

**Poster Session**  
Pegasus Ballroom A-F  
Poster Session Chair: Laurene Tetard, University of Central Florida

**Monday, March 9, 5:00-7:00 pm**  
**Tuesday, March 10, 8:00-9:00 am**

**Category: Undergraduate**

**P-01**

**SYNTHESIS AND CHARACTERIZATION OF METAL-CONJUGATED MICROBICIDAL CHITOSAN NANOPARTICLES**, Antonia Bass<sup>1,2</sup>, Parthiban Rajasekaran<sup>1,2</sup> and Swadeshmukul Santra<sup>1,2,3,4</sup>, <sup>1</sup>Burnett School of Biomedical Sciences, <sup>2</sup>NanoScience Technology Center, <sup>3</sup>Materials Science and Engineering and <sup>4</sup>Department of Chemistry, University of Central Florida, Orlando, FL 32826

**P-02**

**MAGNETIC FIELD EFFECT ON CONVECTIVE FLOW STRUCTURES IN MAGNETIC FLUIDS**, Sebastien Benoit<sup>1</sup>, Jun Huang<sup>1</sup>, Tianshu Liu<sup>2</sup>, and Weili Luo<sup>1</sup>, <sup>1</sup>Department of Physics, University of Central Florida, Orlando, FL 32826 <sup>2</sup>Department of Mechanical and Aeronautical Engineering, G220 Parkview Campus, Western Michigan University, Kalamazoo, MI 49008-5343

**P-03**

**HIGH RESOLUTION CHARACTERIZATION OF NANOPARTICLES IN SINGLE CELLS**, Eric Calkins, Mikhael Soliman, Laurene Tetard, NanoScience Technology Center, University of Central Florida, Orlando, FL 32826

**P-04**

**THERMOSET AND THERMOPLASTIC POLYMER NANOCOMPOSITES OF EDGE-FUNCTIONALIZED GRAPHENE OXIDE**, David Fox, Matthew McInnis, Lei Zhai, Nanoscience Technology Science Center and Department of Chemistry, University of Central Florida, Orlando, FL 32826

**P-05**

**THIN CELLULOSIC FILMS AS A DRUG-DELIVERY PLATFORM**, Johnnie Greene, Ayman Abouraddy, CREOL, University of Central Florida, Orlando, FL 32826

**P-06**

**FIXED QUAT: AN ATTRACTIVE ALTERNATIVE TO COPPER (Cu) BIOCIDES**, Preeti Kumrah<sup>1,2</sup>, Mikaeel Young<sup>1,2</sup>, Parthiban Rajasekaran<sup>2</sup>, and Swadeshmukul Santra<sup>1,2,3,4</sup>, <sup>1</sup>Burnett School of Biomedical Sciences, <sup>2</sup>NanoScience Technology Center, <sup>3</sup>Materials Science and Engineering and <sup>4</sup>Department of Chemistry, University of Central Florida, Orlando, FL 32826

**P-07**

**IMPROVING ROOM TEMPERATURE HYDROGEN DETECTION WITH THE USE OF NANOSTRUCTURED TIN OXIDE**, Rameech McCormack<sup>1,3</sup>, Nozomi Shirato<sup>5</sup>, Umesh Singh<sup>2</sup>, Soumen Das<sup>3,4</sup>, Amit Kumar<sup>3</sup>, Hyoung J. Cho<sup>1</sup>, Ramki Kalyanaraman<sup>5,6,7</sup>, Sudipta Seal<sup>2,3,4</sup>, <sup>1</sup>Department of Mechanical & Aerospace Engineering (MAE), <sup>2</sup>Department of Material Science and Engineering (MSE), <sup>3</sup>Advanced Materials Processing Analysis Center (AMPAC), <sup>4</sup>NanoScience Technology Center (NSTC) University of Central Florida, Orlando, FL 32826 <sup>5</sup>Department of Materials Science & Engineering, <sup>6</sup>Department of Chemical & Biomolecular Engineering, <sup>7</sup>Sustainable Energy Education and Research Center (SEERC), University of Tennessee, Knoxville, TN

**P-08**

**CALCULATION OF THE TERAHERTZ RADIATION PATTERNS FROM A SUPERCONDUCTING MESA FOR THE DEVELOPMENT OF MEDICAL IMAGING AND HOMELAND SECURITY TOOLS**, Manuel A. Morales, Richard Klemm, Department of Physics, University of Central Florida, Orlando, FL 32826

**P-09**

**PLASMON ASSISTED ENHANCEMENT OF THE OPTICAL PROPERTIES OF MEH-PPV NANOPARTICLES**, Merin Thomas<sup>1</sup>, Mona Matthews<sup>2</sup>, Chao Li<sup>2</sup>, Sean Crystal<sup>2</sup>, Laurene Tetard<sup>2</sup>, Andre Gesquiere<sup>2</sup>, <sup>1</sup>Winter Park High School, Winter Park, FL 32792, <sup>2</sup>NanoScience Technology Center, University of Central Florida, Orlando, FL, 32826

**P-10**

**HIGH RESOLUTION CHARACTERIZATION OF NANOPARTICLES IN SINGLE CELLS**, Brandon Wolfson, Laurene Tetard, NanoScience Technology Center, University of Central Florida, Orlando, FL, 32826

**Graduate**

**Category: Graduate - Computational and Experimental Materials Science**

**P-11**

**DIFFUSION OF SMALL CU ISLANDS ON THE NI (111) SURFACE: RESULTS OF THE MOLECULAR DYNAMICS AND SELF-LEARNING KINETIC MONTE CARLO (II) SIMULATIONS**, Shree Ram Acharya, Syed Islamuddin Shah, Talat S. Rahman, Department of Physics, University of Central Florida, Orlando, FL, 32816

**P-12**

**OPTICAL AND ELECTRONIC PROPERTIES OF MOS<sub>2</sub>-AU HYBRID**, Udai Bhanu, Muhammad R. Islam, Laurene Tetard & Saiful I. Khondaker, NanoScience Technology Center and Department of Physics, University of Central Florida, FL 32826

**P-13**

**CELL PRINTING OF VARIOUS CELL TYPES FOR BIOMEMS APPLICATIONS**, Ashley L. Bui, Michael A. Lopez, Muhaimeen Hossain, James J. Hickman, NanoScience Technology Center, University of Central Florida, Orlando, FL, 32826

**P-14**

**DETERMINATION OF ADSORPTION ISOTHERM OF POLYACRYLIC ACID ON CERIUM OXIDE NANOPARTICLES AS A FUNCTION OF LATTICE STRAIN**, Ali Haghghat Mesbahi<sup>1</sup>, Shashank Saraf<sup>1</sup>, Supita Seal<sup>1,2</sup>, <sup>1</sup>Advanced Materials Processing and Analysis Center (AMPAC), Materials Science Engineering (MSE) and <sup>3</sup>NanoScience Technology Center (NSTC), University of Central Florida, Orlando, FL 32826

**P-15**

**CO ADSORPTION ON PD(111) AT 0.5ML: A DFT STUDY**, Zahra Hooshmand-Gharehbagh, Duy Le, Talat S. Rahman, Department of Physics, University of Central Florida, Orlando FL 32816

**P-16**

**MAGNETIC BODY FORCE IN NATURAL CONVECTION IN MAGNETIC FLUIDS**, Jun Huang and Weili Luo, Department of Physics, University of Central Florida, Orlando, FL 32816

**P-17**

**ELECTRICAL PROPERTY TUNING VIA DEFECT ENGINEERING OF SINGLE LAYER MOS<sub>2</sub> BY OXYGEN PLASMA**, Muhammad R. Islam<sup>1,2</sup>, Narae Kang<sup>1,2</sup>, Udai Bhanu<sup>1,2</sup>, Hari P. Paudel<sup>1,2</sup>, Mikhail Erementchouk<sup>1,2</sup>, Laurene Tetard<sup>1,2</sup>, Michael N. Leuenberger<sup>1,2,4</sup>, and Saiful I. Khondaker<sup>1,2,3</sup>, <sup>1</sup>Nanoscience Technology Center, <sup>2</sup>Department of Physics, <sup>3</sup>School of Electrical Engineering and Computer Science, <sup>4</sup>College of Optics and Photonics (CREOL), University of Central Florida, Orlando, Florida 32826

**P-18**

**SPECTRAL AND MAGNETIC PROPERTIES OF HEMATITE FE<sub>2</sub>O<sub>3</sub>(001) SURFACE: RESULTS FROM DFT+DMFT,** Alamgir Kabir, Volodymyr Turkowski, and Talat S. Rahman, Department of Physics, University of Central Florida, Orlando, FL 32816

**P-19**

**KINETIC STUDY OF HOMOGENEOUS THERMAL DECOMPOSITION OF CL<sub>4</sub>(CH<sub>3</sub>CN)WNIPR FOR MOCVD OF WCXNY USING IN-SITU RAMAN SPECTROSCOPY AND COMPUTATIONAL CHEMISTRY,** Seo Young Kim<sup>1</sup>, Arijit Koley<sup>2</sup>, Lisa McElwee-White<sup>2</sup>, and Tim Anderson<sup>1</sup>, <sup>1</sup>Department of Chemical Engineering, University of Florida, Gainesville, Florida, 32611, <sup>2</sup>Department of Chemistry, University of Florida, Gainesville, Florida, 32611

**P-20**

**DESIGN OPTIMIZATION OF SI<sub>3</sub>N<sub>4</sub>/SiO<sub>2</sub> MULTILAYER COATINGS DEPOSITED ON LITHIUM DISILICATE,** L. C. Le, W. D. Zhu, R. X. Liang, F. Ren, Department of Chemical Engineering, University of Florida, Gainesville FL 32611

**P-21**

**HIGH SPEED MULTISPECTRAL TUNABLE METAMATERIAL MICROBOLOMETER DETECTOR,** Jonathan Lee<sup>2</sup>, Sushrut Modak<sup>1</sup>, Debashis Chanda<sup>1,2</sup>, <sup>1</sup>CREOL, The College of Optics and Photonics, University of Central Florida, Orlando, Florida 32826, <sup>2</sup>Department of Physics, University of Central Florida, Orlando, Florida 32826

**P-22**

**SURFACE CHEMISTRY CONTROLLED CARDIOMYOCYTE PATTERNING ON MICROELECTRODE ARRAYS FOR IN VITRO ELECTROCARDIOLOGY,** Gregg Legters, Candace R. Martin, Gail. C Eckman, Frank Sommerhage, James J. Hickman, Hybrid Systems Lab, Nanoscience Technology Center, University of Central Florida, Orlando, FL 32826

**P-23**

**IMPACT OF ULTRA SMALL N-ACETYL CYSTEINE COATED CDS:MN/ZNS QUANTUM DOTS ON SNOW PEA (PISUM SATIVUM L.),** Smruti Das<sup>1</sup>, Brandon P. Wolfson<sup>1</sup>, Laurene Tetard<sup>1,2,3</sup>, Jeremy Tharkur<sup>1,4</sup>, Joshua Bazata<sup>1,4</sup>, Tyler Maxwell<sup>1</sup> and Swadeshmukul Santra<sup>1,3,4,5</sup>, <sup>1</sup>NanoScience Technology Center, <sup>2</sup>Department of Physics, <sup>3</sup>Department of Materials Science and Engineering, <sup>4</sup>Burnett School of Biomedical Sciences, and <sup>5</sup>Department of Chemistry, University of Central Florida, Orlando, FL 32826

**P-24**

**ADSORPTION, VIBRATION AND DIFFUSION OF OXYGEN ON AG(110),** Takat B. Rawal<sup>1</sup>, Sampyo Hong<sup>1</sup>, Aki Pulkkinen<sup>2</sup>, Matti Alatalo<sup>3</sup> and Talat S. Rahman<sup>1</sup>, <sup>1</sup>Department of Physics, University of Central Florida, Orlando, FL, 32826, <sup>2</sup>Lappeenranta University of Technology, FI-53851, Finland, <sup>3</sup>Department of Physics, University of Oulu, FI-90014, Finland

**P-25**

**ENERGY-DISPERSIVE X-RAY SPECTROSCOPY SIMULATION FOR MONOLAYER DIFFUSED MATERIALS IN 22 NM GATE STRUCTURE,** Imen Rezadad<sup>1,2</sup>, Brenda Prenitzer<sup>2</sup>, Robert Peale<sup>1</sup>, <sup>1</sup>Physics Department, University of Central Florida, Orlando, FL, 32816, <sup>2</sup>NanoSpective, Inc. 12565 Research Parkway, Suite 390, Orlando, FL 32826

**P-26**

**HOLE-DISK BASED HYPERBOLIC METAMATERIAL,** Alireza Safaei<sup>1,2</sup>, Sushrut Modak<sup>2,3</sup>, Debashis Chanda<sup>1,2,3</sup>, <sup>1</sup>Department of Physics, <sup>2</sup>NanoScience Technology Center, and <sup>3</sup>CREOL, The College of Optics and Photonics, University of Central Florida, Orlando, Florida 32826

**P-27**

**ANTI-BIOFOULING SURFACE OF NANOPOROUS GOLD FOR BIOMEDICAL DEVICES**, Shashank Saraf<sup>1</sup>, Craig Neal<sup>1</sup>, Sanghoon Park<sup>2</sup>, Soumen Das<sup>1,3</sup>, Swetha Barkam<sup>1</sup>, Sudipta Seal<sup>1,3</sup> and Hyoung Jin Cho<sup>2</sup>, <sup>1</sup>Advanced Materials Processing and Analysis Center (AMPAC), Materials Science Engineering (MSE), <sup>2</sup>Department of Mechanical and Aerospace Engineering, <sup>3</sup>NanoScience Technology Center (NSTC), University of Central Florida, Orlando, FL 32816

**P-28**

**EFFECTS OF HYDROXYLATED  $\Gamma$ -AL<sub>2</sub>O<sub>3</sub> SUPPORT AND H ADSORBATE ON THE GEOMETRY AND ELECTRONIC STRUCTURE OF PT NANOPARTICLES**, Ghazal Shafai<sup>1</sup>, Sampyo Hong<sup>1,2</sup>, and Talat S. Rahman<sup>1</sup>, <sup>1</sup>Department of Physics, University of Central Florida, Orlando, FL, 32826, <sup>2</sup>Department of Physics, University of North Florida, Jacksonville, FL, 32224

**P-29**

**MD MODELING OF THE DNA OVEREXTENSION CURVE**, Gregory Shinaberry, Ivan Mikhaylov, Alexander Balaeff, Nanoscience Technology Center, University of Central Florida, Orlando, FL, 32826

**P-30**

**RESISTANCE INDUCED BY A SINGLE ATOM ON A CARBON NANOTUBE**, Ryuichi Tsuchikawa<sup>1</sup>, Daniel Heligman<sup>1</sup>, Amin Ahmadi<sup>1</sup>, Zhengyi Zhang<sup>1</sup>, James Hone<sup>2</sup>, Eduardo Mucciolo<sup>1</sup>, Masa Ishigami<sup>1</sup>, <sup>1</sup>Department of Physics, University of Central Florida, Orlando, FL, 32826, <sup>2</sup>Department of Mechanical Engineering, Columbia University, New York, NY 10027

**P-31**

**HYBRID PLASMONIC-PHOTONIC SYSTEMS FOR ENHANCEMENT OF LIGHT-MATTER INTERACTION**, Abraham Vázquez-Guardado<sup>1,2</sup>, Alireza Safaei<sup>2,3</sup>, Sushrut Modak<sup>1,2</sup>, Daniel Franklin<sup>2,3</sup>, and Debashis Chanda<sup>1,2,3</sup>, <sup>1</sup>CREOL, College of Optics and Photonics, <sup>2</sup>NanoScience Technology Center, and <sup>3</sup>Department of Physics, University of Central Florida, Orlando, Florida 32816

**P-32**

**IMPACT OF GAMMA-IRRADIATION ON ELECTRONIC PROPERTIES OF ALGAN/GAN HIGH ELECTRON MOBILITY TRANSISTORS**, Anupama Yadava<sup>1</sup>, Elena Flitsiyana<sup>1</sup>, Leonid Chernyaka<sup>2</sup> and Igor Lubomirskyb<sup>2</sup>, <sup>1</sup>Department of Physics, University of Central Florida, Orlando, FL 32816, <sup>2</sup>Interfaces, Weizmann Institute of Science, Rehovot 76100, Israel

**P-33**

**INTERDIFFUSION, MARTENSITIC TRANSFORMATION AND MECHANICAL PROPERTIES OF NICKEL MANGANESE GALLIUM ALLOYS**, Le Zhou<sup>1</sup>, Anit Giri<sup>2</sup>, Kyu Cho<sup>3</sup>, Helge Heinrich<sup>1,4</sup>, Yongho Sohn<sup>1</sup>, <sup>1</sup>Department of Materials Science and Engineering and Advanced Materials Processing and Analysis Center, University of Central Florida, Orlando, FL, 32816, <sup>2</sup>TKC Global, 13873 Park Center Road, Herndon, VA 20171, <sup>3</sup>Weapons and Materials Research Directorate, US Army Research Laboratory, Aberdeen Proving Ground, Maryland, 21005, <sup>4</sup>Department of Physics, University of Central Florida, Orlando, FL, 32816

### **Category: Graduate - Energy-Related Materials**

**P-34**

**PHOTON-ELECTRON HARVESTING IN THNI-FILM FLEXIBLE SOLAR CELLS**, Javaneh Boroumand<sup>1</sup>, Debashis Chanda<sup>1,2,3</sup>, <sup>1</sup>Physics Department, <sup>2</sup>CREOL, College of Optics and Photonics, and <sup>3</sup>NanoScience Technology Center, University of Central Florida, Orlando, FL 32826

**P-35**

**PD/W (110) AS A HIGHLY CO TOLERANT ELECTROCATALYST FOR HYDROGEN OXIDATION: INSIGHT FROM FIRST PRINCIPLES**, Nagendra Dhakal, Sergey Stolbov, Physics Department, University of central Florida, Orlando, FL 32826

**P-36**

**REMEDICATION OF ORGANICS FROM WATER USING GRAPHENE DOPED METAL OXIDES (TiO<sub>2</sub>, ZNO) PHOTOCATALYST, Srikanth Gunti<sup>1</sup>, Ashok Kumar<sup>1</sup>, Manoj K Ram<sup>2</sup>, <sup>1</sup>Mechanical Engineering and <sup>2</sup>NREC/CERC, University of South Florida, Tampa, FL**

**P-37**

**HYDROTHERMAL SYNTHESIS OF MoO<sub>2</sub> NANOPARTICLES DIRECTLY ONTO A COPPER SUBSTRATE FOR THE ANODE OF A LITHIUM-ION BATTERY, Michael McCrory<sup>1</sup>, Manoj K. Ram<sup>2</sup>, Ashok Kumar<sup>1,2</sup>, <sup>1</sup>Department of Mechanical Engineering and <sup>2</sup>Clean Energy Research Center, College of Engineering, University of South Florida, Tampa, FL 33620**

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**GRAPHENE CRYOGELS FOR ENERGY STORAGE AND CONVERSION, Matthew McInnis, Zenan Yu, Jean Calderon, Jayan Thomas, Lei Zhai, NanoScience Technology Center, Department of Materials Science and Engineering, Department of Chemistry, and CREOL, College of Optics and Photonics, University of Central Florida, FL 32826**

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**INTERDIFFUSION AND REACTION IN BINARY AL VS. ZR AND TERNARY AL-SI VS. ZR DIFFUSION COUPLES, Abhishek Mehta<sup>1</sup>, D.D. Keiser Jr.<sup>2</sup>, Y.H.Sohn<sup>1</sup>, <sup>1</sup>Advanced Materials Processing and Analysis Center, Department of Materials Science and Engineering, University of Central Florida, Orlando, FL 32816, <sup>2</sup>Nuclear Fuels and Materials Division, Idaho National Laboratory, Idaho Falls, ID 83415**

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**MAGNETIC ALIGNMENT OF RHODAMINE-B INTERCALATED MICA FOR LUMINESCENT SOLAR CONCENTRATORS, Rashi Sharma<sup>1</sup>, Jennefir L. Digaum<sup>2</sup>, Gerald D. Richardson III, Stephen M. Kuebler<sup>1,2</sup>, <sup>1</sup>Chemistry Department and <sup>2</sup>CREOL, The College of Optics and Photonics, University of Central Florida, Orlando, FL 32816**

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**ELECTRICAL CABLES THAT STORE ENERGY? Zenan Yu<sup>1,2</sup> and Jayan Thomas<sup>1,2,3</sup>, <sup>1</sup>NanoScience Technology Center, <sup>2</sup>Department of Material Science and Engineering, and <sup>3</sup>CREOL, College of Optics and Photonics, University of Central Florida, FL 32826**

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**INVESTIGATION OF PRECURSOR GROWTH BEHAVIOR OVER WELL-DEFINED SUPPORTS USING ALD, Haibin Zheng, Lilli Eleanor Carpo, Helena Hagelin-Weaver, University of Florida, Gainesville, FL**

### **Category: Graduate - Materials Processing and Characterization**

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**INVESTIGATING THE EFFECT OF PROTON IRRADIATION ON DC PERFORMANCE OF ALGAN/GAN METAL-OXIDE SEMICONDUCTOR USING AL<sub>2</sub>O<sub>3</sub> AS GATE DIELECTRIC, Shihyun, Ahn<sup>1</sup>, Lingcong Le<sup>1</sup>, Byung-Jae Kim<sup>1</sup>, Y.-H Hwang<sup>1</sup>, Fan Ren<sup>1</sup>, Weidi Zhu<sup>2</sup>, Chen Dong<sup>2</sup>, Gwangseok Yang<sup>3</sup>, Jihyun Kim<sup>3</sup>, <sup>1</sup>Department of Chemical Engineering, University of Florida, Gainesville, FL 32611, <sup>2</sup>Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611, <sup>3</sup>Department of Chemical and Biological Engineering, Korea University, Seoul 136-713, Korea**

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**CERIA INTEGRATED SILK FIBROIN-PLGA BIOACTIVE 3D SCAFFOLD FOR TISSUE REGENERATION, S. Barkam<sup>1</sup>, C. Rodas<sup>1</sup>, R. McCormack<sup>1</sup>, C. Zgheib<sup>3</sup>, B., K. W. Liechty<sup>3</sup>, S. Das<sup>1</sup>, S. Seal<sup>1</sup>, <sup>1</sup>Advanced Materials Processing and Analysis Center, NanoScience Technology Center, Department of Material Science and Engineering, University of Central Florida, Orlando, FL 32816, <sup>2</sup>Nemours Children's Hospital, Sanford-Burnham Medical Research Institute, Orlando, FL 32827**

**P-45**

**DESIGN OF B-CD/SURFACTANT COMPLEX-COATED LIQUID CRYSTAL DROPLETS FOR THE DETECTION OF CHOLIC ACID VIA COMPETITIVE HOST-GUEST RECOGNITIONS,** Jinan Deng, Jiyu Fang, Department of Materials Science and Engineering, University of Central Florida, Orlando, FL 32816

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**THREE DIMENSIONAL POLARIZATION-SENSITIVE SPATIALLY-VARIANT SELF COLLIMATING PHOTONIC CRYSTAL FOR BEAM BENDING** Jennefir L. Digaum<sup>1</sup>, Javier Pazos<sup>2</sup>, Raymond C. Rumpf<sup>2</sup>, Jeff Chiles<sup>1</sup>, Sasan Fathpour<sup>1</sup>, Stephen M. Kuebler<sup>1,2,3</sup>, <sup>1</sup>CREOL, The College of Optics & Photonics, University of Central Florida, Orlando, FL 32816, <sup>2</sup>EM Lab, W.M. Keck Center for 3D Innovation, University of Texas at El Paso, El Paso, TX 79968, <sup>3</sup>Department of Chemistry, University of Central Florida, Orlando, FL 32816, <sup>4</sup>Department of Physics, University of Central Florida, Orlando, FL 32816

**P-47**

**LIGHT-MATTER INTERACTION AT THE NANOSCALE USING MULTI-FREQUENCY ATOMIC FORCE MICROSCOPY,** Yi Ding, Laurene Tetard, NanoScience Technology Center, University of Central Florida, Orlando, FL 32826

**P-48**

**A NON-TOXIC ANTIFOULING TECHNOGY FOR SHIPS BY CREATING SURFACE ROUGHNESS WITH FINE POWDERS,** Chen Dong<sup>1</sup>, Xueping Yi<sup>1</sup>, Weidi Zhu<sup>1</sup>, David Lovett<sup>1</sup>, Ya-Hsi Hwang<sup>2</sup> and Fan Ren<sup>2</sup>, <sup>1</sup>Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611, <sup>2</sup>Department of Chemical Engineering, University of Florida, Gainesville FL 32611

**P-49**

**DIRECTIONAL EMISSION BY MEANS OF RESONANT 2D GRATINGS,** Pedro Figueiredo<sup>1,2</sup>, James Ginn<sup>2</sup>, <sup>1</sup>University of Central Florida, Physics Department 32816, <sup>2</sup>Plasmonics Incorporated, 32826

**P-50**

**SIZE DEPENDENCE OF ELECTROCHEMICAL RESPONSE OF MOLYBDNIUM DISULFIDE FOR NITRIC OXIDE RADICALS DETECTION,** Ankur Gupta, Soumen Das, Sudipta Seal, Advanced Materials Processing and Analysis Center, NanoScience Technology Center and Department of Materials Science and Engineering, University of Central Florida, Orlando, FL 32816

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**EFFECT OF BACK-SIDE GATE TO DC PERFORMANCE AND OFF-STATE DRAIN BREAKDOWN VOLTAGE ON ALGAN/GAN HIGH ELECTRON MOBILITY TRANSISTORS,** Y.-H. Hwang<sup>1</sup>, C. Dong<sup>1</sup>, W. Zhu<sup>1</sup>, Y.-L. Hsieh<sup>1</sup>, S. Ahn<sup>1</sup>, F. Ren<sup>1</sup>, S. J. Pearton<sup>2</sup>, <sup>1</sup>Department of Chemical Engineering, University of Florida, Gainesville FL 32611, <sup>2</sup>Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611

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**TEMPERATURE DEPENDENT INVESTIGATION ON SUB-100NM CHANNEL ORGANIC FIELD-EFFECT TRANSISTORS WITH GRAPHENE ELECTRODES,** Narae Kang<sup>1,2</sup>, Saiful I. Khondaker<sup>1,2,3</sup>, <sup>1</sup>Nanoscience Technology Center, <sup>2</sup>Department of Physics, <sup>3</sup>School of electrical Engineering and Computer Science, University of Central Florida, Orlando, FL 32826

**P-53**

**A NEW PLATFORM FOR DROPLET ACTUATION, TRAPPING, AND MIXING,** Alireza Karbalaeei, Ashkan Davanlou, Ranganathan Kumar, Hyoung Jin Cho, Department of Mechanical and Aerospace Engineering, University of Central Florida, 4000 Central Florida Blvd, Orlando, FL, 32816

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**OPTICAL AND ELECTRICAL PROPERTIES OF TIN OXIDE-BASED THIN FILMS PREPARED BY STREAMING PROCESS FOR ELECTRODELESS ELECTROCHEMICAL DEPOSITION,** F. Khalilzadeh-Rezaie<sup>1</sup>, I. O. Oladeji<sup>2</sup>, J. W. Cleary<sup>3</sup>, J. Nath<sup>1</sup>, N. Nader<sup>3,4</sup>, Winston V. Schoenfeld<sup>5</sup>, R. E. Peale<sup>1</sup>, <sup>1</sup>Department of Physics, University

of Central Florida, Orlando, FL 32816, <sup>2</sup>SISOM THIN FILMS LLC, Orlando, FL 32805, <sup>3</sup>Air Force Research Laboratory, Sensors Directorate, Wright-Patterson Air Force Base, OH 45433, <sup>4</sup>Solid State Scientific Corporation, Nashua, NH 03060, <sup>5</sup>CREOL, The College of Optics & Photonics, University of Central Florida, Orlando, FL 32828

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**POLYMER-DERIVED CERAMICS SENSING MATERIAL EXHIBITING BOTH HIGH PIEZO-RESISTIVITY AND PIEZO-DIELECTRICITY**, Hao Li, Linan An, Department of Materials Science and Engineering, Advanced Materials Processing and Analysis Center, University of Central Florida, Orlando, FL 32816

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**XPS ANALYSIS OF FIBRONECTIN AND LAMININ ON DETA- AND PEG-MODIFIED GLASS SUBSTRATES**, Candace Martin, Gail Ekman, James J. Hickman, University of Central Florida, Orlando FL 32826

**P-57**

**BROADBAND METAMATERIAL PERFECT ABSORBER WITH POLARIZATION INSENSITIVE AND OMNIDIRECTIONAL ABSORPTION BANDS IN THE MID-IR REGION USING A DISPERSIVE DIELECTRIC SPACER**, Janardan Nath, Farnood Khalilzadeh-Rezaie, Robert Peale, Department of Physics, University of Central Florida, Orlando FL 32816

**P-58**

**THREE-DIMENSIONAL PLASMONIC NANOSTRUCTURES FOR ENHANCED CIRCULAR DICHROISM**, Negar Othrooshi<sup>1,2</sup>, Debashis Chanda<sup>2,3</sup>, Laurene Tetard<sup>1,2</sup>, Physics Department, <sup>2</sup>Nanoscience Technology Center, <sup>3</sup>CREOL, University of Central Florida, Orlando FL 32816

**P-59**

**INTEGRATION OF A PATTERNED GOLD-BLACK ABSORBER WITH A VOX-BASED BOLOMETER FOR ENHANCED DEVICE PERFORMANCE**, Evan M. Smith<sup>1,2</sup>, Deep Panjwani<sup>1</sup>, James Ginn<sup>2</sup>, Joshua Perlstein, Christopher Long<sup>2</sup>, RE Peale<sup>1</sup>, David Shelton<sup>2</sup>, <sup>1</sup>Department of Physics, University of Central Florida, Orlando FL 32816, <sup>2</sup>Plasmonics, Inc., Orlando FL 32826

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**NANOSCALE PHYSICAL AND CHEMICAL CHARACTERIZATION OF BIOMATERIALS IN PLANT SYSTEMS AND THEIR RESPONSE TO MECHANICAL STRESS**, Mikhael Soliman<sup>1,2</sup>, Laurene Tetard<sup>1,2</sup>, <sup>1</sup>NanoScience Technology Center, <sup>2</sup>Department of Material Science and Engineering, University of Central Florida, Orlando FL 32816

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**NANOFIBROUS COBALT SENSOR FOR PHOSPHATE SENSING**, Xiaochen Wang<sup>1</sup>, Xiangmeng Ma<sup>2</sup>, Woo Hyoung Lee<sup>2</sup> and Hyoung J. Cho<sup>1,3</sup>, <sup>1</sup>Materials Science and Engineering, <sup>2</sup>Civil, Environmental & Construction Engineering, <sup>3</sup>Mechanical and Aerospace Engineering, University of Central Florida, Orlando FL 32816

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