jong-sup Park, and Jae-Yoon Kang**

Department of Infrastructure Safety Research, Korea Institute of Civil Engineering and Building Technology, Goyang, Republic of Korea.

**2:45pm - 3:00pm**

**A re-centering deformation-amplified SMA damper for mitigating seismic response of structures**

**Hongnan Li**

State Key Laboratory of Coastal and Offshore Engineering, Dalian University of Technology, Dalian 116023, China

**3:00pm - 3:15pm**

**Auxetic Composite Made of Three-dimensional Fiber Structure for Impact Protection**

**Hong Hu, Lin Zhou, Jifang Zeng**

Institute of Textiles and Clothing, The Hong Kong Polytechnic University, Hung Hom, Hong Kong.

**3:15pm - 3:30pm**

**Colorless and Transparent Copolyimide Nanocomposite Films for Flexible Display Substrates**

**Jong Won Kim, Jin-Hae Chang\***

Department of Polymer Science and Engineering, Kumoh National Institute of Technology, Gumi 39177, Korea.

**3:30pm - 3:45pm**

**Injectable and hemostatic composite hydrogel of N, O-carboxymethyl chitosan/oxidized chondroitin sulfate for wound dressing**

**Hongbin (Li), Feng (Cheng), Xingjing (Wei), Xiaotong Yi, Jinmei (He)\***

School of Chemistry and Chemical Engineering, Harbin Institute of Technology, Harbin, Heilongjiang 150010, China

**3:45pm - 4:00pm**

**DGEBA Epoxy Based Polymer Nano Composites: A study on mechanical, Thermal, Morphological, Chemical properties**

**Manoj Kumar Shukla<sup>1\*</sup>, Archana Misra<sup>2</sup>, Moksh Shukla<sup>3</sup>, Kavita Srivastava<sup>4</sup> and Deepak Srivastava<sup>5\*</sup>**

<sup>1\*</sup>Department of Plastic Tech., Govt. Polytechnic College, Kota, Rajasthan, India,<sup>2</sup>Department of Plastic Tech., Govt. Polytechnic College, Kota, Rajasthan, India,<sup>3</sup>B.Tech. Scholar, Department of Chemical Engineering, IIT, Kanpur, U.P., India.<sup>4</sup>Department of Chemistry, V. S. S. D. College, Kanpur, U.P., India, <sup>5\*</sup>School of Chem. Tech. Department of Plastic Technology, H.B.T. U. , Kanpur, U.P., India.

**4:00pm - 4:15pm**

**Structure, dielectric, ferroelectric and piezoelectric properties of KNN- based perovskite ceramics**

**E.D. Politova<sup>1</sup>, G.M. Kaleva<sup>1</sup>, A.V. Mosunov<sup>1</sup>, S. Yu. Stefanovich<sup>1</sup>, D.A. Kiselev<sup>2</sup>,**

<sup>1</sup>L.Ya.Karpov Institute of Physical Chemistry; Vorontsovo pole, 10, Moscow 105064, Russia, <sup>2</sup>National University of Science and Technology "MISiS", Leninskii pr. 4, Moscow, Russia

**4:15pm - 4:30pm**

**Layered Double Hydroxides Functionalized with Organic Chromophores Utilized for Stamping of Polymer Profiles**

**Zăvoianu<sup>1</sup>, Șerban<sup>1</sup>, Pavel<sup>1</sup>, Bacalum<sup>1</sup>, Vlad<sup>2</sup>, Bîrjega<sup>2</sup>**

<sup>1</sup>University of Bucharest, Faculty of Chemistry, Department of Organic Chemistry, Biochemistry & Catalysis, Blv. Regina Elisabeta No. 4-12, S3, 030018, Bucharest, ROMANIA, <sup>2</sup>National Institute for Lasers, Plasma and Radiation Physics, 409 Atomistilor Str., 77125 Bucharest-Magurele, ROMANIA.

**4:30pm - 4:45pm**

**Field Application of Prestressed Near-Surface-Mounted Carbon-Fiber-Reinforced-Polymer Tendon for Concrete Bridge**

**Woo-tai Jung**

Korea Institute of Civil engineering and building Technology

**4:45pm - 5:00pm**

**Electron transfer mechanism of carbon dots and nickel-<sup>2+</sup>mesoporous silica nanoparticles for fluorescent detection probe**

**Yilin Yu, Xiaolei Li, Lin Zhuang**

Department of Prosthodontics, Guanghua School of Stomatology, Hospital of Stomatology, Guangdong Provincial Key Laboratory of Stomatology, Sun Yat-sen

**5:00pm - 5:15pm**

**PdSe<sub>2</sub>: a Pentagonal Layered Material Bridging the Gap between 2D and 3D Materials**

**Liangbo Liang, Kai Xiao, Alexander A. Puzos, Giang Nguyen, An-Ping Li, David B. Geohegan, Bobby G. Sumpter,**

Oak Ridge National Laboratory

**5:15pm - 5:30pm**

**Lignin as a raw material of activated carbon for supercapacitor electrodes**

**Zulamita Zapata-Benabithé, Giovanna Diosa, Chris D. Castro, Germán Quintana**

Grupo de Energía y Termodinámica, Facultad de Ingeniería Química, Universidad Pontificia Bolivariana, Medellín 050031, Colombia, Grupo Pulpa y Papel, Facultad de Ingeniería Química, Universidad Pontificia Bolivariana, Circular 1No 70-01, Medellín 050031, Colombia

**5:30pm - 5:45pm**

**Preparation of hyperbranched polymers of oxidized lignin modified with triazine for removal of heavy metals**

Viviana Gómez | Zulamita Zapata-Benabithé | Jorge Valásquez | Germán Quintana | Grupo Pulpa y Papel, Facultad de Ingeniería Química, Universidad Pontificia Bolivariana, Circular 1No 70-01, Medellín 050031, Colombia | Grupo de Energía y Termodinámica, Facultad de Ingeniería Química, Universidad Pontificia Bolivariana, Circular 1No 70-01, Medellín 050031, Colombia | Grupo Pulpa y Papel, Facultad de Ingeniería Química, Universidad Pontificia Bolivariana, Circular 1No 70-01, Medellín 050031, Colombia | Grupo Pulpa y Papel, Facultad de Ingeniería Química, Universidad Pontificia Bolivariana, Circular 1No 70-01, Medellín 050031, Colombia

**5:45pm - 6:00pm**

**Extremely tough and versatile cyclic peptide nanopolymers**

**Manoj Kolel-Veetil and Kenan P. Fears**

Chemistry Division, US Naval Research Laboratory, Washington DC 20375



# LDNT: Low Dimensional, Nano and 2d Materials and Thin Films

*Time: Wednesday, 24/July/2019: 2:00pm - 6:30pm · Location: Grand Ballroom*

*Session Chair: Dae Joon Kang and Imran Shakir,*

**2:00pm - 2:15pm**

**Molecular Organometallic Resists for EUV (13.5 nm) Lithography**

**Brian (Cardineau), Michael (Murphy) , Robert L. (Brainard)\***

Colleges of Nanoscale Science and Engineering, SUNY Polytechnic Institute; Albany NY 12203

**2:15pm - 2:30pm**

**Electric-field control of magnetism in multiferroic heterostructures**

**Y. G. Zhao<sup>1</sup>, A. T. Chen<sup>1,5</sup>, Y. Ba<sup>1</sup>, Y. Liu<sup>1</sup>, P. S. Li<sup>1,2</sup>, S. Zhang<sup>1,2</sup>, X. F. Han<sup>3</sup>, J. W. Cai<sup>3</sup>, D. T. Pierce<sup>4</sup>, John Unguris<sup>4</sup>, X. X. Zhang<sup>5</sup>, and C. W. Nan<sup>6</sup>**

<sup>1</sup>Department of Physics and State Key Laboratory of Low-Dimensional Quantum Physics, Tsinghua University, Beijing 100084, China, <sup>2</sup>College of Mechatronics and Automation, National University of Defense Technology, Changsha 410073, China, <sup>3</sup>Beijing National Laboratory for Condensed Matter Physics, Chinese Academy of Sciences, Beijing 100190, China, <sup>4</sup>Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, Maryland 20899, USA, <sup>5</sup>Physical Science and Engineering Division, King Abdullah University of Science and Technology, Thuwal 23955-6900, Kingdom of Saudi Arabia, <sup>6</sup>School of Materials Science and Engineering and Key Laboratory of Advanced Materials (MOE), Tsinghua University, Beijing 100084, China.

**2:30pm - 2:45pm**

**Bioinspired gradient micro- and nanostructured surfaces with controllable wettability**

**Yongmei Zheng**

Beihang University, Xueyuan Road 37, Haidain District, Beijing, 100191, China.

**2:45pm - 3:00pm**

**Crystal growth, Structural Properties, and Molecular Dynamics in Perovskite -Type (C<sub>2</sub>H<sub>5</sub>NH<sub>3</sub>)<sub>2</sub>ZnCl<sub>4</sub> Crystals**

**Seong Eun Jang<sup>1,3</sup>, Mi Jung Kim<sup>1,3</sup> Ae Ran Lim<sup>1,2,\*</sup>**

<sup>1</sup>Analytical Laboratory of Advanced Ferroelectric Crystals, Jeonju University, Jeonju 55069, South Korea, <sup>2</sup>Department of Science Education, Jeonju University, Jeonju 55069, South Korea, <sup>3</sup>Department of Carbon Fusion Engineering, Jeonju University, Jeonju 55069, South Korea

**3:00pm - 3:15pm**

**Quasi-Solid-State Single-Atom Transistor**

**Fangqing Xie<sup>1\*</sup>, Andreas Peukert<sup>1</sup>, Thorsten Bender<sup>1</sup>, Christian Obermair<sup>1</sup>, Florian Wertz<sup>1</sup>, Philipp Schmieder<sup>1</sup>, and Thomas Schimmel<sup>1,2,3</sup>**

<sup>1</sup>Institute of Applied Physics, Karlsruhe Institute of Technology (KIT), Campus South, 76131 Karlsruhe, Germany, <sup>2</sup>Institute of Nanotechnology, KIT, Campus North, 76344 Eggenstein-

Leopoldhafen, Germany, <sup>3</sup>Material Research Center for Energy Systems (MZE), KIT, Campus South, Karlsruhe, Germany

**3:15pm - 3:30pm**

**Piezoelectric acoustic sensor based on two dimensional MoS<sub>2</sub>**

**Hyoung Taek Kim, Ahrum Sohn, Jae Hwan Jung, Sang-Woo Kim\***

School of Advanced Materials Science and Engineering, Sungkyunkwan University (SKKU), Suwon 16419, Republic of Korea

**3:30pm - 3:45pm**

**Solution Processing of Functional Hybrid Inorganic Macromolecules**

**Mengwen Yan, Kelly G. Walter, Audrey Crom, Jeremy I. Feldblyum**

Chemistry Department, The University at Albany, SUNY, Albany, NY, 12222

**3:45pm - 4:00pm**

**Photoluminescence Trend in Carbon Quantum Dots**

**Jose Luis Casas Espinola**

Instituto Politecnico Nacional

**4:00pm - 4:15pm**

**Resistance Switching in a Single ZnO Nano-Wire**

**Kausik S Das<sup>1</sup>, Benjamin Barnes<sup>1,2</sup>, Eguono Wayne Omagamre<sup>1</sup>**

<sup>1</sup>Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD, USA, <sup>2</sup>Department of Chemistry, University of Maryland College Park, College Park, MD, USA.

**4:15pm - 4:30pm**

**Constructing transferrable electronics on functionalized graphene**

**Keith Whitener, Woo Lee, Jeremy Robinson, Paul Sheehan**

Naval Research Laboratory

**4:30pm - 4:45pm**

**A METHOD TO FABRICATE HIGH RESOLUTION AFM TIPS USING NANOSCALE CHEMICAL TEMPLATING TECHNIQUE**

**Maha M Khayyat**

Saudi Arabia

**4:45pm - 5:00pm**

**Charge Transfer Dynamics controlled by the band alignment at ZnPc-MoS<sub>2</sub> Interface: Monolayer vs Bulk**

**Tika Kafle, Bhupal Kattel, Wai-Lun Chan**

University of Kansas

**5:00pm - 5:15pm**

**Pulsed Anodic Arc Discharge for the Synthesis of Carbon Nanomaterials**

**Carles Corbella, Sabine Portal, Denis B. Zolotukhin, Luis Martinez, Li Lin, Madhusudhan N. Kundrapu, Michael Keidar**  
George Washington University

**5:15pm - 5:30pm**

**2D thermoelectric materials: Role of the lattice thermal conductivity**

**Udo Schwingenschlogl**

King Abdullah University of Science and Technology (KAUST), Physical Science and Engineering Division (PSE), Thuwal 23955-6900, Saudi Arabia

**5:30pm - 5:45pm**

**Control of metal-insulator transition temperature in VO<sub>2</sub> thin films by strain modification via various buffer layers**

**Heungsoo Kim, Nicholas A. Charipar, Alberto Piqué**  
Naval Research Laboratory

**5:45pm - 6:00pm**

**Phase transition-based Terahertz and Infrared Devices**

**Nicholas Charipar, Heungsoo Kim, Ray Auyeung, Scott Mathews, Kristin Charipar , Alberto Pique**  
Naval Research Laboratory

**6:00pm - 6:15pm**

**Exciton emissions in quasi onedimensional layered KP15**

**Nan Tian, Danmin Liu, Yongzhe Zhang and Guoqing Zhang**

Institute of Microstructure and Property of Advanced Materials, Beijing University of Technology, Beijing, China | Institute of Microstructure and Property of Advanced Materials, Beijing University of Technology, Beijing, China | College of Materials Science and Engineering, Beijing University of Technology, Beijing, China. | Institute of Microstructure and Property of Advanced Materials, Beijing University of Technology, Beijing, China