

## POSTER SESSION CONTRIBUTION

Pegasus Ballroom A-F

Poster Session Chair: Mariana Sendova, New College of Florida

Judging Session 1: Monday, March 10, 7:30-9:00 am

Judging Session 2: Monday, March 10, 4:30-6:00 pm

Judging Session 3: Tuesday, March 11, 7:30-8:30 am

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### ELECTRONIC PROPERTIES AND MOBILITY OF METAL NANOPARTICLES SUPPORTED ON TiO<sub>2</sub>

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### STRUCTURE AND DIELECTRIC PROPERTIES OF FLUORITE-RELATED COMPOUNDS: LN<sub>3</sub>NBO<sub>7</sub> AND LN<sub>2</sub>(LN',NB)O<sub>7</sub> (LN = RARE EARTH ELEMENT)

Lu Cai, Juan C. Nino, Materials Science and Engineering, University of Florida, Gainesville, FL 32611

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### EFFECT OF THE SLIDING ORIENTATION AND TEMPERATURE ON THE TRIBOLOGICAL PROPERTIES OF POLYETHYLENE IN MOLECULAR DYNAMICS SIMULATIONS

Patrick Chiu, Seong Jun Heo, Simon R. Phillpot, Susan B. Sinnott, Materials Science and Engineering Department, University of Florida, Gainesville, FL 32611

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### TRANSITION METAL COMPLEX HYDRIDES FOR VEHICULAR APPLICATION

Pabitra Choudhury, Sessa Srinivasan, Venkat R. Bhethanabotla and Elias Stefanakos, Sensors Research Laboratory, Department of Chemical Engineering, Clean Energy Research Center (CERC), University of South Florida, 4202 E. Fowler Ave., ENB 118, Tampa, FL 33620

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### MEASUREMENT OF OXYGEN DIFFUSIVITY AND PERMEABILITY IN POLYMERS USING FLUORESCENCE MICROSCOPY

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### TUNGSTEN PIPERIDYL COMPLEX CL<sub>4</sub>(CH<sub>3</sub>CN)<sub>W</sub>(N-PIP) AS A SINGLE-SOURCE CVD PRECURSOR FOR W<sub>N</sub>XCY THIN FILMS IN COPPER METALLIZATION

Dojun Kim, Juergen Koller, Joseph M. Tsai, Oh Hyun Kim, Timothy J. Anderson, Lisa McElwee-White, Department of Chemical Engineering, Department of Chemistry, Department of Material Science and Engineering, University of Florida, Gainesville, FL 32611, USA

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### CHARACTERIZATION OF SEEDING METHODS FOR THE GROWTH OF NANO-CRYSTALLINE DIAMOND FILMS

Humberto Gomez, Harish Jeedigunta, Ashok Kumar, Department of Mechanical Engineering, Department of Electrical Engineering, University of South Florida; 4202 E. Fowler Ave ENB118, Tampa, FL 33620-5350

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**SEDIMENTATION BEHAVIOR OF INORGANIC-ORGANIC COMPOSITE PARTICLES**

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**STRUCTURAL CHARACTERIZATION OF STRAINED LAYERS BY USING HIGH RESOLUTION X-RAY BASED TECHNIQUES**

J. H. Jang, M. S. Phen, A , K. S. Jones, and V. Craciun, Department of Materials Science and Engineering, University of Florida, Box 116400, Gainesville, FL 32611, USA

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**QUANTITATIVE ANALYSIS WITH ATOMIC NUMBER CONTRAST TRANSMISSION ELECTRON MICROSCOPY**

Haritha Nukala, Biao Yuan, Hilary Palmer, Helge Heinrich, Advanced Materials Processing and Analysis Center (AMPAC), University of Central Florida, P.O.Box 162566, Orlando FL 32816-2455

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**X-RAY PHOTOELECTRON INVESTIGATION OF PHOSPHOTUNGSTIC ACID AS A PROTON-CONDUCTING MEDIUM IN POLYMER ELECTROLYTES**

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**CHARACTERIZATION OF CuCrO<sub>2</sub>/CuSc<sub>1-x</sub>Mg<sub>x</sub>O<sub>2</sub> HETEROSTRUCTURES GROWN BY PULSED LASER**

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**OPTIMIZATION AND CHARACTERIZATION OF CIGS<sub>2</sub> SOLAR CELLS FOR LOWER ABSORBER THICKNESSES**

Parag S. Vasekar and Neelkanth G. Dhere, Florida Solar Energy Center, University of Central Florida 1679, Clearlake Road, Cocoa, FL-32922

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**ADHESION ENERGY CHARACTERIZATION OF LOW - K DIELECTRIC THIN FILMS USING SCRATCH TESTING**

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**SYNCHROTRON X-RAY SCATTERING OF Cu FILMS AND LINES**

Andrew P. Warren, Tik Sun, Bo Yao, Mike F. Toney, Katayun Barmak, Kevin R. Coffey, University of Central Florida, Orlando, Florida, 32816, Stanford Synchrotron Radiation Laboratory, Stanford Linear Accelerator Center, Menlo Park, CA 94025, Carnegie Mellon University, Pittsburgh, PA 15213

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**ELECTROCHEMICAL CHARACTERIZATION OF A NANOCRYSTALLINE DIAMOND ELECTRODE**

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**INVESTIGATION ON THE INVERSE SPINEL  $Mg_2SnO_4$  FOR INERT MATRIX FUEL IN LIGHT WATER REACTORS**

Peng Xu, Juan C. Nino, Materials Science and Engineering, University of Florida, Gainesville, FL 32611

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**PRESSURE DEPENDENCE OF CARBON MONOXIDE BINDING KINETICS IN MYOGLOBIN**

Silki Arora, Alfons Schulte, Department of Physics and College of Optics and Photonics, University of Central Florida, Orlando, FL 32816

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**AN ATOMISTIC STUDY OF SURFACE STABILITY IN  $PbTiO_3$  THIN FILMS BY MOLECULAR DYNAMICS SIMULATION**

Rakesh K. Behera, Beverly B. Hinojosa, Susan B. Sinnott, Aravind Asthagiri and Simon R. Phillpot, Department of Materials Science and Engineering, Department of Chemical Engineering, University of Florida, Gainesville, FL 32611

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**EFFECTS OF COMPRESSIVE LOAD ON THE TRIBOLOGICAL PROPERTIES OF BUCKY ONIONS AND BUCKY DIAMONDS**

Eric Bucholz, Simon R. Phillpot, Susan B. Sinnott, Department of Materials Science and Engineering, University of Florida, Gainesville, Florida, 32611

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**STRUCTURAL, MAGNETIC, AND ELECTRONIC PROPERTIES OF  $ZnCo_2O_4$  THIN FILMS GROWN VIA PULSED LASER DEPOSITION**

J. A. Cianfrone, D.P. Norton, M.P. Ivill, H.S. Kim, S. Rawal, Seonhoo Kim, A.F. Hebard, R.K. Das, Materials Science and Engineering, Department of Physics, Gainesville, Florida 32611-6400

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**LATTICE SIMULATIONS OF MICROTUBULE "NANOSPOOL" FORMATION DYNAMICS**

Jasmine C. Davenport, Henry Hess, and Simon R. Phillpot, Department of Materials Science and Engineering, University of Florida, 162 Rhines Hall, Gainesville FL 32611

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**NEW SPIN CORRECTION APPROACH APPLIED TO STUDY POTENTIAL ENERGY CURVES FOR 3-d TRANSITION METAL HYDRIDES**

Satyender Goel and Artem Masunov, Nanoscience Technology Center, Department of Chemistry, Department of Physics, University of Central Florida, Orlando, FL 32826

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**FIRST-PRINCIPLES STUDIES OF THE OXIDATION AND CHEMICAL REDUCTION OF TRANSITION METAL SURFACES**

Jeffery M. Hawkins, Eric D. Mondor, Aravind R. Asthagiri, Department of Chemical Engineering; University of Florida; P.O. Box 116005; Gainesville, FL 32611-6005

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**COMPUTATIONAL INVESTIGATION OF BISMUTH CONTAINING PYROCHLORES**

Beverly Brooks Hinojosa & Aravind R. Asthagiri, Department of Chemical Engineering; University of Florida P.O. Box 116005, Gainesville, FL 32611-6005

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**OXYGEN DIFFUSION THROUGH HfO<sub>2</sub> EXAMINED WITH COMPUTATIONAL METHODS**

Travis Kemper, Simon R. Phillpot, and Susan B. Sinnott, Department of Materials Science and Engineering, University of Florida, Gainesville, Florida, 32611-6400

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**EFFECT OF THIN FILM NON-LINEAR DEVICES UPON POST-DEPOSITION ANNEALING**

S. Krishnan, E. Stefanakos, S. Bhansali, Clean Energy Research Center, College of Engineering, Bio-MEMS and Microsystems Laboratory, Dept. of Elec. Engineering, University of South Florida, 4202 E. Fowler Ave., ENB 118, Tampa, FL 33620

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**THE EFFECT OF DOMAIN WALLS ON THE FERROELECTRIC PROPERTIES OF LiNbO<sub>3</sub> BY MOLECULAR DYNAMICS SIMULATION**

D. H. Lee, H. Xu, J. Piper and S. R. Phillpot, Department of Materials Science and Engineering, University of Florida, Gainesville FL 32611

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**EFFECTS OF TRIPLET ENERGY CONFINEMENT BY CHARGE TRANSPORTING LAYERS ON BLUE PHOSPHORESCENT ORGANIC LIGHT EMITTING DIODES**

Jaewon Lee, Neetu Chopra, and Franky So, Department of Materials Science and Engineering, University of Florida, 224 Rhines hall, MSE, University of Florida, Gainesville, FL 32611-6400, USA

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**INVESTIGATION OF POINT DEFECT FORMATION AND MIGRATION IN URANIUM OXIDE**

Pankaj Nerikar, Taku Watanabe, Simon R. Phillpot and Susan B. Sinnott, Materials Science and Engineering Department, University of Florida, Gainesville, Florida 32611

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**A QUANTUM CHEMICAL STUDY OF THE ATOMIC LAYER DEPOSITION OF GaN USING GaCl<sub>3</sub> and NH<sub>3</sub>**

Oh Hyun Kim, Dojun Kim, Lisa McElwee-White, and Tim Anderson, Department of Chemical Engineering, University of Florida, P.O. Box 116005, Gainesville, FL 32611, USA, Department of Chemistry, University of Florida, P.O. Box 117200, Gainesville, FL 32611, USA

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**IN-SITU GAS-PHASE CATALYTIC PROPERTIES OF GOLD NANOPARTICLES : OXIDATION STATE AND SHAPE EFFECTS**

Luis K. Ono, Hanoy Estrada, Damien Denis, Daniyar Khalitov, Beatriz Roldán Cuenya, University of Central Florida, Physics Department Orlando, FL 32816-2450

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**MORPHOLOGY TUNED SYNTHESIS OF CERIA (CeO<sub>2</sub>) NANOSTRUCTURES**

Chetak Patel, Soumitra Kar1, Jay Patel and Swadeshmukul Santra, NanoScience Technology Center, Department of Chemistry and Biomolecular Science Center, University of Central Florida, Orlando, FL

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**SELF-ASSEMBLED STEROID TUBES**

Karan Tamhane, Xuejun Zhang, Jiyu Fang, Advanced Materials Processing and Analysis Center and Department of Mechanical, Materials, and Aerospace Engineering, University of Central Florida

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**MORPHOLOGY AND GROWTH MODES OF DEPOSITED SrTiO<sub>3</sub>**

Jennifer L. Wohlwend, Rakesh K. Behera, Simon R. Phillpot, Susan B. Sinnott, Department of Materials Science and Engineering, University of Florida, Gainesville, Florida, 32605

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**SrTiO<sub>3</sub> THIN FILM DEPOSITION: A MOLECULAR DYNAMICS STUDY**

Cosima Boswell, Jennifer Wohlwend, Simon R. Phillpot, and Susan B. Sinnott, Department of Materials Science and Engineering, University of Florida, Gainesville, Florida, 32605

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**PLASMA SPRAYED CHROMIUM CARBIDE REINFORCED WITH CARBON NANOTUBES**

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**MORPHOLOGICAL EVOLUTION AND PREFERENTIAL ORIENTATION OF PLANES IN HYDROTHERMAL PROCESSED NANOCERIA RODS AND CUBES**

Jessica King, Ajay Karakoti, Swanand Patil, David Reed, Sudipta Seal, Advanced Materials and Processing Analysis Center (AMPAC), Department of Mechanical, Materials, and Aerospace Engineering Department of Chemistry, UCF, Department of Materials Science Engineering, Rutgers University

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**DESIGN AND DEVELOPMENT OF AUTOMATED MECHANICAL SCRIBER FOR SCRIBING OF THIN FILM CIGSeS PV COUPONS**

Michael Mendoza, Marco Tinoco, Justin Culmo, Jouse Marrero, Santosh D. Khatri, Shirish A. Pethe and Neelkanth G. Dhere, University of Central Florida, 4000 Central Florida Blvd., Orlando FL 32816, Florida Solar Energy Center, 1679 Clearlake Road, Cocoa FL 32922

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**CHARACTERIZATION OF NANOCRYSTALLINE THIN DIAMOND FILMS**

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**CATALYTIC DECOMPOSITION OF ALCOHOLS OVER SUPPORTED Pt NANOPARTICLES: A STUDY OF ACTIVITY, SELECTIVITY, AND STABILITY**

Simon Mostafa, J.R. Croy, B. Roldan Cuenya, Department of Physics, University of Central Florida

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**SYNTHESIS AND CHARACTERIZATION OF WATER SOLUBLE FLUORESCENT CERIUM OXIDE (CERIA) NANOPARTICLES**

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**CHARACTERIZATION OF BULK METALLIC GLASS MICROCOMPONENTS**

Jeremy Siegfried, Gerald Bourne, Major Analytical Instrumentation Center, Department of Materials Science and Engineering, 109 MAE P.O. Box 116400, Gainesville, FL 32611

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**HYBRID NANOSTRUCTURED TITANIA: SYNTHESIS, CHARACTERIZATION, AND CATALYTIC APPLICATION**

Thomas C. Spalding, Mechanical, Materials and Aerospace Engineering, Advanced Materials Processing and Analysis Center, University of Central Florida, Orlando, Florida 32816

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**STRUCTURE AND TEXTURE ANALYSES OF NiTiPd HIGH TEMPERATURE SHAPE MEMORY ALLOYS FROM IN SITU LOAD BIASED NEUTRON DIFFRACTION MEASUREMENTS**

C. Tupper, V.B. Krishnan, B. Clausen, D. Brown and R. Vaidyanathan, Advanced Materials Processing and Analysis Center; and Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida, Orlando, FL 32816, Los Alamos National Laboratory, Los Alamos, NM 87545

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**LASER MODIFICATION OF GOLD NANOCCLUSERS IN SiO<sub>2</sub> THIN FILMS**

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**EFFECTS OF RELATIVE HUMIDITY ON STABILIZED NAFION®/PHOSPHOTUNGSTIC ACID COMPOSITE MEMBRANES DURING FABRICATION PROCESS**

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**EFFECT OF TEMPERATURE AND SLIDING ORIENTATION ON FRICTION IN PTFE**

Peter R. Barry, Inkook Jang, David L. Burris, Pamela L. Dickrell, Catherine Santos, Scott S. Perry, Simon R. Phillpot, Susan B. Sinnott, W. Gregory Sawyer, Department of Material Science and Engineering, Department of Mechanical and Aerospace Engineering, University of Florida, Gainesville, FL 32611, Samsung Electronics Co., LTD, Korea, 445-701

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**TEMPERATURE SWITCHABLE SUPERHYDROPHOBIC/HYDROPHILIC PLANAR VALVES IN MICROFLUIDIC CHANNELS**

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**VERY HIGH EFFICIENCY DEEP-BLUE PHOSPHORESCENT ORGANIC LIGHT-EMITTING DEVICES**

Sang-Hyun Eom, Ying Zheng and Jiangeng Xue, Department of Materials Science and Engineering, University of Florida; Gainesville, FL 32611-6400

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**USING GOLD NANOPARTICLES AS MOLECULAR MARKERS FOR THE TREATMENT OF ISCHEMIC OSTERONECROSIS**

Korie Fairbairn, Fedena Fanord, Venkat R. Bhethanabotla, Vinay K. Gupta, Ravi Kothapalli, Harry K.W. Kim, Department of Chemical Engineering, University of South Florida, 4202 E. Fowler Ave, Tampa, Florida 33620, USA., Shriners Hospitals for Children of Tampa

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**NOVEL NANOMATERIALS BASED ON GOLD NANORODS AND A THERMALLY-RESPONSIVE POLYMER**

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**LOW ENERGY ION-BEAM MODIFICATION OF ATACTIC AND ISOTACTIC POLYSTYRENE**

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**REMOVAL OF ARSENIC FROM DRINKING WATER USING CACTUS MUCILAGE**

Dawn Fox, Thomas Pichler, Daniel Yeh, Norma Alcantar, Department of Chemical Engineering, Department of Geology, Department of Civil and Environmental Engineering, University of South Florida, Tampa, Florida

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**PREPARATION OF HIGH EFFICIENCY VISIBLE LIGHT ACTIVATED Pt/CdS PHOTOCATALYST FOR SOLAR HYDROGEN PRODUCTION**

Bello Illiassou, Cunping Huang, Ali T-Raissia & Nazim Muradova, Hydrogen division, Florida Solar Energy Center, UCF, Department of Chemistry, Florida Institute of Technology

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**INVESTIGATION OF COMPLEX HYDRIDES (LiBH<sub>4</sub> / LiNH<sub>2</sub>) FOR HYDROGEN STORAGE APPLICATIONS**

Michael Ulrich Jurczyk, Sessa Srinivasan, Ashok Kumar, Elias Stefanakos, Yogi Goswami, Department of Mechanical Engineering, Clean Energy Research Center, University of South Florida, 4202 E. Fowler Ave., Tampa, Florida 33620

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**SYNTHESIS OF YSZ-AG NANOCOMPOSITE FILMS FOR GAS SENSOR APPLICATIONS**

Denis Kitenge, Makoto Hirai, and Ashok Kumar, Department of Mechanical Engineering, Nanomaterials and Nanomanufacturing Research Center, University of South Florida, Tampa, Florida 33620-5350

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**NOVEL CONDITIONERS FOR CHEMICAL MECHANICAL POLISHING SYSTEM**

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**INORGANIC POWDER PHOSPHORS FOR DOWN-CONVERSION OF BLUE TO WHITE LIGHT**

Serge Maslov, Debasis Bera, Lei Qian, Paul H. Holloway, Department of Materials Science and Engineering, 202A Rhines Hall, P.O. Box 116400, University of Florida, Gainesville, FL, 32611-6400

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**EFFECTS OF FIELD & TEMPERATURE DURING POLING ON THE FERROELECTRIC PROPERTIES OF LEAD ZIRCONATE TITANATE (PZT)**

Anderson D. Prewitt and Jacob Jones, University of Florida

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**AU NANOPARTICLES INTEGRATED AND BIMETAL CLAD WAVEGUIDE BIOSENSOR**

H. M. Quddusi, M. Yasar, A. S. Bhatti, Department of Physics, COMSATS Institute of Information Technology, Islamabad, Pakistan

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**FABRICATION OF END-FUNCTIONALIZED GOLD NANORODS**

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**CHARACTERIZATION OF ELECTROCHEMICALLY SYNTHESIZED CHITOSAN-CONDUCTIVE POLY(N-METHYLANILINE) COMPOSITE AND ITS APPLICATION TO GLUCOSE BIOSENSOR**

Ayse Gul YAVUZ, Aysegul UYGUN, Venkat R. BHETHANABOTLA, Suleyman Demirel University, Arts and Science Faculty, Department of Chemistry, 32260 Isparta, TURKEY, Department of Chemical Engineering, University of South Florida, Tampa, Florida 33620

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**EFFECTS OF SODIUM ON THE Cu(In,Ga)Se<sub>2</sub> ABSORBER MORPHOLOGY AND STRUCTUR**

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