

SURFACE ANALYSIS 2010

32ND ANNUAL SYMPOSIUM ON APPLIED SURFACE ANALYSIS
FLORIDA CHAPTER OF THE AVS SCIENCE AND TECHNOLOGY SOCIETY
AND FLORIDA SOCIETY FOR MICROSCOPY
2010 ANNUAL JOINT SYMPOSIUM AND EXHIBITION



University of Central Florida

USF UNIVERSITY OF
SOUTH FLORIDA.



UNIVERSITY OF
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FLORIDA STATE UNIVERSITY

March 7-10, 2010
University of Central Florida
Student Union
Orlando, Florida

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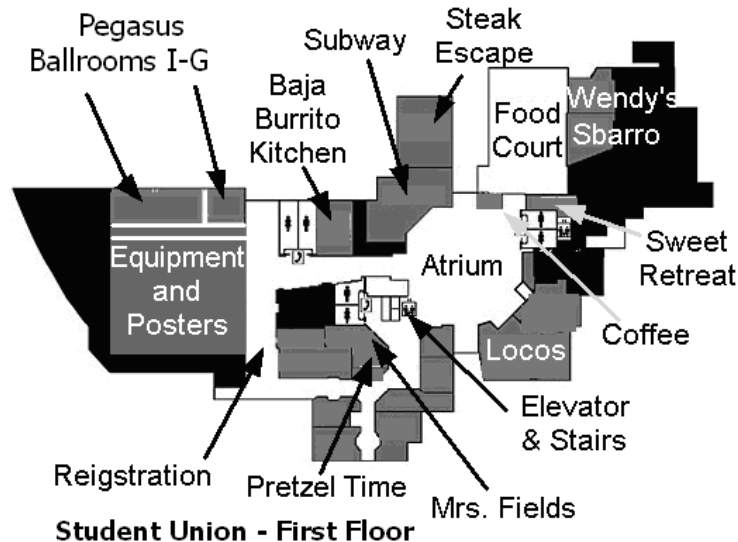
AVS Student Chapter at UF

SURFACE ANALYSIS 2010

SUNDAY MARCH 7, 2010

| | | |
|-----------|--|----------------------|
| 3:00-6:00 | Registration <u>Coordinators:</u> Rosabel Ruiz, University of Florida Amelia Dempere, University of Florida Tasker Beal, Jr., Constellation Technology | Registration Desk |
| 3:00-4:00 | Student Poster Setup <u>Coordinator:</u> Mariana Sendova, New College of Florida | Pegasus Ballroom A-F |
| 3:00-6:30 | Equipment Exhibit Setup <u>Coordinators:</u> Helge Heinrich, University of Central Florida Mark Davidson, University of Florida | Pegasus Ballroom A-F |
| 3:30-5:30 | Young Leaders Session <u>Chairs:</u> Andrew Warren, University of Central Florida Travis Kemper, University of Florida | Pegasus Ballroom G-H |
| 4:00-5:30 | Poster Session (Students only) <u>Poster Session Chair:</u> Mariana Sendova, New College of Florida | Pegasus Ballroom A-F |
| 5:30-6:30 | FI AVS Student Chapter Invited Lecturer RENEWABLE ENERGY, GREEN JOBS AND SUNSMART SCHOOLS PLUS, James M. Fenton, Director, Florida Solar Energy Center, University of Central Florida, Cocoa, FL | Pegasus Ballroom G-H |
| 5:30-6:30 | Student Reception | Pegasus Ballroom G-H |

(Full abstracts for oral and posters presentations are available at www.flavs.org)



Student Union closes at 7 pm
Parking is free in Garage A

YOUNG LEADERS SESSION

Pegasus Ballroom G-H

Chairs: Andrew Warren, University of Central Florida
Travis Kemper, University of Florida

- 3:30-3:45 **InGaZnO THIN FILM TRANSISTORS FABRICATED ON FLEXIBLE SUBSTRATES**, E. A. Douglas¹, Wantae Lim¹, D. P. Norton¹, F. Ren², Young-Woo Heo³, and S. J. Pearton¹,
^{1,2}University of Florida, ³Kyungpook National University, Korea
- 3:45-4:00 **COMPOSITION AND STRUCTURE OF NITROGEN-CONTAINING DISPERSOIDS IN TRI-MODAL METAL MATRIX COMPOSITES**, Clara Hofmeister, Yong-Ho Sohn, University of Central Florida
- 4:00-4:15 **ENHANCED PHOTOLUMINESCENCE FROM $Gd_2O_3:Eu^{3+}/Y_2O_3$ CLUSTERED NANOPARTICLES**, Jihun Choi, Teng-Kuan Tseng, Mark Davidson and Paul H. Holloway, University of Florida
- 4:15-4:30 **INVESTIGATING FILLED DOUBLE-WALLED CARBON NANOTUBES VIA RAMAN SPECTROSCOPY**, Tom Hartsfield¹, Mariana Sendova¹, Emanuel Flahaut²,
¹New College of Florida; ²Université Paul Sabatier, Toulouse, France
- 4:30-4:45 **VACUUM-DEPOSITED, MULTILAYER ORGANIC PHOTODIODES EXHIBITING STRONG AND FAST PHOTOMULTIPLICATION**, William T. Hammond and Jiangeng Xue, University of Florida
- 4:45-5:00 **THIN FILM METASTABLE INTERMOLECULAR COMPOSITES**, Daniel Yates, Kevin R. Coffey, University of Central Florida
- 5:00-5:15 **COMPOSITION DEPENDENT SPECTROSCOPY AND MORPHOLOGY OF COMPOSITE P3HT/PCBM NANOPARTICLES**, Zhongjian Hu, Andre J. Gesquiere, University of Central Florida
- 5:15-5:30 **MOLECULAR BEAM EPITAXY OF NOVEL CUBIC OXIDE SEMICONDUCTORS FOR DEEP-UV APPLICATIONS**, Jeremy W. Mares, Ryan C. Boutwell, A. Scheurer and Winston V. Schoenfeld, University of Central Florida

MONDAY MARCH 8, 2010

7:30-5:00 Registration

8:00-9:00 Poster Session (Students only) - Pegasus Ballroom A-F
Poster Session Chair: Mariana Sendova, New College of Florida

OPENING AND KEYNOTE ADDRESS

Pegasus Ballroom G-H

9:00-9:05 Welcome and Introduction
Program Chair: Maggie Puga-Lambers, MICROFABRITECH, University of Florida

9:05-10:00 Keynote Address
CHARACTERIZATION OF BIOMOLECULE INTERACTIONS WITH SURFACES
(Invited), David G. Castner, AVS President, National ESCA and Surface Analysis Center for Biomedical Problems, Departments of Bioengineering and Chemical Engineering University of Washington, Seattle, WA

10:00-10:30 Coffee Break (sponsored by RBD Instruments, Inc)

RENEWABLE ENERGY I (ALTERNATIVE ENERGIES)

Pegasus Ballroom G-H

Chairs: Tim Anderson (Florida Program for Alternative Energies, University of Florida)
Neelkanth Dhere (Florida Solar Energy Center, University of Central Florida)

10:30-10:55 MATERIAL AND DEVICE PROPERTIES OF HIGH-EFFICIENCY CIGS SOLAR CELLS,
(Invited), Rommel Noufi, Director, National Renewable Energy Laboratory, Golden, CO

10:55-11:20 INTERFACE EFFECT AND BULK CARRIER TRANSPORT IN ORGANIC PHOTOVOLTAIC CELLS, *(Invited)*, Franky So, University of Florida

11:20-11:45 SOLAR THERMAL REFORMING OF HYDROCARBONS IN CATALYTIC RETICULATE CERAMIC FOAMS, *(Invited)*, Jörg Petrasch, University of Florida

11:45-12:00 INFLUENCES OF SURFACES, INTERFACES AND BINDERS IN DOWNCONVERSION STUDIES TO DEVELOP WHITE LIGHT EMITTING DIODES, Debasis Bera, Sergey Maslov, Lei Qian and Paul H. Holloway, University of Florida

12:00-1:00 Lunch Break

Vendors and Equipment Exhibit
Pegasus Ballroom A-F
10:00am-7:00pm

NEW INSTRUMENTAL DEVELOPMENTS AND APPLICATIONS

Pegasus Ballroom G-H

Chair: Mark Davidson, University of Florida

- 1:00-1:25 LATERAL AND VERTICAL SURFACE CHARACTERIZATION OF THIN-FILM PHOTOVOLTAICS, (*Invited*) A.J. Roberts, Kratos Analytical Ltd, Manchester, UK, C. Moffitt, D.J. Surman, Kratos Analytical Inc, Chestnut Ridge, NY, USA, J. Pankow, National Renewable Energy Laboratory, Golden, CO
- 1:25-1:50 PHOTOELECTRON SPECTROSCOPY OF PLZT THIN FILMS FOR HIGH POWER ENERGY STORAGE APPLICATIONS, (*Invited*) Jeff Terry, Illinois Institute of Technology, Chicago, IL
- 1:50-2:05 XPS DEPTH PROFILING OF SOLID OXIDE FUEL CELL MATERIAL, Paul Mack, Richard White, Thermo Fisher Scientific, East Grinstead, West Sussex, UK; H.M. Meyer III, Oak Ridge National Laboratory, Oak Ridge, TN
- 2:05-2:20 PHOTOVOLTAGE AND PHOTOCONDUCTIVITY PROBED BY DYNAMICAL XPS MEASUREMENTS, Hikmet Sezen, Sefik Suzer, Bilkent University, Ankara, Turkey
- 2:20-2:35 A NOVEL LARGE AREA IMAGING NEXAFS SPECTROMETER ENABLING RAPID COMBINATORIAL CHEMICAL AND STRUCTURAL ANALYSIS, Daniel A. Fischer, Cherno Jaye, National Institute of Standards and Technology, Gaithersburg, MD, Kirk Scammon, University of Central Florida, Peter Sobol, Edward Principe, Synchrotron Research, Inc., Florida Institute of Technology, Physics & Space Sciences, Melbourne, FL
- 2:35-3:00 Coffee Break (sponsored by Kratos Analytical, Inc)

ADVANCES IN SCANNING ION AND SECONDARY ELECTRON MICROSCOPY

Pegasus Ballroom G-H

Chair: Lucille Giannuzzi, FEI Company

- 3:00-3:25 HELIUM ION MICROSCOPY, (*Invited*) David C. Bell, Harvard University
- 3:25-3:50 AN INDUCTIVELY COUPLED PLASMA ION SOURCE FOR HIGH RESOLUTION SURFACE ANALYSIS AND ENGINEERING, (*Invited*) Noel S. Smith, P. P. Tesch, N. P. Martin and R. W. Boswell, Oregon Physics LLC, Hillsboro, OR
- 3:50-4:15 EXTREME HIGH RESOLUTION SCANNING ELECTRON MICROSCOPY (XHR SEM) USING A MONOCHROMATOR, (*Invited*) Richard J. Young, FEI Company, Hillsboro, OR
- 4:15-4:30 EMERGING SEM TECHNOLOGY TO ADVANCE ENERGY RESEARCH, Natasha Erdman, Naoki Kikuchi, Regina Campbell, and Vernon E. Robertson, JEOL USA Inc, Peabody, MA

Vendors and Equipment Exhibit

Pegasus Ballroom A-F

10:00am-7:00pm

POSTER SESSION AND RECEPTION
Pegasus Ballroom A-F

- 4:30-7:00 **Poster Session**
Poster Session Chair: Mariana Sendova, New College of Florida
- 5:00-7:00 **Reception** (sponsored by Thermo Fisher Scientific)

Student Union closes at 7 pm

Vendors and Equipment Exhibit
Pegasus Ballroom A-F
10:00am-7:00pm

TUESDAY MARCH 9, 2010

8:00-5:00 Registration

RENEWABLE ENERGY II (PHOTOVOLTAICS)

Pegasus Ballroom G-H

Chairs: Tim Anderson (Florida Program for Alternative Energies, University of Florida)
Neelkanth Dhere (Florida Solar Energy Center, University of Central Florida)

- 8:30-8:55 THIN FILM PV RESEARCH PROGRAM AT USF, (*Invited*) Chris Ferekides, University of South Florida (*Invited*)
- 8:55-9:20 RESEARCH IN THE NATIONAL CENTER FOR PHOTOVOLTAICS AT NREL: PAST, PRESENT, AND FUTURE, (*Invited*) Ryne P. Raffaele, Director, National Center for Photovoltaics, National Renewable Energy Laboratory, Golden, CO
- 9:20-9:45 THE SURFACE SCIENCE OF Cu(In,Ga)Se₂, (*Invited*) Angus Rockett, University of Illinois
- 9:45-10:10 LEAD FOR SOLAR SYSTEM INTEGRATION, (*Invited*) Kevin Lynn, US Department of Energy
- 10:10-10:40 Coffee Break (sponsored by JEOL USA, Inc)

DEPTH PROFILING, QUANTIFICATION AND DATA INTERPRETATION

Pegasus Ballroom G-H

Chair: Chris Szakal (National Institute of Standards and Technology)

- 10:40-11:05 3D TOF-SIMS IMAGING OF ORGANIC AND INORGANIC SPECIMENS WITH FIB SECTIONING AND C₆₀ ION POLISHING, (*Invited*) Gregory L. Fisher¹, Christopher Szakal², Greg Gillen², and Scott R. Bryan¹, ¹Physical Electronics, Chanhassen, MN, ²NIST, Gaithersburg, MD
- 11:05-11:20 TOF-SIMS DEPTH PROFILES OF ENZYMATICALLY DEGRADED POLY(PEPTIDE URETHANEUREAS), Gilad Zorn, Felix I. Simonovsky, Jeremy Brison, Buddy D. Ratner and David G. Castner, University of Washington
- 11:20-11:35 MCs_x⁺ DEPTH PROFILING USING CLUSTER PRIMARY IONS, E. Niehuis^a, F. Kollmer^a, R. Moellers^a, D. Rading^a, R. Kersting^b, B. Hagenhoff^b, A. Schnieders^{c,d}, N. Havercroft^d, ^aION-TOF GmbH, Muenster, Germany; ^bTASCON GmbH, Muenster, Germany; ^dION-TOF USA, Inc, Chestnut Ridge, NY

Vendors and Equipment Exhibit

Pegasus Ballroom A-F

10:00am-1:00pm

11:35-12:00 PROBLEMS WITH DATA ACQUISITION AND PROCESSING IN X-RAY PHOTOELECTRON SPECTROSCOPY, *(Invited)* John T. Grant, University of Dayton

12:00-1:00 Lunch Break
Door Prize - Pegasus Ballroom A-F

DEPTH PROFILING, QUANTIFICATION AND DATA INTERPRETATION

Pegasus Ballroom G-H

Chair: Chris Szakal (National Institute of Standards and Technology)

1:00-1:15 APPLICATION OF AN IMPROVED MAXIMUM ENTROPY METHOD (MEM) ALGORITHM FOR THE ANALYSIS AND INTERPRETATION OF ANGLE RESOLVED XPS RESULTS, G. Mishra, K. Mcack, Kratos Analytical Ltd, Manchester, UK; C. Moffitt, Kratos Analytical Inc, Chestnut Ridge, NY, USA

1:15-1:30 RECONSTRUCTION OF DEPTH PROFILES FROM ANGULAR AND ENERGY DISTRIBUTION OF PHOTOELECTRON, G.Tasneem, W.S.M Werner, W.Smekal, Vienna University of Technology, Austria

1:30-1:45 SPECTROSCOPIC ANALYSIS OF HIGH TEMPERATURE ELECTRICAL CONTACTS ON SiC USING AES AND FIB FE-SEM, Dorothy Lukco, ASRC Aerospace Inc., Cleveland, OH; Robert S. Okojie, NASA Glenn Research Center, Cleveland, OH and Chuck Blaha, Jacobs Sverdrup, Cleveland, OH

CHARACTERIZATION OF NANO/BIO MATERIALS

Pegasus Ballroom G-H

Chair: Swadesh Santra, University of Central Florida

1:45-2:10 REDOX-ACTIVE RADICAL SCAVENGING NANOMATERIALS, *(Invited)* Ajay Karakoti, Sanjay Singh, Janet M. Dowding, Sudipta Seal and William T. Self, University of Central Florida

2:10-2:35 SURPRISINGLY LONG-RANGE SURFACE ENHANCED RAMAN SCATTERING (SERS) ON AU-NI MULTISEGMENTED NANOWIRES, *(Invited)* David Wei, University of Florida

2:35-2:50 OPTICAL INTERACTIONS AND ENERGY TRANSFER IN SILVER NANOCOMPOSITE GLASSES, J. A. Jiménez, M. Sendova, New College of Florida; S. Lysenko, H. Liu, University of Puerto Rico

2:50-3:10 Coffee Break (sponsored by Physical Electronics, Inc)

Vendors and Equipment Exhibit

Pegasus Ballroom A-F

10:00am-1:00pm

OPTICAL TECHNIQUES FOR APPLIED SURFACE ANALYSIS

Pegasus Ballroom G-H

Chair: Andre Gesquiere, University of Central Florida

- 3:10-3:35 OPTICAL SPECTROSCOPY FOR STRESS MEASUREMENTS IN AEROSPACE MATERIALS, *(Invited)* Seetha Raghavan, University of Central Florida
- 3:35-4:00 PLASMON ENHANCED NEAR-FIELD INTERACTIONS IN METALLIC NANOSTRUCTURES AND DEVICES, *(Invited)* Pieter G. Kik, University of Central Florida
- 4:00-4:15 STUDIES OF MOLECULAR MECHANISMS OF ADSORPTION AND SURFACE CHEMICAL REACTIONS OF AROMATIC VS. THIOAROMATIC COMPOUNDS BY THE COMBINATION OF THE SURFACE AND BULK-SENSITIVE OPERANDO UV-VIS DIFFUSE REFLECTANCE SPECTROSCOPY (DRS) AND OPERANDO ESR, Alexander Samokhvalov, Evert C. Duin, and Bruce J. Tatarchuk, Auburn University

SPECIAL EVENTS

- 4:15-4:20 FI AVS Annual Business Meeting - Pegasus Ballroom G-H
Chair: Winston Schoenfeld, CREOL, The College of Optics & Photonics University of Central Florida
- 4:20-4:45 Student Poster Session Awards Ceremony - Pegasus Ballroom G-H
Program Chair: Maggie Puga-Lambers, MICROFABRITECH, University of Florida
Poster Session Chair: Mariana Sendova, New College of Florida
- 5:00-6:30 ASTM E-42 Meeting - Garden Key (2nd floor)

Student Union closes at 7 pm

WEDNESDAY MARCH 10, 2010

8:00-3:00 Registration

MICROSCOPY IN THE PHYSICAL AND BIOLOGICAL SCIENCES

Pegasus Ballroom G-H

Chairs: Helge Heinrich, University of Central Florida

Tony Greco, University of South Florida

- 8:00-8:25 MICROSCOPY AND SPECTROSCOPY FOR PROBING NANOMATERIALS, (*Invited*) Qi Zhang, Kirk Scammon, Mikhail Klimov, Karen Glidewell, Yong-ho Sohn, University of Central Florida
- 8.25-8.40 X-RAY MICROANALYSIS: REPORTING SUCCESSFUL STORIES FEATURING SOLAR CELLS AND BIOLOGICAL MATERIALS, Breno Leite, Thermo Fisher Scientific, Madison, WI
- 8:40-9:05 HOW TO USE ELECTRON MICROSCOPY TO TEACH SUSTAINABILITY IN ENGINEERING, (*Invited*) Luisa Amelia Dempere, University of Florida
- 9:05-9:30 ELUCIDATING PROPERTY-STRUCTURE RELATIONSHIPS OF BIOLOGICAL SYSTEMS: IMPLICATIONS FOR ALZHEIMER'S DISEASE, FLOCCULATION AND DRUG DELIVERY SYSTEMS, (*Invited*) Norma A. Alcantar, University of South Florida
- 9.30-9.45 A COMPREHENSIVE METHOD FOR THE CHEMICAL MAPPING OF SINGLE CELLS WITH IMAGING MASS SPECTROMETRY, Christopher Szakal,^a Kedar Narayan,^b Jing Fu,^b Jonathan Lefman,^a and Sriram Subramaniam^b, ^aNational Institute of Standards and Technology, Gaithersburg, MD, ^bNational Institutes of Health, Bethesda, MD
- 9:45-10:10 BIOLOGICAL EM IN THE 21ST CENTURY: CRYOTECHNIQUES, CORRELATIVE LM/EM, AND CELLULAR TOMOGRAPHY, (*Invited*) Kent L. McDonald, University of California at Berkeley
- 10:10-10:30 Coffee Break (Sponsored by Turbo Vacuum)

COMPUTATIONAL MODELING OF SURFACES

Pegasus Ballroom G-H

Chair: Susan Sinnott, University of Florida

- 10:30-10:55 COMPUTATIONAL MODELING OF SURFACES, (*Invited*) Patrick Schelling, University of Central Florida
- 10:55-11:20 GRAPHITIC NANOSTRUCTURED MATERIALS: ELECTRONIC STRUCTURE AND MUTUAL INTERACTION EFFECTS, (*Invited*) Lilia Woods, University of South Florida

- 11:20-11:45 **NANOSCALE MORPHOLOGY OF A SURFACE LAYER OF METAL IRRADIATED BY FEMTOSECOND LASER PULSE**, (*Invited*) Vasily V. Zhakhovsky, University of South Florida
- 11:45-12:00 **ELECTRONIC TRANSPORT PROPERTIES IN ARRAYS OF DNA SEGMENTS**, E. L. Albuquerque and L. R. da Silva, Universidade Federal do Rio Grande do Norte, Natal-RN, Brazil
- 12:00-1:00 **Lunch Break**

SURFACE SCIENCE

Pegasus Ballroom G-H

Chair: Beatriz Roldán Cuenya, University of Central Florida

- 1:00-1:25 **SELECTIVITY AND REACTIVITY OF OXIDE SURFACES: INSIGHTS FROM THEORY AND MODELING**, (*Invited*) Talat Rahman, University of Central Florida
- 1:25-1:50 **CHARACTERIZATION AND CHEMICAL ACTIVITY OF AU-BASED BIMETALLIC CLUSTERS ON TiO₂ (110)**, (*Invited*) Samuel A. Tenney, Wei He, and Donna A. Chen, University of South Carolina
- 1:50-2:15 **CONTROL OF MOLECULAR MOTION AT SURFACES**, (*Invited*) Ludwig Bartels, University of California at Riverside
- 2:15-2:35 **Coffee Break**

THIN FILMS

Pegasus Ballroom G-H

Chair: Ashok Kumar, University of South Florida

- 2:35 -3:00 **ORGANIC AND HYBRID ORGANIC-INORGANIC THIN FILMS FOR LIGHT-EMITTING DEVICES**, (*Invited*) Jiangeng Xue, University of Florida
- 3:00 -3:25 **NANO CARBON MATERIALS FOR MULTIFUNCTIONAL APPLICATION**, (*Invited*) Wonbong Choi, Florida International University
- 3:25 -3:50 **DIAMOND THIN FILMS FOR RF MEMS APPLICATIONS**, (*Invited*) Jing Wang, University of South Florida
- 3:50 -4:15 **IMPACT OF THE ER-TO-NI THICKNESS RATIO ON THE FORMATION OF ER-NI SILICIDE**, Pui Yee Hung¹, Wei-Yip Loh¹, Joel Barnett¹, Kelly Radar¹, Pat Lysaght¹, Prashant Majhi^{1,2}, Bill Taylor¹, Rajarao Jammy¹, ¹SEMATECH, Albany, NY, ²Intel assignee, SEMATECH, Austin, TX

POSTER SESSION

Pegasus Ballroom A-F

Poster Session Chair: Mariana Sendova, New College of Florida

Sunday, March 7, 4:00-5:30 pm (Students only)

Monday, March 8, 8:00-9:00 am (Students only)

Monday, March 8, 4:30-7:00 pm

P-01

STRONG KINETIC ISOTOPE EFFECT IN THE DISSOCIATIVE CHEMISORPTION OF H₂ ON A PdO(101) THIN FILM, Can Hakanoglu, Jeffery M. Hawkins and Aravind Asthagiri, and Jason F. Weaver, Department of Chemical Engineering, University of Florida

P-02

NUCLEATION AND GROWTH OF OXIDE NANOWIRES SEEDED BY THERMALLY-STABLE SELF-ASSEMBLED MICELLAR Pt NANOPARTICLES, F. Behafarid¹, A. Naitabdi¹, B. Roldan Cuenya^{1,2}, ¹Department of Physics, ²Nanoscience and Technology Center, University of Central Florida

P-03

INFRARED SURFACE PLASMON RESONANCES ON NOBLE METAL, SEMIMETAL, AND SEMICONDUCTOR GRATINGS, Gautam Medhi^a, Justin Cleary^a, Robert E. Peale^a, Walter Buchwald^b, Glenn Boreman^c, Isaiah Oladeji^d, ^aDepartment of Physics, University of Central Florida, ^bAir Force Research Laboratory, ^cCollege of Optics and Photonics, University of Central Florida, ^dSISOM Thin Films

P-04

STM INVESTIGATION OF PdO(101) THERMAL DECOMPOSITION, Jose A. Hinojosa Jr., Andrew J. Edmondson, Jason F. Weaver, Department of Chemical Engineering, University of Florida

P-05

GOLD-BLACK AS IR ABSORBER AND SOLAR CELL ENHANCER, J. W. Cleary¹, R. E. Peale¹, M. Ishigami¹, C. W. Smith¹, K. Baillie¹, J. E. Colwell¹, K. M. Beck², A. G. Joly², O. Edwards³, C. J. Fredricksen⁴, ¹Department of Physics, University of Central Florida, ²Pacific Northwest National Laboratory, ³Zyberwear, Inc., ⁴LRC Engineering, Inc.

P-06

REMOTE PLASMA ASSISTED ATOMIC LAYER DEPOSITION OF HfN_xCy THIN FILMS, Ning Li, Tonya M. Klein, Department of Chemical and Biological Engineering, University of Alabama, Tuscaloosa

P-07

CHARACTERIZE THE CHROMATIN DYNAMICS BY HIGH RESOLUTION MULTIPLE NUCLEAR BODY TRACKING, Pei-Hsun Wu^{1,2}, Ie-Ming Shih³, Yiider Tseng^{1,2}, ¹Department of Chemical Engineering, University of Florida, ²NCI Physical Science Oncology Center, Gainesville, FL, ³Departments of Pathology and Oncology, Gynecology and Obstetrics, Johns Hopkins Medical Institutions, Baltimore, MD

P-08

2-PROPANOL OXIDATION OVER SUPPORTED Pt NANOPARTICLES: A STUDY OF CATALYTIC PERFORMANCE AND PARTICLE MORPHOLOGY, Simon Mostafa, Jason R. Croy, Beatriz Roldán Cuenya, Department of Physics, University of Central Florida

P-09

LUMINESCENCE AND STRUCTURE CHARACTERIZATION OF SELF-ACTIVATED BISMUTH GERMINATE SCINTILLATION NANOCRYSTALS, Teng-Kuan Tseng, Jihun Choi, Mark Davidson and Paul H. Holloway, Department of Materials Science and Engineering, MICROFABRITECH, University of Florida

P-10

PREPARATION OF HIGH ENERGY STEP EDGES ON TiO₂(110) BY GRAZING INCIDENCE ION SPUTTERING, Tim Luttrell and Matthias Batzill, Department of Physics, University of South Florida

P-11

SUPRAMOLECULAR STRUCTURE OF POLY (3-HEXYLTHIOPHENE) ON GRAPHENE NANOSHEETS WITH IMPROVED COMPATIBILITY, Anindarupa Chunder, Jianhua Liu, Lei Zhai, Nanoscience Technology Center & Department of Chemistry, University of Central Florida

P-12

COMPREHENSIVE HEMT RELIABILITY TESTING, David Cheney¹, Erica Douglas², Brent Gila², Fan Ren³, Steve Pearton², ¹Department of Electrical and Computer Engineering, ²Department of Material Science and Engineering, ³Department of Chemical Engineering, University of Florida

P-13

THE INVESTIGATION ON BACK CONTACT INTERLAYER ZnTe, ZnTe/Cu, AND STAINLESS STEEL FOIL SUBSTRATES ZnTe/Cu₂Te FOR CDTE SOLAR CELLS ON FLEXIBLE STAINLESS STEEL FOIL SUBSTRATES, Dongna Shen, Vasilios Palekis, Shweta Bhandaru, Deidra Hodges, Kartikay Singh and Chris. S. Ferekides, Department of Electrical Engineering, University of South Florida

P-14

TRANSPARENT OXIDE/METAL/OXIDE TRILAYER ELECTRODE FOR USE IN TOP-EMITTING ORGANIC LIGHT EMITTING DIODES, Edward Wrzesniewski, Sang-Hyun Eom, William Hammond, Weiran Cao, and Jiangeng Xue, Department of Materials Science and Engineering, University of Florida

P15

EFFECT OF PROCESS PARAMETERS ON PROPERTIES OF MOLYBDENUM THIN FILMS FOR CIGS₂ THIN FILM SOLAR CELLS, Eigo Takahashi, Shirish A. Pethe, Ashwani Kaul and Neelkanth G. Dhere, Florida Solar Energy Center, University of Central Florida

P-16

DEGRADATION OF OHMIC AND SCHOTTKY CONTACTS ON InGaAs HEMTs DURING STRESSING, E. A. Douglas¹, C. Y. Chang¹, K. H. Chen², F. Ren², S. J. Pearton¹, ¹Department of Materials Science and Engineering, University of Florida, ²Department of Chemical Engineering, University of Florida

P-17

CUBIC Zn_xMg_{1-x}O AND Ni_xMg_{1-x}O THIN FILMS GROWN BY MOLECULAR BEAM EPITAXY FOR DEEP-UV OPTOELECTRONIC APPLICATIONS, J. W. Mares, R. C. Boutwell, A. Scheurer, M. Wei and W. V. Schoenfeld, CREOL, The College of Optics and Photonics, University of Central Florida

P-18

EXTREME LUMINESCENT SIGNATURE OF COALESCED Cd_xZn_{1-x}Se QUANTUM-ROD ALLOYS, Marc Plaisant and Paul Holloway, Materials Science and Engineering Department, University of Florida

P-19

EFFICIENT AND AIR-STABLE HYBRID ORGANIC-INORGANIC SOLAR CELLS BASED ON A LOW-GAP POLYMER AND CdSe NANOCRYSTALS, Renjia Zhou, Lei Qian, Ying Zheng, Paul Holloway, Jiangeng Xue, Department of Materials Science and Engineering, University of Florida

P-20

MANGANESE AND ANTIMONY TELLURIDE THIN FILMS FOR BACK CONTACT INTERFACES IN CdTe SOLAR CELLS, V. Guntur, D. Shen, V. Palekis, S. Bhandaru, K. Singh, D.L. Morel and C.S. Ferekides, Department of Electrical Engineering, University of South Florida

P-21

NANOFORMULATION FOR THE TREATMENT OF MOLD, Tamre Parsons, Padmavathy Tallury, Rajendra Narayan Mitra, Swadeshmukul Santra", Nanoscience Technology Center, University of Central Florida

P-22

POLYMER TRANSLOCATION INDUCED BY A BAD SOLVENT, Christopher Lörscher¹, Aniket Bhattacharya¹, and Tapio Ala-Nissila^{2, 3}, ¹Department of Physics, ²Department of Applied Physics, University of Central Florida, ³Department of Physics, Brown University

P-23

LUBRICATION MECHANISM OF CARBON NANOOXIONS DETERMINED FROM MOLECULAR DYNAMICS SIMULATIONS, Eric W. Bucholz, Simon R. Phillpot, Susan B. Sinnott, Materials Science and Engineering Department, UF

P-24

EVOLUTION AND STABILITY OF Pt-OXIDES ON SIZE-SELECTED Pt NANOPARTICLES, J. R. Croya^a, L. Onoa^a, and B. Roldan Cuenyaa^{a,b,c}, ^aDepartment of Physics, ^bDepartment of Civil, Environmental, and Construction Engineering, ^cNanoscience and Technology Center, University of Central Florida

P-25

STRUCTURE AND PROPERTIES OF NICKEL/GRAPHENE INTERFACES, J Lahiri, Y Lin, P Bozkurt, I Oleynik, M Batzill, Department of Physics, University of South Florida

P-26

ENHANCED PHOTOLUMINESCENCE OF Gd₂O₃:Eu³⁺ NANOPARTICLES BY ENCAPSULATION WITH Y₂O₃, Jihun Choi, Teng-Kuan Tseng, Mark Davidson and Paul H. Holloway, Department of Materials Science and Engineering Department, University of Florida

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Takahiro Ishizaki¹, Nagahiro Saito², Osamu Takai³, ¹National Institute of Advanced Industrial Science and Technology (AIST) Materials Research Institute for Sustainable Development, ²EcoTopia Science Institute, Nagoya University, ³Department of Materials, Physics and Energy Engineering, Graduate School of Engineering, Nagoya University, Japan

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OPTIMAL DEPOSITION CONDITIONS AND CHARACTERIZATION OF ALUMINUM OXYNITRIDE FILMS DEPOSITED BY ION BEAM SPUTTERING AT ROOM TEMPERATURE

Paul W. Wang¹, Jin-Cherng Hsu², Yung-Hsin Lin³, and Huang-Lu Chen³, ¹Department of Physics, Bradley University, ²Department of Physics, ³Graduate Institute of Applied Science and Engineering, Fu Jen Catholic University, Taipei 24205, Taiwan"

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Farah Alvi, USF
Farzad Behafarid, UCF
Jeffery Hawkins, UF
Luis Ono, UCF
Chan-Woo Lee, UF
Cecil Coutinho, USF
Dong Hyun Kim, UF

Materials Processing

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OH Hyun Kim, UF
Justin Cleary, UCF
Dongjo OH, UF
Jung Hun Janga, UF
Jaewon Lee, UF

Materials Characterization

Jose Hinojosa, UCF
Biao Yuan, UCF
Simon Mostafa, UCF
Jason Croy, UCF
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Jooyoung Lee, UF
Jihun Choi, UF
DoJun Kim, UF

Undergraduate Awards

Christopher Grabill, UCF
Logan Byrne, UCF
Thomas Hartsfield, NCF
Doug Maukonen, UCF
Ulka Patel, UCF

The program committee congratulates all the student winners and also thanks all the students, whose outstanding work made the 2009 student session very competitive. The committee gives a special thank you to all the judges who spend many hours with the students discussing their projects. Your encouragement and interaction meant more to the students than you will ever know.

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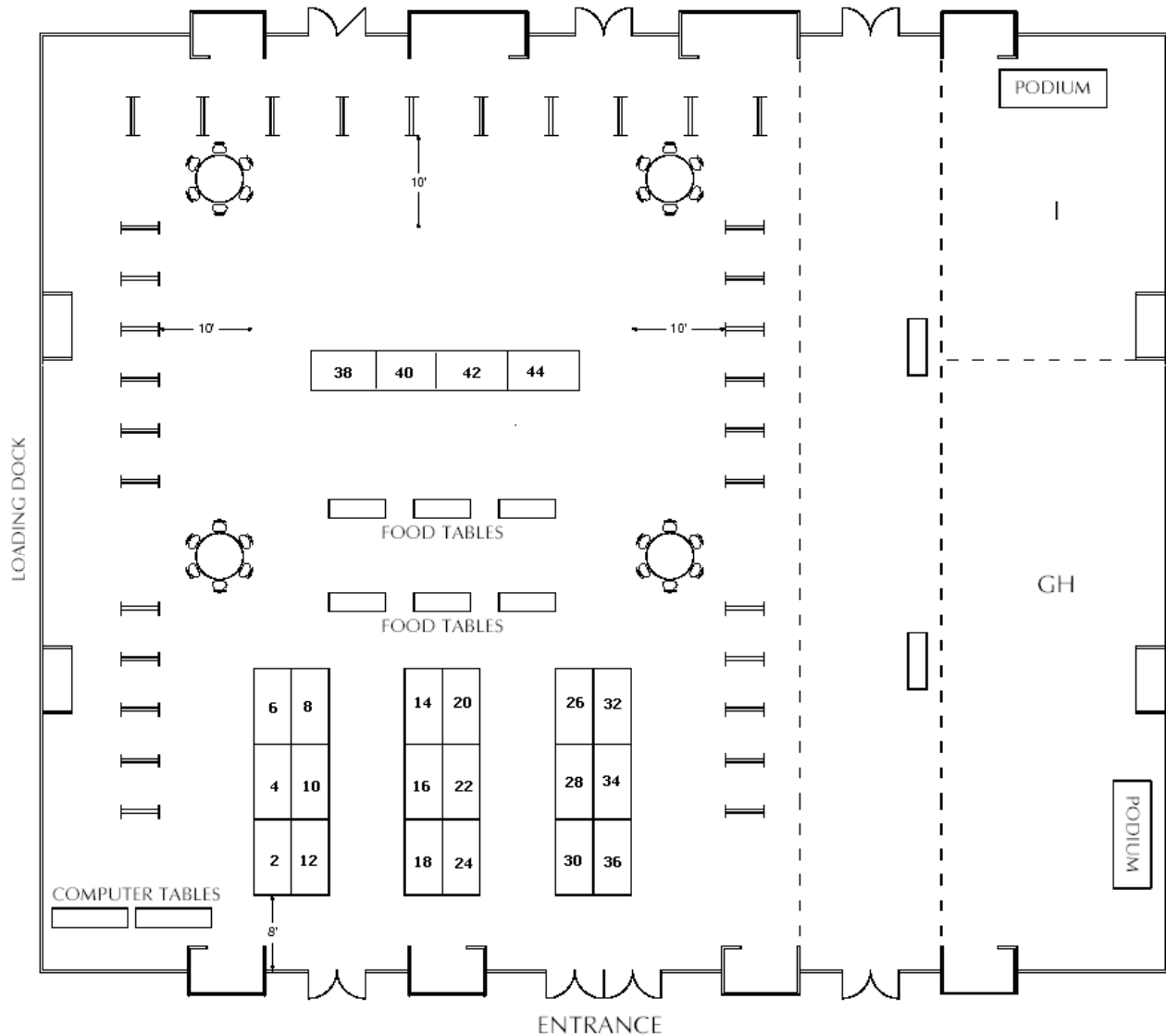
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