

POSTER SESSION
Pegasus Ballroom A-F
Poster Session Chair: Ying Zheng, University of Florida

Monday, March 5, 5:00-7:00 pm
Tuesday, March 6, 8:00-9:00 am

P-01

A FINITE ELEMENT BASED 2D TRUSS MODEL FOR MODULUS PREDICTION OF PVA-TREATED BUCKYPAPER, Kan Wang^{1,2}, Arda Vanli^{1,2}, Chuck Zhang^{1,2}, and Ben Wang^{1,2}, ¹High-Performance Materials Institute, Florida State University, ²Department of Industrial & Manufacturing Engineering, FAMU - FSU College of Engineering, Tallahassee, FL 32310

P-02

ABSORPTION FROM PLASMONIC ANTENNA ARRAYS, Kathryn E. O'Brien, Po-Yuan Wang, Paul H. Holloway, Mark R. Davidson, Department of Materials Science and Engineering, University of Florida, Gainesville, FL

P-03

REDUCTION EFFICIENCY DEPENDENT EFROS-SHKLOVSKII VARIABLE RANGE HOPPING IN CHEMICALLY DERIVED GRAPHENE OXIDE SHEETS, Daeha Joung^{a,b} and Saiful I. Khondaker^{a,b,c}, ^aNanoscience Technology Center, ^bDepartment of Physics, ^cSchool of Electrical Engineering and Computer Science, University of Central Florida, Orlando, Florida 32826, USA

P-04

A GENERAL APPROACH FOR HIGH YIELD FABRICATION OF CMOS COMPATIBLE ALL SEMICONDUCTING CARBON NANOTUBE FIELD EFFECT TRANSISTORS, Muhammad R. Islam^{a,b}, Kristy J. Kormondy^{a,b}, Eliot Silbar^{a,b}, and Saiful I. Khondaker^{a,b,c}, ^aNanoscience Technology Center, ^bDepartment of Physics, ^cSchool of Electrical Engineering and Computer Science, University of Central Florida, Orlando, Florida 32826, USA

P-05

NANOFISSURE FORMATION DURING SELECTIVE BREAKDOWN OF M-SWNT IN AN ALIGNED ARRAY, Uday Bhanu^{1,2}, Shashank Shekhar¹, Saiful I. Khondaker^{1,2}, ¹Nanoscience Technology Center, ²Department of Physics, University of Central Florida, Orlando, Florida 32826, USA

P-06

SIMULATION OF SURFACE PLASMONS ON NANO-SCALE ANTENNA ARRAYS, Po-Yuan Wang, Kathryn E. O'Brien, Paul H. Holloway, Mark R. Davidson, Department of Materials Science and Engineering, University of Florida, Gainesville, FL

P-07

TRANSITION METAL IMPURITY INDUCED PLASMONS IN Au CHAINS, Neha Nayar¹, Alamgir Kabir¹, Volodymyr Turkowski^{1,2}, Talat S. Rahman^{1,2}, ¹Department of Physics, University of Central Florida, Orlando FL-32826, ²Nanoscience and Technology Center, University of Central Florida, Orlando FL

P-08

STUDY OF ELECTRIC FIELD DRIVEN DEGRADATION MECHANISM ON AlGaN/GaN HIGH ELECTRON MOBILITY TRANSISTORS DURING OFF-STATE STRESS, Lu Liu¹, C.Y. Chang², Tsung Sheng Kang¹, David A. Cullen³, Lin Zhou³, Jinhung Kim⁴, Erica A. Douglas², Soohwan Jang⁴, David. J. Smith³, S. J. Pearton², Wayne J. Johnson⁵, and Fan Ren¹, ¹Department of Chemical Engineering, University of Florida, Gainesville FL 32611, ²Department of Materials Science and Engineering, University of Florida, Gainesville FL 32611, ³Department of Physics, Arizona State University, Tempe, AZ 85287, ⁴Department of Chemical Engineering, Dankook University, Yongin, 448-701, Korea, ⁵Nitronex Corporation, Raleigh, NC 27606

P-09

SELF-DIFFUSION OF SMALL AG AND NI ISLANDS ON Ag(111) AND Ni(111) USING THE SELF-LEARNING KINETIC MONTE CARLO METHOD, Syed Islamuddin Shah, Giridhar Nandipati, Abdelkader Kara and Talat S. Rahman, Department of Physics, University of Central Florida

P-10

STRUCTURE-PROPERTY RELATIONSHIP OF SINGLE-WALLED CARBON NANOTUBE THIN FILM AND CONDUCTING MECHANISM STUDY, Sida Luo, and Tao Liu, High Performance Materials Institute, Industrial and Manufacturing Engineering, Florida State University, 2005 Levy Avenue, Tallahassee, FL, USA

P-11

SIMULATION AND EXPERIMENTAL STUDY OF ArF 193nm LASER LIFT-OFF AlGaN/GaN HIGH ELECTRON MOBILITY TRANSISTORS, T. S.Kang¹, X. T. Wang¹, C. F.Lo¹, F. Ren¹, S. J. Pearton², O. Laboutin³, Yu Cao³, J. W. Johnson³, Jihyum Kim⁴, ¹Department of Chemical Engineering, University of Florida, Gainesville FL 32611, ²Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611, ³Kopin Corporation, Taunton, Massachusetts 02780, ⁴Department of Chemical and Biological Engineering, Korea University, Seoul 136-701, Korea

P-12

DOES ORGANIC FIELD EFFECT TRANSISTORS (OFETS) DEVICE PERFORMANCE USING CARBON NANOTUBES (CNT) ELECTRODE DEPENDS ON THE DENSITY OF CNT IN THE ELECTRODE? Narae Kang^{a,b}, Biddut K. Sarker^{a,b} and Saiful I. Khondaker^{a,b,c}, ^aNanoscience Technology Center, ^b Department of Physics, ^cSchool of Electrical Engineering and Computer Science, University of Central Florida, Orlando, Florida 32826, USA

P-13

NANODIAMOND AS FILLER IN CONDUCTING POLYMER FILMS FOR ENZYMATIC BIOSENSING, Pedro Villalba^{1,3}, Manoj Ram^{2,3}, Ashok Kumar^{2,3}, ¹Chemical and Biomedical Engineering Department, ²Mechanical Engineering Department, ³Nanotechnology Research and Education Center

P-14

GROWTH AND CHARACTERIZATION OF SILICON NANOWIRE AND ITS APPLICATION IN LITHIUM-ION BATTERY, Teng Liu, Mei Zhang, Department of Industrial Engineering, High Performance Materials Institute, Florida State University, Tallahassee, FL

P-15

PLANAR ORGANIC PHOTOVOLTAICS FOR MORE OPPORTUNITIES OF EFFICIENCY ENHANCEMENT AND PARAMETERS CONTROLLING, Feras G. Alzubi, M. Arif, Daeha Joung, and Saiful I. Khondaker, Nanoscience Technology Center and Department of Physics, University of Central Florida, 12424 Research Parkway suite 400, Orlando, Florida 32826, USA

P-16

SYNTHESIS, MORPHOLOGICAL CHARACTERIZATION AND CATALYTIC ACTIVITY OF SIZE-SELECTED Pt NPS SUPPORTED ON WC_x and Al₂O₃, Mahdi Ahmadi, Beatriz Roldan Cuenya, Physics department, University of Central Florida, Orlando, FL 32816

P-17

TERNARY SOLVENT INKS FOR ULTRASONIC SPRAY DEPOSITION OF THIN-FILM ORGANIC PHOTOVOLTAICS, Nate Shewmon, William Hammond, and Jiangeng Xue, Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611

P-18

SOLUTION-PROCESSED HYBRID ORGANIC-INORGANIC PHOTOVOLTAIC CELLS BASED ON SPHERICAL CdSe NANOCRYSTALS, Renjia Zhou, Ying Zheng, Lei Qian, Yixing Yang, Paul H. Holloway, and Jiangeng Xue, Department of Materials Science & Engineering, University of Florida, Gainesville, FL 32611

P-19

CYCLIC OLEFIN COPOLYMER (COC) FERROELECTRICS: CELLULAR STRUCTURE AND PIEZOELECTRICITY, Libo Pei, Chip Young, Zhenhua Chen, Changchun Zeng and Chuck Zhang, High Performance Materials Institute, Industrial and Manufacturing Engineering, Florida State University, 2005 Levy Avenue, Tallahassee, FL, USA

P-20

TRANSPARENT QUANTUM-DOT LIGHT-EMITTING DIODES USING OXIDE/METAL/OXIDE TRILAYER ELECTRODE, Weiran Cao, Ying Zheng, Paul H. Holloway, and Jiangeng Xue, Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611

P-21

EFFECT OF ANNEALING CONDITIONS ON THE PROPERTIES OF SPUTTERED ZnO FILMS FOR SOLAR CELL APPLICATIONS, Eric Schneller and Neelkanth Dhere, Florida Solar Energy Center, 1679 Clearlake Road, Cocoa, FL 32922, USA

P-22

ANALYSIS AND COMPARISON OF DISTORTED J-V CURVES IN a-Si/c-Si HETEROJUNCTION AND THIN-FILM CIGS SOLAR CELLS, Narendra Shiradkar and Neelkanth Dhere, Florida Solar Energy Center, 1679 Clearlake Road, Cocoa, FL, 32922, USA

P-23

ENHANCING LIGHT EXTRACTION IN TOP-EMITTING ORGANIC LIGHT-EMITTING DEVICES USING MOLDED POLYMER MICROLENS ARRAYS, Edward Wrzesniewski, Sang-Hyun Eom, Weiran Cao, William T. Hammond, Sangjun Lee, Elliot P. Douglas, and Jiangeng Xue, Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611, USA

P-24

RADIANT ENERGY IMAGER USING NULL SWITCHING, Evan Smith¹, Robert Peale¹, Oliver Edwards², ¹University of Central Florida, 4000 Central Florida Blvd. PS430, Orlando, FL 32816, USA, ²Zyberwear Inc. 2650 Florence Street, Orlando, FL 32818, USA

P-25

CHARGE INJECTION MECHANISM AT CARBON NANOTUBE-ORGANIC SEMICONDUCTOR INTERFACE, Bidut K. Sarker^{1,2}, and Saiful I. Khondaker^{1,2,3}, ¹Nanoscience Technology Center, ²Department of Physics, ³School of Electrical Engineering and Computer Science, University of Central Florida, 12424 Research Parkway, Suite 400, Orlando, Florida 32826, USA

P-26

CONDUCTING POLYMERS COMPOSITES FOR INFRARED PLASMONIC BIOSENSORS, Monas Shahzad¹, Gautam Medhi¹, R. E. Peale¹, Walter R. Buchwald², Justin W. Cleary³, Yi Liao⁴, Candace Alber⁴, Valentine Johns⁴, ¹Department of Physics, University of Central, Florida, Orlando FL 32816, ²Solid State Scientific Corp., 27-2 Wright Road, Hollis, NH 03049, ³Air Force Research Lab, Sensors Directorate, Wright Patterson AFB OH, ⁴Department of Chemistry, University of Central Florida, Orlando FL 32816

P-27

CARBON MONOXIDE DETECTION SENSITIVITY OF ZnO NANOROD-GATED AlGaIn/GaN HIGH ELECTRON MOBILITY TRANSISTORS IN DIFFERENT TEMPERATURE ENVIRONMENTS, Chien-Fong Lo¹, Lu Liu¹, S. J. Pearton², S. Doré³, C. H. Hsu⁴, A. Dabiran⁵, P. P. Chow⁵, and Fan Ren¹, ¹Department of Chemical Engineering, University of Florida, Gainesville, FL 32611, ²Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611, ³Departments of Anesthesiology, Neurology, Psychiatry and Neuroscience, University of Florida, Gainesville, FL 32610, ⁴Department of Chemical Engineering, Feng Chia University, Taichung 40724, Taiwan, ⁵SVT Associates, Eden Prairie, Minnesota 553446

P-28

PROTON IRRADIATION EFFECTS ON InAlN/GaN HIGH ELECTRON MOBILITY TRANSISTORS, Chien-Fong Lo¹, L. Liu¹, H.-Y. Kim², J. Kim², S. J. Pearton³, O. Laboutin⁴, Yu Cao⁴, J. W. Johnson⁴, I. I. Kravchenko⁵, and F. Ren¹, ¹Department of Chemical Engineering, University of Florida, Gainesville, FL 32611, ²Department of Chemical and Biological Engineering, Korea University, Seoul 136-701, Korea, ³Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611, ⁴Kopin Corporation, Taunton, Massachusetts 02780, ⁵Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37830

P-29

INVESTIGATING THE EFFECTS OF OFF-STATE STRESS AND SAMPLE TEMPERATURE ON TRAP DENSITIES IN AlGaIn/GaN HIGH MOBILITY TRANSISTORS, L. Liu¹, F. Ren¹, S. J. Pearton², R. C. Fitch³, D. E. Walker Jr.³, K. D. Chabak³, J. K. Gillespie³, M. Kossler³, M. Trejo³, David Via³, and A. Crespo³, ¹Department of Chemical Engineering, University of Florida, Gainesville FL 32611, ²Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611, ³Sensors Directorate, Air Force Research Laboratory, Wright-Patterson Air Force Base, OH 45433-7322, USA

P-30

OPTICAL PROPERTIES OF BENZYLPIPERAZINE/CuI (111) SYSTEM, Takat Rawal¹, Volodymyr Turkowski¹, Richard Blair² and Talat S. Rahman¹, ¹Physics Department and NSTC, University of Central Florida, ²Department of Chemistry and Forensic Science Center, University of Central Florida

P-31

IN-SITU STRUCTURAL CHARACTERIZATION OF SINGLE WALLED CARBON NANOTUBES IN DISPERSION, Zhiwei Xiao, Tao Liu, High-Performance Materials Institute, Florida State University, 2005 Levy Avenue, Tallahassee, FL 32310, USA

P-32

GROWTH AND CHARACTERIZATION OF RUDDLESDEN-POPPER MANGANITE PHASES, M. Lee, J. Ludwig, P. Roy, M. P. Warusawithana, Department of Physics and NHMFL, Florida State University, Tallahassee, Florida, USA

P-33

CHARACTERIZATION OF MBE-GROWN LaVO₃ - A MOTT INSULATOR, J. Ludwig^{1,2}, T. Tokumoto², S. Magill², M.P. Warusawithana^{1,2}, ¹Department of Physics, Florida State University, Tallahassee, Florida, United States, ²National High Magnetic Field Laboratory, Tallahassee, Florida, United States

P-34

TWO DIMENSIONALITY AT THE INTERFACE OF MBE - GROWN LaAlO₃ / SrTiO₃ HETEROSTRUCTURES, P. Roy, J. Ludwig, M. Lee, E. Steven, A. Kiswandhi, A. A. Pawlicki, J. Brooks, O. Vafek, M. P. Warusawithana, Department of Physics and NHMFL, Florida State University, Tallahassee, Florida, USA

P-35

DIRECT DETERMINATION OF THE DOMINANT SCATTERER IN GRAPHENE ON SILICON OXIDE, Jyoti Katoch and Masa Ishigami, Department of Physics and Nanoscience Technology Center, University of Central Florida, Orlando, FL

P-36

CHARACTERIZATION AND COMPARATIVE STUDIES OF BARIUM STRONTIUM TITANATE THIN FILMS FOR FREQUENCY TUNABLE APPLICATIONS, Supriya Ketkar¹, Manoj Kumar², Andrew Hoff¹, Thomas Weller¹ and Ashok Kumar^{2,3}, ¹Department of Electrical Engineering, ²Department of Mechanical Engineering, ³Nanotechnology Research and Education Center, University of South Florida, Tampa, FL 33620

P-37

AN EASY METHOD OF SYNTHESIS OF COPPER DOPED ZINC OXIDE NANOCRYSTALS FLUORESCING IN THE BLUE REGION, Srijita Basumallick^{1,2}, and Swadeshmukul Santra^{1,2,3}, ¹NanoScience Technology Center, ²Department of Chemistry and ³Biomolecular Science Center, University of Central Florida, 12424 Research Parkway, Suite 400, Orlando, FL 32826.

P-38

OPTIMIZATION OF DOG-LEG MEMS CANTILEVERS, Javaneh Boroumand, Imen Rezadad, Farnood Rezaie, Evan Smith, Pedro Figueiredo, Doug Maukonen, Guy Zummo, Robert E. Peale, Department of Physics, University of Central Florida, Orlando FL, USA 32816

P-39

UCF PHYSICS DEPARTMENT WAFER FABRICATION FACILITY, P. Figueiredo, E. Smith, F. Rezaie, J. Nath, D. Panjwani, G. Zummo, M. Shazad, I. Rezadad, G. Medhi, D. Maukonen, M. Ishigami, E. del Barco, R. E. Peale, Department of Physics, University of Central Florida, Orlando, FL 32816

P-40

SILICON PHOTONIC WAVEGUIDES AT 3.4 MICRON IR WAVELENGTH, Farnood K. Rezaie¹, Christopher J. Fredricksen², Pedro Figueiredo¹, Monas Shahzad¹, Javaneh Boroumand¹, Imen Rezadad¹, Walter R. Buchwald³, Guangming Tao⁴, Ayman F. Abouraddy⁴ and Robert E. Peale¹, ¹Department of physics, University of Central Florida, Orlando, FL 32816, USA, ²LRC Engineering Inc., Orlando, FL 32825, USA, ³Solid State Scientific Corporation, 12 Simon St. Nashua, NH 03060, USA, ⁴CREOL, University of Central Florida, Orlando, FL 32816, USA

P-41

THERMAL BENDING, HEAT FLOW, AND ELECTROSTATIC FORCES FOR MEMS CANTILEVERS, Imen Rezadad, Javaneh Boroumand, Robert E. Peale, Physics Department, University of Central Florida, Orlando, FL, USA

P-42

GOLD BLACK PATTERNING BY PHOTO RESIST LIFT OFF, Deep Panjwani^a, Evan Smith^a, Farnood Khalilzadeh-Rezaie^a, Doug Maukonen^a, Imen Rezadad^a, R. E. Peale^a, Chris Fredricksen^b, ^aDepartment of Physics, University of Central Florida, Orlando FL 32816, ^bLRC Engineering Inc, 9345 Chandon Dr., Orlando, FL 32825

P-43

PRINTING POLYMER-DISPERSED LIQUID CRYSTALS INTO TWO-DIMENSIONAL ORDERED ARRAYS WITH SOFT LITHOGRAPHY FOR GAS SENSOR APPLICATION, Wenlang Liang and Jiyu Fang, Advanced Materials Processing and Analysis Center and Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida, Orlando, FL 32816.

P-44

EFFECT OF PINPOINT-LIKE HEATING OF A POLYMER SOLUTION FILM COATED ON A SUBSTRATE DURING DRYING TO THICKNESS DISTRIBUTION OF THE POLYMER FILM AFTER DRYING IN PHOTOLITHOGRAPHY PROCESS, Hiroyuki Kagami, Nagoya College Department of Preschool Education, 48 Takeji, Sakae-cho, Toyoake-shi, Aichi, 470-1193, Japan

P-45

A NOVEL APPROACH FOR THE FABRICATION OF HIGH-STRENGTH MULTIFUNCTIONAL POLYMER-CARBON NANOTUBE COMPOSITE THIN FILM, Waris Obitayo, Ted Liu, Richard Liang and Chuck Zhang, High-Performance Materials Institute, FAMU-FSU College of Engineering, Florida State University, 2525 Pottsdamer Street, Tallahassee, FL 32310, USA

P-46

ZnO NANOROD-GATED AlGaIn/GaN HIGH ELECTRON MOBILITY TRANSISTOR BASED SENSOR FOR METHANE SENSING, Yuyin Xi¹, Chien-Fong Lo¹, Lu Liu¹, Fan Ren¹, S. J. Pearton², C. H. Hsu⁴, A. Dabiran⁵, P. and P. Chow⁵, ¹Department of Chemical Engineering, University of Florida, Gainesville, FL 32611, ²Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611, ³Departments of Anesthesiology, Neurology, Psychiatry and Neuroscience, University of Florida, Gainesville, FL 32610, ⁴Department of Chemical Engineering, Feng Chia University, Taichung 40724, Taiwan, ⁵SVT Associates, Eden Prairie, Minnesota 55344

P-47

ORIGINAL STRUCTURE OF CARBON NANOTUBE SHEET FOR FIELD EMISSION, Hai H. Van, Mei Zhang, Richard Liang, and Chuck Zhang, Department of Industrial and Manufacturing Engineering, FAMU-FSU College of Engineering, High-Performance Materials Institute, Florida State University, 2525 Pottsdamer Street, Tallahassee, FL 32310, USA

P-48

MANUFACTURE AND ANALYSIS OF NANOSTRUCTURE DYE SENSITIZED SOLAR CELLS, Jin Yan, Okenwa I.Okoli, High-Performance Materials Institute, Florida State University, Materials Research Building, 2005 Levy Ave., Tallahassee, FL 32310

P-49

SURFACE TREATMENT OF NiTi SHAPE MEMORY ALLOY BY FULLY DISSOCIATED OXYGEN PLASMA, Monika Jenko¹, Rebeka Rudolf², Tadej Kokalj¹, Djordje Mandrino¹ and Miran Mozetič³, ¹Institute of Metals and Technology, Lepi pot 11, 1000 Ljubljana, Slovenia, ²University of Maribor, Faculty of Mechanical Engineering, Smetanova 17, 2000 Maribor, Slovenia, ³Jožef Stefan Institute, Jamova 39, 1000 Ljubljana

P-50

N-TYPE ORGANIC FIELD EFFECT TRANSISTOR USING DENSELY ALIGNED CARBON NANOTUBE ARRAY ELECTRODES, Edwards G. Jimenez^{1,2}, Biddut K. Sarker^{2,3}, and Saiful I. Khondaker^{1,2,3}, ¹School of Electrical Engineering and Computer Science, ²Nanoscience Technology Center, ³Department of Physics, University of Central Florida, 12424 Research Parkway, Suite 400, Orlando, Florida 32826, USA