

**POSTER SESSION CONTRIBUTION: Pegasus Ballroom A-F**

Judging Session 1: 8-9 AM

Judging Session 2: 4:30-7 PM

Poster Session Chair: Mariana Sendova

- P – 01 PHOTOELECTROCHEMICAL WATER SPLITTING FOR HYDROGEN PRODUCTION USING PHOTOVOLTAIC CELL AND PHOTOCATALYST**  
Anant H. Jahagirdar, Upendra S. Avachat and Neelkanth G. Dhere  
Florida Solar Energy Center, University of Central Florida  
1679, Clearlake Road Cocoa, FL-32922
- P – 02 THERMOCATALYTIC H-PRODUCTION VIA OXYGEN-FREE METHANE AROMATIZATION**  
A. Kababji<sup>1,2</sup>, J.T. Wolan<sup>1,2</sup>, E. Stefanakos<sup>1,3</sup>, and B. Krakow<sup>1,3</sup>  
<sup>1</sup>Clean Energy Research Center, University of South Florida  
<sup>2</sup>Department of Chemical Engineering, 4202 E. Fowler Ave. Tampa, FL 33620  
<sup>3</sup>Department of Electrical Engineering, 4202 E. Fowler Ave. Tampa, FL 33620
- P – 03 EVANESCENT WAVE RAMAN SPECTROSCOPY OF BACTERIORHODOPSIN ON GALLIUM NITRIDE WAVEGUIDE STRUCTURES**  
A. Keller, S. Ortiz, A. Pope, Y. Guo, H. Hockel<sup>#</sup>, E. Johnson<sup>#</sup>, A. Schulte  
Department of Physics and <sup>#</sup>College of Optics & Photonics-CREOL, University of Central Florida, Orlando, FL 32816-2385, USA
- P – 04 GIANT MAGNETO-IMPEDANCE IN TRI-LAYER THIN FILM STRUCTURES**  
Amruta V. Borge, Kevin R. Coffey  
Advanced Materials Processing and Analysis Center, University of Central Florida, Engr. Bldg. I, room 381, box 162455, Orlando, FL-32816
- P – 05 EXTENDED STABILITY STUDY OF PASSIVATION INFLUENCING AlGaIn/GaN HEMT STRUCTURE**  
A. Gerger<sup>1</sup>, B.P. Gila<sup>1</sup>, A.H. Onstine<sup>1</sup>, M. Hlad<sup>1</sup>, A. Herrero<sup>1</sup>, K.K. Allums<sup>1</sup>, D. Stodilka<sup>1</sup>, S. Jang<sup>2</sup>, B. Kang<sup>2</sup>, T. Anderson<sup>2</sup>, C. R. Abernathy<sup>1</sup>, F. Ren<sup>2</sup>, S.J. Pearton<sup>1</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 – 06 DEVELOPMENT OF CIGS AND CIGSS THIN FILM SOLAR CELLS**  
Ankur A. Kadam, Anant H. Jahagirdar and Neelkanth G. Dhere,  
Florida Solar Energy Center, 1679 Clearlake Road, Cocoa FL 32922-5703  
1679, Clearlake Road Cocoa, FL-32922
- P – 07 DESIGN AND CONSTRUCTION OF AN ELECTROSPRAY IONIZATION SYSTEM FOR NANOSCALE PATTERNING OF MACROMOLECULES**  
A.J. Cascio<sup>1</sup>, J.M. Anthony<sup>2</sup>, J.C. Braunagel<sup>1</sup>, B. Doran<sup>1</sup>, M.M. Beerbom<sup>1</sup>, R. Schlaf<sup>1</sup>  
<sup>1</sup> University of South Florida Department of Electrical Engineering  
4202 E. Fowler Ave., ENB 351 Tampa, FL 33620  
<sup>2</sup> Elion, Inc. 13505 Lone Rider Trail Austin, TX 78738
- P – 08 CHALCOGENIDE WAVEGUIDE STRUCTURES AS SUBSTRATES AND GUIDING LAYERS FOR EVANESCENT WAVE SPECTROSCOPY OF BIO-ASSEMBLIES**  
A. Pope<sup>1,2</sup>, C. Lopez<sup>2</sup>, K. Richardson<sup>2</sup>, A. Schulte<sup>1,2</sup>  
<sup>1</sup>Physics Department, University of Central Florida, Orlando, FL32816-2700, USA  
<sup>2</sup>CREOL – FPCE, College of Optics and Photonics, University of Central Florida  
Orlando, FL32816-2700, USA

- P - 09 DESIGN AND REALIZATION OF MOCVD-GROWN GaAs-BASED INTERSUBBAND LIGHT EMITTING DEVICES (LEDs) OPERATING AT 4.7 $\mu$ m.**  
Arkadiy A. Lyakh, Peter S. Zory.  
University of Florida, Department of Electrical and Computer Engineering, 127 Larsen Hall, PO Box 116200, Gainesville, FL 32611-6200.
- P - 10 STUDY OF MICROSCOPIC AND OPTICAL PROPERTIES OF TUNGSTEN DOPED INDIUM OXIDE THIN FILMS**  
Arturo I. Martinez and Dwight R. Acosta  
Thin Films Laboratory-Institute of Physics  
National Autonomous University of Mexico, Mexico D.F, Mexico
- P - 11 PHONON TRANSPORT AND SCATTERING IN SILICON NANOWIRES**  
Brian Becker<sup>1</sup>, Patrick K. Schelling<sup>1</sup>, and Simon R. Phillpot<sup>2</sup>  
<sup>1</sup> Advanced Materials Processing and Analysis Center and Department of Physics, University of Central Florida Orlando FL, 32816  
<sup>2</sup> Department of Materials Science and Engineering, University of Florida, Gainesville FL, 32611
- P - 12 RAMAN SPECTROSCOPY OF PbI<sub>2</sub> FILLED DOUBLE-WALLED CARBON NANOTUBES**  
Authors: Bryan DeBono<sup>1</sup>, Dr. Mariana Sendova<sup>1</sup>, Dr. Emmanuel Flahaut<sup>2</sup>  
<sup>1</sup>New College of Florida 5700 N. Tamiami Trail Sarasota, FL 34243  
<sup>2</sup>Universite Paul Sabatier 31602 Toulouse Cedex 4 France
- P - 13 GATELESS AlGaIn/GaN HEMT RESPONSE TO HALIDE IONS**  
B. S. Kang<sup>1</sup>, M. C. Kang<sup>2</sup>, S. J. Pearton<sup>3</sup>, A. Dabiran<sup>4</sup>, P. Chow<sup>4</sup> and F. Ren<sup>1</sup>  
<sup>1</sup>Department of Chemical Engineering, University of Florida, Gainesville, FL 32611  
<sup>2</sup>Department of Chemistry, University of Florida, Gainesville, FL 32611  
<sup>3</sup>Department of Material Science and Engineering, University of Florida, FL 32611,  
<sup>4</sup>SVT Associates Inc., Eden Prairie, MN 55344
- P - 14 CHARACTERIZATION OF RESIDUAL STRAIN FIELDS IN WELDED INCONEL-718 FOR NASA SPACE SHUTTLE FLOW LINERS**  
C.R. Rathod<sup>1</sup>, V. Livescu<sup>2</sup>, B. Clausen<sup>2</sup>, M.A.M. Bourke<sup>2</sup>, W. Notardonato<sup>3</sup>, M. Femminino<sup>3</sup>, and R. Vaidyanathan<sup>1</sup>  
<sup>1</sup>University of Central Florida, Orlando, Florida, 32816, USA  
<sup>2</sup>Los Alamos National Laboratory; Los Alamos, New Mexico, 87545, USA  
<sup>3</sup>NASA Kennedy Space Center, Kennedy Space Center, Florida, 32899, USA
- P - 15 ZnO-BASED MOSFET AND MESFET GROWN ON SAPPHIRE**  
C.J.Kao<sup>1</sup>, Y.W.Heo<sup>1</sup>, D.P.Norton<sup>1</sup>, S.J.Pearnton<sup>1</sup>, F.Ren<sup>2</sup>, and G.C.Chi<sup>3</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 USA  
<sup>3</sup>Department of Physics, National Central University, Chung-Li, Taiwan 32054
- P - 16 ANALYSIS OF SILICON NANOPARTICLES USING MULTIPLE IMAGING TECHNIQUES**  
D. Yates<sup>1</sup>, O. Lopatiuk<sup>1</sup>, A. Schulte<sup>1,2</sup>  
<sup>1</sup>Department of Physics, University of Central Florida, 4000 Central Florida Blvd, Orlando, FL 32816-2385, USA  
<sup>2</sup>School of Optics – CREOL, University of Central Florida, 4000 Central Florida Blvd, Orlando, FL 32816-2385, USA

- P – 17 PARAMETRIC STUDY OF CARBON NANOTUBES SYNTHESIS USING ARC-DISCHARGE IN SOLUTIONS**  
 Debasis Bera, Erik Brinley, Greg Johnston, Sudipta Seal  
 Advanced Materials processing and Analysis Center (AMPAC), Department of Mechanical, Materials and Aerospace Engineering (MMAE)  
 University of Central Florida 4000 Central Florida Blvd. AMPAC, Eng-1 #381, Orlando, FL-32816
- P – 18 PREPARATION OF SIZE SELECTED Au NANOPARTICLES USING INVERSE DIBLOCK COPOLYMER MICELLES**  
 Enrique G. Ortiz, Grady Slane, Beatriz Roldan Cuenya  
 University of Central Florida Physics Department Orlando, FL 32816-2450
- P – 19 COMPARISON OF X-RAY AND LASER PHOTON EFFECTS ON Si(100) SURFACES COVERED BY DIETHYLSILANE AT 100 K**  
 Erika Crandall, Rachel Price, J. Lozano, K.R. Kimberlin, J.H. Craig, Jr., and P.W. Wang  
 Department of Physics, Bradley University, Peoria, IL
- P – 20 STRESS AND STRESS RELAXATION IN THIN FILM STRUCTURES**  
 Evan Law, Jonathan Gorrell, Narada Bradman and Paul H. Holloway  
 Department of Materials Science and Engineering  
 University of Florida Gainesville, FL 32611-6400
- P – 21 EFFECT OF AMPHIPHILIC GEOMETRY ON PHASE SEPARATION AND MICELLIZATION: BROWNIAN DYNAMICS AND MONTE CARLO SIMULATIONS**  
 Georgui Bourov, Aniket Bhattacharya  
 Physics Department UCF, Orlando, FL 32816
- P – 22 MANUFACTURING AND TESTING OF DUAL-WAVELENGTH PHOTON SIEVES**  
 Hsiu-hsin Chung<sup>1</sup>, Narada Bradman<sup>1</sup>, Olga Shenderova<sup>2</sup>, Mark Davidson<sup>1</sup>, and Paul Holloway<sup>1</sup>  
<sup>1</sup>Materials Science and Engineering, University of Florida, Gainesville, FL  
<sup>2</sup>International Technology Center, Research Triangle Park, NC
- P – 23 EFFECT OF HYDROGEN ON PALLADIUM COATED CARBON NANOTUBE CONDUCTANCE**  
 H. T. Wang<sup>1</sup>, B. S. Kang<sup>1</sup>, F. Ren<sup>1</sup>, J. Sippel<sup>2</sup>, A. G. Rinzler<sup>2</sup> and S. J. Pearton<sup>3</sup>  
<sup>1</sup>Department of Chemical Engineering, University of Florida, Gainesville, FL 32611  
<sup>2</sup>Department of Physics, University of Florida, Gainesville, FL 32611  
<sup>3</sup>Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611
- P – 24 HIGHLY LUMINESCENT COLLOIDAL ZnXCd1-XSe TERNARY SEMICONDUCTOR NANOALLOY QUANTUM DOTS**  
 Hyeokjin Lee, Heesun Yang, Paul H. Holloway  
 Department of Material Science and Engineering , University of Florida, Gainesville, FL
- P – 25 FABRICATION OF ZNO-BASED P-N JUNCTION DIODES**  
 Hyuck Soo Yang , Y. Li, D. P. Norton, and S. J. Pearton  
 Department of Materials Science and Engineering, University of Florida, Gainesville, Florida 32611  
 Soohwan Jang and F. Ren,  
 Department of Chemical Engineering, University of Florida, Gainesville, Florida 32611

- P - 26 HEAVY METAL ION DETECTION USING PEPTIDE-MODIFIED HYDROGEL LAYERS ON A QUARTZ CRYSTAL MICROBALANCE**  
Jackie Shepard, Venkat R. Bhethanabotla, Ryan Toomey  
Sensors Research Laboratory, Department of Chemical Engineering, ENB 118, University of South Florida, Tampa, FL 33620
- P - 27 DIFFUSION CHARACTERISTICS OF GASES THROUGH Y-SHAPED CARBON NANOTUBES USING MOLECULAR DYNAMICS SIMULATIONS**  
Jason Myers, Ki-Ho Lee, and Dr. Susan B. Sinnott  
Department of Materials Science and Engineering, University of Florida, Gainesville, Florida 32611-6400
- P - 28 ATOMIC LAYER DEPOSITION OF OXIDE PHOSPHOR MATERIALS**  
Jason Rowland and Paul H. Holloway  
Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611-6400
- P - 29 OPTOELECTRONICALLY AUTOMATED SYSTEM FOR CNT SYNTHESIS VIA ARC-DISCHARGE IN SOLUTION**  
Jean-Philippe Perrault, Debasis Bera, Erik Brinley, Sudipta Seal  
Surface Engineering and Nanotechnology Facility (SNF); Advanced Materials Processing and Analysis Center (AMPAC), and Mechanical, Materials and Aerospace Engineering (MMAE), University of Central Florida (UCF), 4000 Central Florida Blvd., Eng 1, #381, Orlando, FL 32816
- P - 30 SINGLE WALL CARBON NANOTUBES AS HYDROGEN GAS SENSORS**  
Jennifer Sippel-Oakley<sup>1</sup>, Andrew G. Rinzler<sup>1</sup>, Hung-Ta Wang<sup>2</sup>, B. S. Kang<sup>2</sup>, S. J. Pearton<sup>3</sup> and F. Ren<sup>2</sup>  
<sup>1</sup>Department of Physics, University of Florida, Gainesville, FL 32611  
<sup>2</sup>Department of Chemical Engineering, University of Florida, Gainesville, FL 32611  
<sup>3</sup>Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611
- P - 31 SIMPLE METAL CONTACTS FOR ZnO THIN FILMS**  
John Turpish<sup>1</sup>, Andrey Muraviev<sup>1</sup>, Gabriel Braunstein<sup>1</sup>, and Neelkanth Dhere<sup>2</sup>  
<sup>1</sup>Department of Physics, University of Central Florida, Orlando, FL 32816  
<sup>2</sup>Florida Solar Energy Center, University of Central Florida, Cocoa, FL 32922
- P - 32 INTEGRATION OF CARBON NANOTUBES INTO DEVICE STRUCTURES**  
J. Schumacher, B. Lagel, N. Nguyen, B. Zivanovic and R. Schlaf  
Department of Electrical Engineering, University of South Florida, Tampa, FL 33620
- P - 33 FIRST-PRINCIPLES CALCULATIONS OF INTRINSIC POINT DEFECTS IN RUTILE TiO<sub>2</sub>**  
Jun He and Susan B. Sinnott  
Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611-6400
- P - 34 UV INDUCED REDUCTION OF U<sup>3+</sup> AND U<sup>4+</sup> IONS IN CaF<sub>2</sub>**  
J. W. Cleary and R. E. Peale  
Department of Physics, University of Central Florida, Orlando, FL 32816
- P - 35 THE EFFECT OF NH<sub>3</sub> INCORPORATION ON TaN MOCVD using TBTDET**  
KeeChan Kim a, Tim Anderson  
Chemical Engineering Department, University of Florida, Gainesville, FL, 32611

- P – 36 CARBON NANOTUBES AS ENHANCED SURFACE ACOUSTIC WAVE (SAW) CHEMICAL SENSOR MATERIALS**  
Krishnan Srinivasan and Venkat R. Bhethanabotla  
Sensors Research Laboratory, Department of Chemical Engineering, University of South Florida, 4202 E. Fowler Ave., ENB 118, Tampa, FL 33620
- P – 37 TOBACCO MOSAIC VIRUS (TMV) AS NEW SURFACE ACOUSTIC WAVE (SAW) CHEMICAL SENSOR MATERIAL**  
Krishnan Srinivasan and Venkat R. Bhethanabotla  
Sensors Research Laboratory, Department of Chemical Engineering, University of South Florida, 4202 E. Fowler Ave., Tampa, FL 33620
- P – 38 DETERMINATION OF FRACTAL DIMENSIONAL INCREMENT OF EPOXY SURFACES USING OPTICAL MICROSCOPY**  
Kyle Kathan, Ronald Baney  
University of Florida, Materials Science and Engineering, Gainesville, Florida 32611-6400
- P – 39 MOLECULAR DYNAMICS SIMULATION OF MELTING AND STRUCTURAL EVOLUTION OF GRAPHITE-SUPPORTED PALLADIUM NANOCLUSTERS**  
Ling Miao, Venkat R. Bhethanabotla and Babu Joseph  
Chemical Engineering Department, University of South Florida, Tampa, Florida 33620-5350
- P – 40 GAS-PHASE CATALYTIC PROCESSES ON METAL NANOCLUSTERS**  
Luis K.Ono, Abhilash Vincent, Beatriz Roldán Cuenya  
University of Central Florida, Physics Department, Orlando, FL 32816-2450
- P – 41 HREELS AND TPD INVESTIGATION OF ELECTRON IRRADIATION EFFECTS ON DIETHYLSILANE-COVERED Si(100) SURFACES AT 100K**  
Luke Bockewitz, P. Petrany, D. Early, J.H. Craig, Jr., P. Wang, K.R. Kimberlin and J. Lozano  
Department of Physics, Bradley University, Peoria, IL 61625
- P – 42 THEORETICAL CHARACTERIZATION OF PHOTONIC CRYSTALS**  
Marcus Diem<sup>1,2</sup> and Kurt Busch<sup>1</sup>  
<sup>1</sup>School of Optics/CREOL & Department of Physics, University of Central Florida, P.O. Box 162385, Orlando, FL 32816, USA  
<sup>2</sup>Institut für Theorie der Kondensierten Materie, Universität Karlsruhe, Germany
- P – 43 THEORETICAL ANALYSIS OF NEGATIVE INDEX MATERIAL**  
Maria Dienerowitz<sup>1,2</sup> and Kurt Busch<sup>1</sup>  
<sup>1</sup>Department of Physics & College of Optics & Photonics: CREOL & FPCE, University of Central Florida, Orlando, FL 32816, USA  
<sup>2</sup>Institut für Theorie der Kondensierten Materie, Universität Karlsruhe, Germany
- P – 44 INTERSUBBAND TERAHERTZ GAIN CALCULATION IN MULTILAYER HOMOEPITAXIAL P-TYPE GERMANIUM MICRO-STRUCTURES**  
M. V. Dolguikh, A.V. Muravjov, R. E. Peale  
Dept. of Physics, University of Central Florida, Orlando FL, 32816-2385

- P - 45 STRUCTURES AND MECHANICAL PROPERTIES OF SELF-ASSEMBLED LIPID TUBULES STUDIED WITH ATOMIC FORCE MICROSCOPY**  
Nidhi Mahajan and Jiyu Fang  
Advanced Materials Processing and Analysis Center, University of Central Florida, Orlando, FL 32816
- P - 46 THE AGGLOMERATION BEHAVIOR OF THIN METALLIC FILMS ON SiO<sub>2</sub>**  
P.R. Gadkari, A.P. Warren, R.M. Todi, R.V. Petrova, K.R. Coffey  
Advanced Materials Processing and Analysis Center, University of Central Florida, Orlando FL-32816
- P - 47 CHALLENGES IN RELIABILITY AND INTEGRATION OF POLYMERIC INTERLAYER DIELECTRIC (ILD) MATERIAL WITH COPPER FOR INTEGRATED CIRCUIT (IC) INTERCONNECTS**  
Parshuram B. Zantye<sup>1,2</sup>, Ashok Kumar<sup>1,2</sup> and J. Yota<sup>3</sup>  
<sup>1</sup>Department of Mechanical Engineering,  
<sup>2</sup>Nanomaterials and Nanomanufacturing Research Center, University of South Florida, Tampa, Florida-33620  
<sup>3</sup>Skyworks Solutions, Inc., Advanced Process Technology, Newbury Park, CA 91320
- P - 48 PROPERTIES OF C12TAB SURFACTANTS AND MICELLES USING MOLECULAR DYNAMICS SIMULATIONS**  
Patrick Chiu, Kunal Shah, and Susan B. Sinnott  
Department of Materials Science and Engineering, University of Florida, Gainesville, Florida 32611-6400
- P - 49 ADSORPTION AND DISSOCIATION STUDIES OF TRI-ETHYLGERMANE ON THE Si(100) SURFACE**  
Peter Petrany, J. Lozano, J.H. Craig, Jr., and P.W. Wang  
Department of Physics, Bradley University, Peoria, IL 61625
- P - 50 DETECTION OF LOW EXPLOSION LIMIT HYDROCARBONS USING POLYMER-COATED HIGH FREQUENCY THICKNESS SHEAR MODE DEVICES**  
Randolph D. Williams, Anant K. Upadhyayula and Venkat R. Bhethanabotla  
Sensors Research Laboratory, Department of Chemical Engineering, University of South Florida, 4202 E. Fowler Ave., ENB 118, Tampa, FL 33620
- P - 51 POLYMER VAPOR SORPTION USING THICKNESS SHEAR MODE RESONATORS**  
Randolph D. Williams and Venkat R. Bhethanabotla  
Sensors Research Laboratory, Department of Chemical Engineering, University of South Florida, 4202 E. Fowler Ave., ENB 118, Tampa, FL 33620
- P - 52 PHOTOLUMINESCENCE STUDIES OF TEMPLATED 8-HYDROXYQUINOLINE DERIVATIVES FOR THEIR USE IN ORGANIC LIGHT EMITTING DIODES**  
Ricardo D. Torres<sup>1</sup>, Paul H. Holloway<sup>1</sup>, John Reynolds<sup>2</sup>, and Markus Albrecht<sup>3</sup>  
<sup>1</sup>Dept of Materials Science and Engineering, University of Florida, Gainesville, FL 32611-6400  
<sup>2</sup>Dept of Chemistry, University of Florida, Gainesville, FL 32611-6400  
<sup>3</sup>Institut für Organische Chemie, RWTH-Aachen, D-52074 Aachen, Germany
- P - 53 DETERMINATION OF ORDER PARAMETER IN FePt L1<sub>0</sub> NANOPARTICLES**  
R.V.Petrova<sup>1</sup>, R.R.Vanfleet<sup>2</sup>, D. Richardson<sup>2</sup>, B.Yao<sup>1</sup> and K.R.Coffey<sup>1</sup>  
<sup>1</sup>University of Central Florida, 4000 Central Florida Blvd, Orlando, FL 32816-2455, U.S.A.  
<sup>2</sup>Department of Physics, Brigham Young University, Provo, Utah 84602, U.S.A.

- P – 54 EFFECT OF TEMPERATURE ON CHEMICAL MECHANICAL PLANARIZATION OF COPPER IN SLURRIES WITH DIFFERENT OXIDIZERS**  
S. R. Mudhivarthi<sup>1,2</sup>, Parshuram B Zantye<sup>1,2</sup>, Arun Kumar<sup>2</sup> and Ashok Kumar<sup>1,2</sup>  
<sup>1</sup>Department of Mechanical Engineering  
<sup>2</sup>Nanomaterials and Nanomanufacturing Research Center  
University of South Florida, Tampa, Florida
- P – 55 POLYCRYSTALLINE SILICON THIN FILM FROM SILICON NANOPARTICLES**  
Sachin Bet<sup>1</sup>, Nathaniel Quick<sup>2</sup> and Aravinda Kar<sup>1</sup>  
<sup>1</sup>Laser-Aided Manufacturing, Materials and Micro-processing Laboratory (LAMMP), School of Optics, Center for Research and Education in Optics and lasers (CREOL), MMAE, University of Central Florida, Orlando, FL, 32816  
<sup>2</sup>Applicote Associates, LLC, 3259 Progress Dr., Orlando, FL 32826
- P – 56 A NOVEL NANOPARTICLE ADDITIVE FOR ENHANCED COPPER CMP PERFORMANCE**  
S. Deshpande, S. Patil, V N T K Satyanarayana, and S. Seal.  
Advanced Materials Processing and Analysis Center (AMPAC), and Department of Mechanical, Materials and Aerospace Engineering (MMAE), University of Central Florida, Room #381, Eng. 1, 4000 Central Florida Blvd., Orlando, FL 32816.
- P – 57 SYNTHESIS, CHARACTERIZATION OF NANOFUIDS AND TO MODEL ITS HEAT TRANSFER PROPERTIES**  
Santosh Kumar  
AMPAC/MMAE, University of Central Florida, 1925, Pasteur Drive, Orlando FL-32826, USA
- P – 58 ELECTRONIC-STRUCTURE SIMULATION OF CERIA-WATER INTERFACES**  
Santosh Kumar and Patrick Schelling  
Advanced Materials Processing and Analysis Center (AMPAC) and Department of Physics  
University of Central Florida, Orlando FL, 32816
- P – 59 SPATIALLY RESOLVED NEUTRON DIFFRACTION MEASUREMENTS IN SHAPE MEMORY ALLOYS USING THE SMARTS SPECTROMETER AT LOS ALAMOS NATIONAL LABORATORY**  
C.R. Rathod<sup>1</sup>, S. Shmalo<sup>1</sup>, B. Clausen<sup>2</sup>, M.A.M. Bourke<sup>2</sup> and R. Vaidyanathan<sup>1</sup>  
<sup>1</sup>University of Central Florida, Orlando, Florida, 32816, USA  
<sup>2</sup>Los Alamos National Laboratory; Los Alamos, New Mexico, 87545, USA
- P – 60 CHARACTERIZATION OF HIGH-k HfO<sub>2</sub> THIN FILMS FOR GATE-OXIDE APPLICATIONS**  
S. Jeedigunta<sup>1,2</sup>, Ashok Kumar<sup>2,3</sup> and Y.L. Chiou<sup>1</sup>  
<sup>1</sup>Department of Electrical Engineering, Nanomaterials and Nanomanufacturing Research Center,  
<sup>2</sup>Department of Mechanical Engineering,  
<sup>3</sup>University of South Florida, Tampa, Florida
- P – 61 COMPARATIVE STUDY OF WN<sub>x</sub> AND W-Ge-N AS DIFFUSION BARRIER MATERIALS FOR Cu METALLIZATION ON SiO<sub>2</sub>/Si.**  
S. Rawal<sup>1</sup>, D. P. Norton<sup>1</sup>, T. J. Anderson<sup>2</sup>, L. McElwee-White<sup>3</sup>  
<sup>1</sup>Department of Materials Science and Engineering. Univ. of Florida, Gainesville, FL 32611,  
<sup>2</sup>Department of Chemical Engineering. Univ. of Florida, Gainesville, FL 32611  
<sup>3</sup>Department of Chemistry. Univ. of Florida, Gainesville, FL 32611

- P - 62 FILLING EFFECT OF CARBON NANOTUBES ON THEIR TRIBOLOGICAL PROPERTIES**  
SeongJun Heo, Susan B. Sinnott  
Department of Materials Science and Engineering  
University of Florida, P. O. Box 116400, Gainesville, FL 32611-6400
- P - 63 NANOSCALE LAMELLAR STRUCTURE IN Al-Ag ALLOYS**  
Sephalka Senapati<sup>1</sup>, Brad Kabes<sup>2</sup>, Helge Heinrich<sup>1,3</sup>, Kevin R. Coffey<sup>1</sup>  
<sup>1</sup>Advanced Materials Processing and Analysis Center, University of Central Florida, Box 162566, Orlando, FL 32816-2455  
<sup>2</sup>Department of Chemical Engineering, College of Science and Engineering, University of Minnesota Duluth, 176 Engineering Building, 1303 Ordean Court, Duluth, MN 55812  
<sup>3</sup>Physics Department, University of Central Florida, Box 162385, Orlando, FL 32816-2385
- P - 64 LASER DIODE EPIWAFER CHARACTERIZATION USING LIQUID CONTACT LUMINESCENCE AND PHOTOLUMINESCENCE**  
Shih-Kun Liu and Peter Zory  
University of Florida, 120 Larsen Hall, P.O. BOX 116200, Gainesville, FL 32611
- P - 65 LIQUID- PHASE SYNTHESIS OF YVO<sub>4</sub> : ER NANOPARTICLES**  
S.Y. Seo, H.S. Yang and P.H. Holloway,  
Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611-6400
- P - 66 INGAAS METAL-SEMICONDUCTOR-METAL OPTOELECTRONIC MIXERS FOR EYE-SAFE LADAR APPLICATIONS**  
S. Jang<sup>1</sup>, T. Anderson<sup>1</sup>, P. Shen<sup>2</sup>, N. W. Emanetoglu<sup>2</sup>, S.J. Pearton<sup>3</sup>, and Fan Ren<sup>1</sup>  
<sup>1</sup>Department of Chemical Engineering, University of Florida, Gainesville, FL 32611  
<sup>2</sup>U. S. Army Research Laboratory, 2800 Powder Mill Road Adelphi, MD 20783  
<sup>3</sup>Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611
- P - 67 ACOUSTIC WAVE SENSORS: APPLICATION TO BIOLOGICAL SENSING IN LIQUID ENVIRONMENTS**  
Stefan Cular<sup>1</sup>, Steven K. Showalter<sup>2</sup>, Venkat R. Bhethanabotla<sup>1</sup>, Richard W. Cernosek<sup>2</sup>  
<sup>1</sup>Sensors Research Laboratory, Department of Chemical Engineering, University of South Florida, Tampa, FL 33620  
<sup>2</sup>Sandia National Laboratories, Albuquerque, NM 87185
- P - 68 NOVEL SHEAR HORIZONTAL SURFACE ACOUSTIC WAVE DEVICE FOR THE EXTRACTION OF MULTIPLE FILM PROPERTIES**  
Stefan Cular<sup>1</sup>, Venkat Bhethanabotla<sup>1</sup>, Darren Branch<sup>2</sup>  
<sup>1</sup>Sensors Research Laboratory, Department of Chemical Engineering, ENB 118, University of South Florida, Tampa, FL 33620  
<sup>2</sup>Sandia National Laboratories, Albuquerque, NM 87185
- P - 69 NOVEL RESTRUCTURING DURING ANNEALING OF LOW TEMPERATURE GROWN SILVER FILMS ON Si(111)**  
Steven M. Binz, D.C. Ludois, J. Lozano, K. R. Roos, P. W. Wang, J. H. Craig, Jr., and K. R. Kimberlin  
Department of Physics, Bradley University, Peoria IL
- P - 70 MOLECULAR DYNAMICS SIMULATION STUDY OF MELTING OF SUPPORTED AND UNSUPPORTED PD-PT BIMETALLIC NANOCLUSTERS**  
Subramanian Sankaranarayanan, Babu Joseph and Venkat R. Bhethanabotla  
Sensors Research Laboratory, Department of Chemical Engineering, University of South Florida, 4202 E. Fowler Ave., Tampa, FL 33620

- P – 71 RARE EARTH OXIDE BASED REGENERATIVE BIOSENSOR OF HYDROGEN PEROXIDE**  
S. Patil<sup>1,3</sup>, A. Mehta<sup>2</sup>, Hyoungjin Cho<sup>3</sup>, S. Seal<sup>1,3</sup>  
<sup>1</sup>Advanced Materials Processing and Analysis Center (AMPAC)  
<sup>2</sup>Department of Electrical Engineering  
<sup>3</sup>Department of Mechanical Materials and Aerospace Engineering (MMAE) University of Central Florida  
4000 Central Florida Blvd., Orlando, FL 32816, USA
- P – 72 LASER DOPING OF GERMANIUM**  
T. Joseph Mahaney<sup>1</sup>, A.V. Muravjov<sup>1</sup>, M.V. Dolguikh<sup>1</sup>, T. A. Winningham<sup>1</sup>, R. E. Peale<sup>1</sup>, Zhaoxu Tian<sup>2</sup>, Sachin Bet<sup>2</sup>, Aravinda Kar<sup>2</sup>, and M. Klimov<sup>3</sup>  
<sup>1</sup>University of Central Florida, Department of Physics, Orlando, FL 32816  
<sup>2</sup>University of Central Florida, CREOL, Orlando, FL 32816  
<sup>3</sup>University of Central Florida, Materials Characterization Facility, Orlando, FL 32826
- P – 73 COMPACT TUNABLE p-Ge LASER**  
T. W. Du Bosq<sup>1</sup>, A. V. Muravjov<sup>1</sup>, K. Park<sup>1</sup>, C. Mathis<sup>1</sup>, T. J. Mahaney<sup>1</sup>, M. V. Dolguikh<sup>1</sup>, R. E. Peale<sup>1</sup>, C.J Fredricksen<sup>2</sup>  
<sup>1</sup>Department of Physics, University of Central Florida, Orlando FL 32765  
<sup>2</sup>Zaubertek, Inc., 1809 E. Broadway St. #313, Oviedo FL 32765
- P – 74 LASER DRILLING FOR THREE-DIMENSIONAL PACKAGING TECHNOLOGY ON HIGH SPEED RF COMMUNICATION**  
T. Anderson<sup>1</sup>, S. Kim<sup>1</sup>, F. Ren<sup>1</sup>, S.J.Pearton<sup>2</sup>, L. Covert<sup>3</sup>, J. Lin<sup>3</sup>, M. Ray<sup>4</sup>, and G.E. McGuire<sup>4</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 Electrical and Computer Engineering, University of Florida, Gainesville, FL 32611  
<sup>4</sup>International Technology Center, Research Triangle Park, NC 27709
- P – 75 Fe-BASED BULK METALLIC GLASSES BY MECHANICAL ALLOYING**  
Umesh Patil  
Department of Mechanical, Materials & Aerospace Engineering, University of Central Florida, Orlando, FL USA
- P – 76 DEVELOPMENT OF P-TYPE, TRANSPARENT AND CONDUCTING BACK LAYER FOR CdS/CdTe THIN FILM SOLAR CELLS FOR PEC APPLICATION**  
Upendra S. Avachat, Anant H. Jahagirdar and Neelkanth G. Dhere  
Florida Solar Energy Center, University of Central Florida , 1679 Clearlake Road Cocoa, FL-32922
- P – 77 SINGLE AND BILAYER TRIBOLOGICAL COATINGS FOR CRYOCOOLERS**  
Vinay V. Hadagali, Anil U. Pai and Neelkanth G. Dhere  
Florida Solar Energy Center, University of Central Florida , 1679 Clearlake Road, Cocoa, FL 32922
- P – 78 STUDY OF SURFACE POLYMERIZATION OF POLYTHIOPHENE THIN FILM BY AB INITIO MOLECULAR DYNAMICS SIMULATIONS**  
Wen-Dung Hsu, and Susan B. Sinnott  
Department of Materials Science and Engineering, University of Florida, Gainesville, Florida 32611-6400

- P - 79 GROWTH AND CHARACTERIZATION OF ZRC THIN FILMS BY AEROSOL-ASSISTED MOCVD**  
Yong Sun Won<sup>1</sup>, Young Seok Kim<sup>1</sup>, Hiral Ajmera<sup>1</sup>, Olga Kryliouk<sup>1</sup>, Timothy J. Anderson<sup>1</sup>, Venu, G. Varanasi<sup>2</sup>,  
Chatu Sirimanne<sup>3</sup>, and Lisa McElwee-White<sup>3</sup>  
<sup>1</sup>Department of Chemical Engineering, University of Florida, Gainesville, FL 32611-6005, USA  
<sup>2</sup>Department of Preventive and Restorative Dentistry, University of California at San Francisco, CA 94143-0758  
<sup>3</sup>Department of Chemistry, University of Florida, Gainesville, FL 32611-7200, USA
- P - 80 STUDY OF CHEMICAL KINETICS IN MOCVD OF DIETHYLZINC**  
Young Seok Kim<sup>1</sup>, Yong Sun Won<sup>1</sup>, Nicolo Omenetto<sup>2</sup>, Timothy Anderson<sup>1</sup>  
<sup>1</sup>Department of Chemical Engineering, University of Florida, Gainesville, FL32611-6005  
<sup>2</sup>Department of Chemistry, University of Florida, Gainesville, FL32611-7200
- P - 81 REALIZATION OF PHOSPHORUS-DOPED P-TYPE (ZN,MG)O THIN FILMS VIA PULSED LASER DEPOSITION**  
Y. J. Li, Y. W. Heo, J. M. Erie, H. Kim, Y. Kwon, K. Ip, S. J. Pearton and D. P. Norton  
Dept. of Materials Science and Engineering, University of Florida, Gainesville, FL 32611
- P - 82 LIQUID CRYSTAL IMAGING OF SELF-ASSEMBLED TUBULES OF CHIRAL PHOSPHOLIPIDS**  
Yue Zhao, Ruibo Lu, and Jiyu Fang  
Advanced Materials Processing and Analysis Center, Department of Mechanical, Materials, and Aerospace Engineering, University of Central Florida, Orlando, FL 32816
- P - 83 MICROEMULSION DERIVED NANOCRYSTALLINE BARIUM AND STRONSIUM CERATE THIN FILMS AND POWDERS FOR GAS SENSING APPLICATION**  
Julian Duarte, Satyajit Shukla, Swanad Patil, Sudipta Seal  
NSF Lab, Advanced Materials Processing and Analysis Center (AMPAC) and Mechanical Materials Aerospace Engineering (MMAE) Department  
Engineering, 4000 Central Florida Blvd. University of Central Florida (UCF) , Orlando, FL, USA