

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

**Wednesday, March 2, 4:30-7:00 pm**

**Category: Undergraduate**

**P-01**

**AMPICILLIN AND KANAMYCIN LOADED CHITOSAN HYDROGEL EXHIBITS ENHANCED ANTIMICROBIAL EFFICACY AGAINST GRAM POSITIVE AND GRAM-NEGATIVE BACTERIA,** Kripa Ahuja<sup>1, 2</sup>, Parthiban Rajasekaran<sup>2</sup>, and Swadeshmukul Santra<sup>2</sup>, <sup>1</sup>Trinity Preparatory School, Oviedo, FL, <sup>2</sup>NanoScience Technology Center, University of Central Florida, Orlando, FL

**P-02**

**A SIMPLE TECHNIQUE TO TUNE PLASMONIC RESONANCE,** Judin Job Thomas<sup>1</sup>, Kevin Zhai<sup>2</sup>, Katherine Layne<sup>3</sup>, Nitesh Dhasmana<sup>3</sup>, Chao Li<sup>4</sup>, Laurene Tetard<sup>4</sup>, <sup>1</sup>Winter Park High School, Winter Park, FL, <sup>2</sup>Seminole High School, 2701 Ridgewood Avenue, Sanford, FL, <sup>3</sup>College of Optics and Photonics (CREOL), <sup>4</sup>NanoScience Technology Center, University of Central Florida, Orlando, FL

**P-03**

**CELL COMPOSITION OF CITRUS GREENING INFECTED FRUITS,** Uma Menon<sup>1,2</sup>, Mikhael Soliman<sup>2</sup>, Laurene Tetard<sup>2</sup>, <sup>1</sup>Glenridge Middle School and Winter Park High School, Winter Park, FL, <sup>2</sup>NanoScience Technology Center, University of Central Florida, Orlando, FL

**P-04**

**IPURE: INTERDISCIPLINARY PHYSICS UNDERGRADUATE RESEARCH EXPLORERS,** Ana Rosario, Ashley Gramajo, Chanelle Hunter, Claudia Ragosta, Han Le, Rawan Almousa, Yasmine Lanham, Laurene Tetard, Alfons Schulte, AbdelKader Kara, Ahlam Al-Rawi, Burnett School of Biomedical Sciences, Biology Department, Physics Department, University of Central Florida, Orlando, FL

**P-05**

**STRUCTURE -TEMPERATURE-PROCESSING RELATIONSHIP OF CO<sub>25</sub>FE<sub>75</sub> NANOPARTICLES,** Kristin Tringali, Sean Ortiz, Jennifer Andrew, Nancy Ruzycski, Department of Materials Science, University of Florida, Gainesville, FL, \*Harris Corporation, Palm Bay, FL

**P-06**

**EXPLORING THE VOLUME OF HETEROGENEOUS MATERIALS WITH NANOSCALE PRECISION,** Cristian Lacera<sup>1</sup>, Marcy Yi<sup>1</sup>, Mikhael Soliman<sup>1,2</sup>, Negar Otrooshi<sup>1,2</sup>, Laurene Tetard<sup>1,2,3</sup>, <sup>1</sup>NanoScience Technology Center, <sup>2</sup>Department of Materials Science and Engineering, <sup>3</sup>Physics Department, University of Central Florida, Orlando, FL

**P-07**

**NANOSCALE STUDIES OF POLYMER BY NOVEL MICROSCOPY TECHNIQUES,** Marcy Yi<sup>1</sup>, Cristian Lacera<sup>1</sup>, Mikhael Soliman<sup>1,2</sup>, Negar Otrooshi<sup>1,2</sup>, Laurene Tetard<sup>1,2,3</sup>, <sup>1</sup>NanoScience Technology Center, <sup>2</sup>Department of Materials Science and Engineering, <sup>3</sup>Physics Department, University of Central Florida, Orlando, FL

**P-08**

**THEORETICAL STUDY OF CHROMOPHORES FOR BIOLOGICAL SENSING: UNDERSTANDING THE MECHANISM OF RHODOL BASED MULTI-CHROMOPHORIC SYSTEMS,** Hector J. Rivera-Jacquez,<sup>1,2</sup> Diana Lopez<sup>3</sup>—Artëm E.

Masunov<sup>1,4,5</sup>, <sup>1</sup>NanoScience Technology Center, <sup>2</sup>Department of Chemistry, <sup>3</sup>Burnett School of Biomedical Sciences, <sup>4</sup>Department of Physics and <sup>5</sup>Florida Solar Energy Center, University of Central Florida, Orlando, FL

#### P-09

**POLYMERIC MICELLE ENCAPSULATION OF IRON OXIDE NANOPARTICLES FOR REMOTE DRUG DELIVERY**, Sarah Shakespeare<sup>1</sup>, Daniel Denmark<sup>1</sup>, Jessica Major<sup>1</sup>, Kripal Bisht<sup>2</sup>, Sarath Witanachchi<sup>1</sup>, <sup>1</sup>Department of Physics, <sup>2</sup>Department of Chemistry, University of South Florida, Tampa, FL

### Graduate

**Category: Graduate - *Materials, Devices and Applied research***

#### P-10

**ENZYME-FREE DOPAMINE SENSOR USING RARE EARTH NANOPARTICLE TRANSDUCERS IN A HYBRID PLASMONIC SENSOR**, Abraham Vázquez-Guardado<sup>1,2</sup>, Swetha Barkam<sup>3,4</sup>, Soumen Das<sup>2,3</sup>, Sudipta Seal<sup>2,3,4</sup> and Debashis Chanda<sup>1,2,5</sup>, <sup>1</sup>CREOL, The College of Optics and Photonics, <sup>2</sup>NanoScience Technology Center, <sup>3</sup>Materials Science and Engineering, <sup>4</sup>Advanced Materials Processing and Analysis Center, <sup>5</sup>Department of Physics, University of Central Florida, Orlando, FL, USA

#### P-11

**SURFACE PASSIVATION STUDIES IN CRYSTALLINE SILICON SOLAR CELLS**, Haider Ali<sup>1,2,3</sup>, Kristopher Davis<sup>2,3</sup> and Winston Schoenfeld<sup>1, 2,3,4</sup>, <sup>1</sup> Department of Materials Science and Engineering, University of Central Florida, <sup>2</sup> Florida Solar Energy Center, University of Central Florida, <sup>3</sup> c-Si Division, U.S. Photovoltaic Manufacturing Consortium, <sup>4</sup>CREOL, the College of Optics & Photonics, University of Central Florida, Orlando, FL

#### P-12

**SYNTHESIS OF ZnO NANOPARTICLES WITH DIFFERENT CAPPING AGENTS FOR ENHANCED BIOCIDAL ACTIVITY** Ali Ozcan<sup>1,2</sup>, Parthiban Rajasekaran<sup>2</sup>, Rajneesh Prajapati<sup>2</sup>, Swadeshmukul Santra<sup>1,2,3,4</sup>, <sup>1</sup>Department of Chemistry, <sup>2</sup> NanoScience Technology Center, <sup>3</sup> Department of Material Science and Engineering, <sup>4</sup> Burnett School of Biomedical Sciences, University of Central Florida, Orlando, FL

#### P-13

**PLASMA SPRAYED NIAL-GRAPHENE OXIDE COMPOSITE COATINGS FOR AEROSPACE INDUSTRY**, Ankur Gupta<sup>1</sup>, David Ward<sup>1</sup>, Shashank Saraf<sup>1</sup>, Cheng Zhang<sup>2</sup>, Arvind Agarwal<sup>2</sup>, Sudipta Seal<sup>1</sup>, <sup>1</sup>Advanced Materials Processing and Analysis Center, NanoScience Technology Center and Department of Materials Science and Engineering, University of Central Florida, Orlando, FL-32816, <sup>2</sup>Department of Mechanical Engineering, Florida International University, Miami, FL

#### P-14

**PROBING TERNARY SOLVENT EFFECT IN HIGH  $V_{OC}$  POLYMER SOLAR CELLS USING ADVANCED AFM TECHNIQUES**, Chao Li<sup>1,2</sup>, Yi Ding<sup>1,2</sup>, Mikhael Soliman<sup>1,2</sup>, Andre J. Gesquiere<sup>1,2,3,4</sup>, Laurene Tetard<sup>1,2,\*</sup>, Jayan Thomas<sup>1,2,4</sup>, <sup>1</sup>NanoScience Technology Center, <sup>2</sup>Department of Material Science and Engineering, <sup>3</sup> Department of Chemistry, <sup>4</sup>CREOL, College of Optics and Photonics, University of Central Florida, Orlando, FL

#### P-15

**GRAPHENE GUIDED ORDERED CONJUGATED POLYMER SELF-ASSEMBLIES FOR ELECTRIC DEVICES**, Chen Shen, Lei Zhai, Department of Materials Science and Engineering, NanoScience Technology Center, University of Central Florida, Orlando, FL

#### P-16

**AMPEROMETRIC DETECTION OF HYDROGEN PEROXIDE USING AN ENZYME-FREE SENSOR PLATFORM**, Craig J. Neal<sup>1</sup>, Swetha Barkam<sup>1</sup>, Ankur Gupta<sup>1</sup>, Shashank Saraf<sup>1</sup>, Soumen Das<sup>1,2</sup>, Hyoung Jin Cho<sup>1,2</sup>, Sudipta Seal<sup>1,2,3,4</sup>, <sup>1</sup> Materials Science & Engineering, <sup>2</sup> Mechanical & Aerospace Engineering, <sup>3</sup> Nanoscience Technology Center, University of Central Florida, Orlando, FL

**P-17**

**LOSS ANALYSIS OF SILICON SOLAR CELLS USING SPATIAL RESOLVED QUANTUM EFFICIENCY**, Eric J. Schneller<sup>1,2</sup>, Kristopher O. Davis<sup>1,2,3</sup>, Greg Horner<sup>4</sup> and Winston V. Schoenfeld<sup>1,2,3</sup>, <sup>1</sup>Florida Solar Energy Center, University of Central Florida, Cocoa, FL, <sup>2</sup>c-Si Division, U.S. Photovoltaic Manufacturing Consortium, Orlando, FL, <sup>3</sup>CREOL, the College of Optics and Photonics, University of Central Florida, Orlando, FL, <sup>4</sup>Tau Science, 2350 NE Griffin Oaks St 300, Hillsboro, OR

**P-18**

**28% EFFICIENCY IMPROVEMENT USING PHOTON HARVESTING IN THIN-FILM CRYSTALLINE SILICON 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, <sup>3</sup>NanoScience Technology Center, University of Central Florida, Orlando, FL

**P-19**

**TAILORING THE SURFACE OF LIQUID CRYSTAL DROPLETS WITH CHITOSAN/SURFACTANT COMPLEXES FOR THE DETECTION OF BILE ACIDS**, Jinan Deng, Wenlang Liang, Jiyu Fang, Advanced Materials Processing and Analysis Center, Department of Materials Science and Engineering, University of Central Florida, Orlando, FL

**P-20**

**BINDER-FREE FREESTANDING FLEXIBLE SI NANOPARTICLES-MULTI-WALLED CARBON NANOTUBES COMPOSITE ANODES FOR LI-ION BATTERIES**, Kang Yao, Jim P. Zheng, Richard Liang, Materials Science & Engineering, Department of Electrical & Computer Engineering; Aero-propulsion, Mechatronics and Energy Center (AME), Department of Industrial and Manufacturing Engineering, High-Performance Materials Institute (HPMI), Florida State University, Tallahassee, FL

**P-21**

**ROLE OF GOLD NANOPARTICLE SIZE AND SHAPE ON THE SENSITIVITY OF APTASENSOR DEVELOPMENT**, Nileshi Saraf, Soumen Das, Bradley Jay Willenberg, Sudipta Seal, Advanced Materials Processing and Analysis Center (AMPAC), Materials Characterization Facility (MCF), NanoScience Technology Center, College of Medicine, University of Central Florida, FL

**P-22**

**POLYCRYSTALLINE SILICON SOLAR CELL PASSIVATION AT ROOM TEMPERATURE**, Onkar S Shinde<sup>1,2</sup>, Subhash V Ghaisas<sup>2</sup> and Neelkanth G Dhere<sup>1</sup>, <sup>1</sup>Florida Solar Energy Centre, University of Central Florida, Orlando, FL, <sup>2</sup>School of Energy Studies, SP Pune University, India.

**P-23**

**SYNTHESIS OF J-AGGREGATE NANOTUBES FOR BIOSENSOR APPLICATIONS**, Samuel Rhodes<sup>1</sup>, Wenlang Liang<sup>1</sup>, Xiaochen Wang<sup>1</sup>, Joe Cho<sup>2</sup>, Jiyu Fang<sup>1</sup>, <sup>1</sup>Department of Materials Science and Engineering, <sup>2</sup>Department of Mechanical and Aerospace Engineering, University of Central Florida, Orlando, FL

**P-24**

**BATIO<sub>3</sub> FILM GROWN BY WATER-BASED PROCESS**, Sarmad Fawzi Hamza Alhasan<sup>1,3</sup>, Hussain Abouelkhair<sup>2</sup>, Robert. E. Peale<sup>2</sup>, Isaiah. O. Oladeji<sup>4</sup>, <sup>1</sup>Department of Electrical and Computer Engineering/Electrical Engineering, <sup>2</sup>Department of Physics, University of Central Florida, Orlando, FL, <sup>3</sup> Laser and Optoelectronics Engineering Department, University of Technology, Alsina'a Street, Baghdad, Iraq, <sup>4</sup> SISOM Thin Films LLC, Orlando, FL

P-25

NON-CYTOTOXIC QUANTUM DOT-CHITOSAN NANOGEL BIOSENSING PROBE FOR POTENTIAL CANCER TARGETING AGENT, Tyler Maxwell<sup>1,2</sup>, Tahmina Banu<sup>2,3</sup>, Edward Price<sup>1,2</sup>, Jeremy Tharkur<sup>2,6</sup>, Maria Nogueira Campos<sup>2,4</sup>, Andre Gesquiere<sup>1,2,5</sup>, and Swadeshmukul Santra<sup>1,2,3,6</sup>, <sup>1</sup>Department of Chemistry, <sup>2</sup> NanoScience Technology Center, <sup>3</sup>Department of Material Science and Engineering, University of Central Florida, Orlando, FL, <sup>4</sup> Institute of Science and Technology, Federal University of Alfenas, Poços de Caldas, Brazil, <sup>5</sup> CREOL, The College of Optics and Photonics, <sup>6</sup>Burnett School of Biomedical Sciences, University of Central Florida Orlando, FL

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FREE-STANDING SUPERCAPACITOR ELECTRODE BASED ON PAA@ MNO<sub>2</sub>/POLYPYRROLE CORE-SHELL NANOFIBER, Xiaoyan Lu, Lei Zhai, NanoScience Technology Center, University of Central Florida, Orlando, FL

P-27

EFFECT OF B-SITE Fe,Cu-DOPING ON La<sub>0.75</sub>Sr<sub>0.25</sub>CoO<sub>3</sub> PEROVSKITES FOR THE CONVERSION OF CARBON DIOXIDE TO CARBON MONOXIDE, Yolanda A. Daza, Debtanu Maiti, Bryan J. Hare, Venkat R. Bhethanabotla and John N. Kuhn, Chemical & Biomedical Engineering. University of South Florida, Tampa, FL

P-28

FIXED QUAT: AN ATTRACTIVE ALTERNATIVE TO COPPER (Cu) BIOCIDES FOR PLANT DISEASE CONTROL, Mikaeel Young<sup>1,2</sup>, Parthiban Rajasekaran<sup>1</sup>, Preeti Kumrah<sup>2</sup>, Monty E. Myers<sup>5</sup>, James H. Graham<sup>5</sup> and Swadeshmukul Santra<sup>1,2,3,4</sup>, <sup>1</sup>NanoScience Technology Center, <sup>2</sup>Burnett School of Biomedical Sciences, <sup>3</sup>Department of Chemistry and <sup>4</sup>Department of Materials Science and Engineering University of Central Florida, Orlando, FL, <sup>5</sup>Citrus Research and Education Center, University of Florida, Lake Alfred, FL

P-29

ANTIMICROBIAL TESTING OF UREA-PEROXIDE (UP) AND CHITOSAN-UREA-PEROXIDE (UP-DCS) COMPOSITE, Jorge Martinez<sup>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, <sup>4</sup>Department of Chemistry, University of Central Florida, Orlando, FL

P-30

LIQUID CRYSTAL MEDIATED SELF-ASSEMBLY OF POROUS A-Fe<sub>2</sub>O<sub>3</sub> NANORODS ON PEDOT:PSS FUNCTIONALIZED GRAPHENE AS A FLEXIBLE TERNARY ARCHITECTURE FOR CAPACITIVE ENERGY STORAGE, Md. Monirul Islam,<sup>1,2</sup> Taslima Akhter,<sup>1</sup> Konstantin Konstantinov,<sup>1</sup> Jayan Thomas,<sup>2</sup> and Shi Xue Dou<sup>1</sup>, <sup>1</sup> Institute for Superconducting and Electronic Materials (ISEM), Australian Institute for Innovative Materials (AIIM) Facility, Innovation Campus, University of Wollongong, North Wollongong, Australia, <sup>2</sup> NanoScience Technology Center, University of Central Florida, Orlando, FL

**Category: Graduate - Condensed Matter**

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INTER-DIFFUSION AND REACTION IN Al vs. Mo AND Al vs. Zr DIFFUSION COUPLES TO STUDY THE FUNCTIONAL EFFECTIVENESS OF TWO CANDIDATE MATERIAL FOR DIFFUSION BARRIER IN MMMRC FUEL ALLOY TO MINIMIZE FUEL-CLADDING INTERACTION, Abhishek Mehta<sup>1</sup>, Youngjoo Park<sup>1</sup>, D.D. Keiser Jr.<sup>2</sup>, Yongho 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, <sup>2</sup>Nuclear Fuels and Materials Division, Idaho National Laboratory, Idaho Falls, ID

P-32

OPTICAL AND ELECTRON BEAM STUDIES OF GAMMA-IRRADIATED AlGa<sub>N</sub>/Ga<sub>N</sub> HIGH ELECTRON MOBILITY TRANSISTORS, Anupama Yadav, Cameron Glasscock, Elena Flitsiyan and Leonid Chernyak, Department of Physics, University of Central Florida, Orlando, FL

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MULTISCALE INVESTIGATION OF CATALYTIC ACTIVITY OF ULTRA-THIN MOLYBDENUM NITRIDE FOR HYDROGEN DENITROGENATION PROCESS, Asim Khaniya, William Kaden, Department of Physics, University of central Florida, Orlando, FL

P-34

METHODICAL FRAMEWORK OF ELECTROCATALYSTS FOR THE OXYGEN REDUCTION REACTION IN PEMFC (PROTON-EXCHANGE-MEMBRANE FUEL CELLS), Bijoya Dhar, William Kaden, Department of Physics, University of central Florida, Orlando, FL

P-35

EXTENDED SIMULATIONS OF THE DNA FORCE EXTENSION CURVE, Gregory Shinaberry, Alexander Balaeff, Nanoscience Technology Center, University of Central Florida, Orlando, FL

P-36

DENSE NETWORK OF 1D METALLIC LINE-DEFECTS IN MoSe<sub>2</sub>/MoS<sub>2</sub> HETEROSTRUCTURE, Horacio Coy Diaz, Yujing Ma, and Matthias Batzill, Physics Department, University of South Florida, Tampa, FL

P-37

UNRAVELING VARIATIONS IN THE STRUCTURE AND COMPOSITION OF PLANT SYSTEMS AT THE NANOSCALE WITH STATISTICAL ANALYSIS METHODS, Mikhael Soliman<sup>1,2</sup>, Laurene Tetard<sup>1,2,3</sup>, <sup>1</sup>NanoScience Technology Center, <sup>2</sup>Department of Materials Science and Engineering, <sup>3</sup>Physics Department, University of Central Florida, Orlando, FL

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HIGH LATTICE RELAXATION ENERGY OF DOPED-GRAPHENE AND ITS EFFECT ON BINDING OF ADSORBATES, Nagendra Dhakal<sup>1</sup>, Marisol Alcántara Ortigoza<sup>2</sup> and Sergey Stolbov<sup>1</sup>, <sup>1</sup>Physics Department, University of central Florida, Orlando, FL, <sup>2</sup>Physics Department, Tuskegee University, Tuskegee, AL

P-39

PREDICTIVE MODELLING OF METAL-ORGANIC CHAINS WITH ACTIVE METAL SITE, Naseem Ud Din, Duy Le and Talat S. Rahman, Department of Physics, University of Central Florida, Orlando, FL

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ADSORPTION OF SMALL MOLECULES ON DEFECT-LADEN SINGLE LAYER BORON NITRIDE, Tao Jiang, Takat B. Rawal, Duy Le, and Talat S. Rahman, Department of Physics, University of Central Florida, Orlando, FL

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AFM-IR SPECTROSCOPY OF METALLIC NANOPARTICLES, Negar Otrooshi, Laurene Tetard, Physics Department, NanoScience Technology Center, University of Central Florida, Orlando, FL

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MULTI - FREQUENCY ATOMIC FORCE MICROSCOPY FOR TOMOGRAPHY ANALYSES, P. Vitry<sup>1</sup>, E. Bourillot<sup>1</sup>, A. Dazzi<sup>2</sup>, L. Tetard<sup>3</sup>, E. Lesniewska<sup>1</sup>, <sup>1</sup>Laboratoire Interdisciplinaire Carnot de Bourgogne, Université de Bourgogne, Dijon, France, <sup>2</sup>Laboratoire de Chimie Physique d'Orsay, Université Paris-Sud, Orsay, France, <sup>3</sup>NanoScience Technology Center, University of Central Florida, Orlando, FL

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ALUMINUM-SILVER METALLIC NANORODS FROM PHYSICAL VAPOR DEPOSITION AS DEGRADATION RESISTANT SERS SUBSTRATES, Ryan Scherzer, Stephen Stagon, Department of Mechanical Engineering, University of North Florida, Jacksonville, FL

## P-44

**ORDERED Fe(II)Ti(IV)O<sub>3</sub> MIXED MONOLAYER OXIDE ON RUTILE TiO<sub>2</sub>(011),** Sandamali Halpegamage<sup>1</sup>, Pan Ding<sup>2</sup>, Xueqing Gong<sup>2</sup>, Matthias Batzill<sup>1</sup>, <sup>1</sup>Department of Physics, University of South Florida, Tampa, FL, <sup>2</sup>State Key Laboratory of Chemical Engineering, Centre for Computational Chemistry and Research Institute of Industrial Catalysis, East China University of Science and Technology, Shanghai, China.

## P-45

**VARIATION OF DIFFUSION KINETICS OF SMALL Ni or Cu ISLANDS ON HETEROMETALLIC (111) SURFACE: RESULTS OF THE SELF-LEARNING KINETIC MONTE CARLO (II) SIMULATIONS,** Shree Ram Acharya, Talat S. Rahman, Department of Physics, University of Central Florida, Orlando, FL

## P-46

**AB-INITIO STUDY OF GOLD NANOPARTICLES SUPPORTED ON DEFECT-LADEN SINGLE-LAYER MOS<sub>2</sub>,** Takat B. Rawal, Duy Le, and Talat S. Rahman, Department of Physics, University of Central Florida, Orlando, FL

## P-47

**DISTINGUISHING THE PHOTOTHERMAL AND PHOTOINJECTION EFFECTS IN VANADIUM DIOXIDE NANOWIRES,** Xi Wang, Hanwei Gao, Department of Physics, Florida State University, Tallahassee, FL

## P-48

**CONNECTING NANOSCALE STRUCTURE AND PROPERTIES TO DEVICE PERFORMANCES OF SOFT SOLAR CELL MATERIALS BY ADVANCED AFM CHARACTERIZATION,** Yi Ding<sup>1</sup>, Chao Li<sup>1</sup>, Anton Ievlev<sup>2</sup>, Jayan Thomas<sup>1</sup>, Laurene Tetard<sup>1</sup>, <sup>1</sup>NanoScience Technology Center, University of Central Florida, Orlando, FL, <sup>2</sup>The Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN

## P-49

**THE IMPACT OF FUNCTIONAL GROUP ON THE ELECTRONIC STRUCTURE OF COORDINATION CENTER,** Zahra Hooshmand, Duy Le, and Talat S. Rahman, University of Central Florida, Department of Physics, Orlando FL

## P-50

**CORUNDUM VTiO<sub>3</sub> GROWTH, MAGNETIC, VALANCE AND STRUCTURAL CHARACTERIZATION,** Alan Kramer<sup>1</sup>, Rami Hajj Hussein<sup>2</sup>, Eli Sutter<sup>3</sup>, Hari Srikanth<sup>4</sup>, Manh-Huong Phan<sup>4</sup>, Rajas Das<sup>4</sup>, Matthias Batzill<sup>1</sup>, <sup>1</sup>Interface and Surface Science Laboratory, Department of Physics, University of South Florida, Tampa, FL, <sup>2</sup>Materials Research Group in Condensed Matter Physics, University of Saskatchewan Saskatoon, Canada, <sup>3</sup>Center for Functional Nanomaterials, Brookhaven National Laboratory, Upton NY, <sup>4</sup>Functional Materials Laboratory, Department of Physics, University of South Florida, Tampa, FL

## P-51

**COMPARISON OF BEAM BENDING EFFICIENCY OF WAVEGUIDES AND SPATIALLY VARIANT PHOTONIC CRYSTALS (SVPCS),** Rashi Sharma<sup>1</sup>, Jennifer L. Digaum<sup>2</sup>, Nicholas Kosan<sup>2</sup>, Stephen M. Kuebler<sup>1,2,3</sup>, Raymond C. Rumpf<sup>4</sup>, <sup>1</sup>Chemistry Department, <sup>2</sup>CREOL, The College of Optics and Photonics, <sup>3</sup>Physics Department, University of Central Florida, Orlando, FL, <sup>4</sup>EM Lab, W. M. Keck Center for 3D Innovation, University of Texas at El Paso, 500 West University Ave., El Paso, TX, USA 79968

## P-52

**IMPROVING ENERGY HARVESTING USING PLASMONIC OPTICAL HORNS,** Christopher N. Grabil<sup>1</sup>, Jennifer Digaum<sup>2</sup>, David Shelton<sup>3</sup>, Eric Tucker<sup>3</sup>, Glenn Boreman<sup>3</sup>, Stephen M. Kuebler<sup>1,2,4</sup>, <sup>1</sup>Chemistry Dept., <sup>2</sup>CREOL, The College of Optics and Photonics, University of Central Florida, Orlando, FL, <sup>3</sup>Plasmonics, Inc., Orlando, FL, <sup>4</sup>Physics Department, University of Central Florida, Orlando, FL

**Others****P-53**

**GROWTH OF LARGE SCALE MOS<sub>2</sub> NANOSHEETS FOR ELECTRONICS AND ENERGY APPLICATIONS, Nitin Choudhary,<sup>1</sup> Wonbong Choi,<sup>2</sup> YeonWoong Jung<sup>1</sup>,<sup>1</sup>Nanoscience Technology Center, Department of Materials Science and Engineering, University of Central Florida, Orlando, FL, <sup>2</sup>Department of Materials Science and Engineering, University of North Texas, Denton, TX**