CINT 2019A Accepted Projects

3D Graphene structures testing for Li-ion battery cells, Tereza Paronyan, Hexalayer, LLC: *Jinkyoung Yoo*

A Combined Expereimental and Computational Investigation of the Properties of Surface Functionalized Barium Titanate Nanoparticles; Tyler Stevens, Sandia National Laboratories: *John Watt*

All-Inorganic Zero-Dimensional Perovskites Optoelectronics; Chun-Chieh Chang, National Taiwan Normal University: *John Nogan*

Biophysics of Pathogenic Amphiphiles with Biologically Patterned Membranes; Loreen Stromberg, Los Alamos National Laboratory: *Jim Werner*

Broadband terahertz quantum-cascade lasers; Benjamin Williams, University of California, Los Angeles: *John Reno*

Characterizing electron-electron interactions through Coulomb drag; Dominique Laroche, University of Florida: *John Reno*

Characterizing Optical Properties of Nanocomposite Photonic Band Gap Structures; Evgenya Simakov, Los Alamos National Laboratory: *Hou-Tong HT Chen*

Complex Oxides Nanomembranes: Synthesis, Assembly, and Order-from-Disorder Transitions in Confined Geometries; Francesca Cavallo, The University of New Mexico: *John Nogan*

Computational study of structural and electronic properties of organohalide lead perovskites; Alex Zakhidov, Texas State University: *Sergei Tretiak*

Control of Thermal Boundary Conductance via Ion Implantation; Patrick Hopkins, University of Virginia: *Khalid Hattar*

Controlling Pt single atom self-assembly in heterogeneous catalysts; Abhaya Datye, The University of New Mexico: *Katie Jungjohann*

Controlling the oxidation state of palladium during hydrocarbon oxidation reactions; Abhaya Datye, The University of New Mexico: *Katie Jungjohann*

Copy of High Performance and Low Noise MoS2 Transistors Through Schottky barrier engineering and Channel Interface Passivation; Suprem Das, Kansas State University: *Tom Harris*

Developing Non-Adiabatic Molecular Dynamics Models for Metal Clusters; Rebecca Gieseking, Brandeis University: *Sergei Tretiak*

Diamond photonic networks and TiO2 metasurface optics; Victor Acosta, The University of New Mexico: *Igal Brener*

Digitally Designed Porous Media to Control Capillary Imbibition and Release under Mechanical Deformation; Bryan Kaehr, Sandia National Laboratories: *Brad Boyce*

Direct-patterning of nanofiber-based glucose sensors on 3D contact lens using wafer scale MoS2; Jiyoung Chang, University of Utah: *Jinkyoung Yoo*

LA-UR-19-28479

Discovering the Nanoscale Mechanisms Unique to the Mechanical Fatigue of Metamaterials; Cody Kunka, Sandia National Laboratories: *Brad Boyce*

Dynamic imaging of electronic transitions in metal oxide films during in situ lithium intercalation with photoemission electron microscopy; Elliot Fuller, Sandia National Laboratories: *Taisuke Ohta*

Effect of irradiation on the microstructure evolution and deuterium permeation behavior of Al2O3 TPB; Guang-Nan Luo, Institute of Physics, Chinese Academy of Sciences: *Yongqiang Y. Wang*

Effect of solute additions to increase radiation tolerance of metallic alloys; Pascal Bellon, University of Illinois at Urbana-Champaign: *Khalid Hattar*

Effects of Radiation on Ionic Transport in NaMnO2-Nanoparticle-Based Battery Materials; Xianming Bai, Virginia Tech: *Yongqiang Y. Wang*

Electric Field-Controlled High-Order Harmonic Generation in Ferroelectric/Multiferroic Heterostructures; Michael Chini, University of Central Florida: *Aiping A. Chen*

Electrical detection of spin transport in 2D; Tellurene Peide Ye, Purdue University: *Wei Pan*

Electrical transport in InAs-GaSb nanowires for optoelectronic quantum devices; Vittorio Bellani, University of Pavia: *Wei Pan*

Electric-Double-Layer Nanowire FET for Ultra-Sensitive Nanobiosensing; Fei-Hung, Chu Vista Therapeutics, Inc: *John Nogan*

Electron microscopy imaging of polymer nanocomposites with bio-based nanoparticles; Meisha Shofner, Georgia Institute of Technology: John Watt

Electronic and Vibrational energy transfer in organic chromophores; Sebastian Fernandez Alberti, Universidad Nacional de Quilmes: *Sergei Tretiak*

Elucidating the mechanisms of gadolinium-based contrast agent-induced diseases; Brent Wagner, The University of New Mexico: *John Watt*

Erbium Doped Lithium Niobate Nanophotonics; Amir Safavi-Naeini, Stanford University: *Edward Bielejec*

Evaluation of Nanostructured Fillers for Improving Wear Performance in Fluropolymer Materials; Mark Sidebottom, Miami University: *Brad Boyce*

Exploring Energy Transport in Nanoparticle Clusters Using Time-Resolved Superresolution Microscopy; Alan van Orden, Colorado State University: *Peter Goodwin*

Exploring Multi-layered Electrified Interfaces of Ionic Liquids; Jerzy Chlistunoff, Los Alamos National Laboratory: *Millie Firestone*

Exploring Nonlinear Optics in Layered Polar Semiconductors with Large Spin-orbit Couplings; Sang-Wook Cheong, Rutgers University: *Rohit Prasankumar*

Exploring Novel Layered Transition Metal Dichalcogenide for Super Capacitor; Gang Wu, University at Buffalo: *Sergei Tretiak*

Exploring quantum Hall plateau scaling behavior in a two-dimensional hole system with strong spin-orbit coupling; Will Hardy, Sandia National Laboratories: *Tom Harris*

Extended LaMer Synthesis of Metal Insulator Transition Nanoparticles; Erika Vreeland, IR Dynamics: *Dale Huber*

Fabrication and observation of conducting filament path in Si-based nanowires; Jeehwan Kim, Massachusetts Institute of Technology: *Jinkyoung Yoo*

Fabrication and Optical Characterization of III-Nitride Core-Shell Nanostructures; Daniel Feezell, The University of New Mexico: *Igal Brener*

Fabrication of Microfluidic Channels for Studying Solid Helium-4; Michael Ray, California State University, Sacramento: *Tzu-Ming T. Lu*

Fine Excitonic Structure and Dynamics in Covalently Functionalized Carbon Nanotubes: Integrated Data-Driven Modeling, Computations and Experiment; Svetlana Kilina, North Dakota State University: *Sergei Tretiak*

GaSb-based plasmon waveguide interband cascade lasers; Rui Yang, University of Oklahoma: *John Klem*

Hamiltonian on Demand with Machine Learning Methods; Benjamin Nebgen, Los Alamos National Laboratory: *Sergei Tretiak*

Helium Bubbles in Nanostructured Oxide-Dispersion-Strengthened Ni-Mo Alloys; Bai Cui , University of Nebraska, Lincoln: *Khalid Hattar*

Helium effects on melting dynamics of tungsten; Siegfried Glenzer, SLAC National Accelerator Laboratory: *Yongqiang Y. Wang*

Highly Dispersed Pt on Faceted Ru Branched Nanoparticles for Improved Electrocatalysis of Methanol Oxidation Reaction; Richard Tilley, The University of New South Wales: *John Watt*

In Situ Electromechanical Characterization of Failure and Self-Healing Mechanisms of Metal Matrix Composites Used in Solar Cell Metallization; Sang M Han, The University of New Mexico: *Brad Boyce*

In-situ ETEM Study of Ethanol Steam Reforming on Ni/CeO2 catalysts; Joerg Jinschek, Ohio State University: *Katie Jungjohann*

In-situ micropillar testing of Beta Ti alloys; Emmanuelle Marquis, University of Michigan: *Nan N. Li*

Intersubband neurons for ultrafast optical neural networks; David Burghoff, University of Notre Dame: *John Reno*

Investigation of thermal transport in Si/SiGe superlattice nanowires; Woochul Lee, University of Hawaii at Manoa: *Jinkyoung Yoo*

Irradiation induced grain growth in UO2 thin films; Arthur Motta, Penn State University: *Aiping A. Chen*

ITO deposition for blue Vertical Cavity Surface Emitting Gallium Nitride Laser; Jung Han, Yale University: *Willie Luk*

LAMMPS simulation for the solvation energy of ions dissolved in polymeric liquids; Issei Nakamura, Michigan Technological University: *Amalie Frischknecht*

Limits of Sensitivty for Quantum Enhanced Plasmonic Sensors; Alberto Marino, University of Oklahoma: *Tzu-Ming T. Lu*

Lipid and Silica nanocarriers for anti-CRISPR mRNA and protein delivery; Kimberly Butler, Sandia National Laboratories: *John Watt*

Machine learning for functional nanomaterials discovery and analysis; Yang Zhao, Nanyang Technological University: *Sergei Tretiak*

Magnetic and Thermal Properties of Proton Irradiated van der Waals Crystals; SRINIVASA RAO SINGAMANENI, The University of Texas at El Paso: *Aiping A. Chen*

Manipulating Light Emission with Metamaterials and Metasurfaces; Jie Gao, Missouri University of Science and Technology: *Willie Luk*

Mapping the reaction mechanism of bacterial Asparaginases through quantum mechanical calculations; Juan Vanegas, University of Vermont: *Susan Rempe*

Measuring the Quantized Photocurrent Response in a Topological Chiral Crystal; Zahid Hasan, Princeton University: *Rohit Prasankumar*

Membrane binding of teixobactin derivatives; Emad Tajkhorshid, University of Illinois at Urbana-Champaign: *Susan Rempe*

mid-IR angled cavity diode lasers; Chi Yang, Air Force Research Laboratory (AFRL): *John Nogan*

Modifying the Surface Chemistry of Nanocrystalline Semiconductors for Enhanced Radiation Detection; Amanda Graff, Los Alamos National Laboratory: *Jennifer Hollingsworth*

Modulation of THz Waves via Magnetoelastoelectric Coupling in Core-Shell Nanocomposites; Ruyan Guo, The University of Texas at San Antonio: *Rohit Prasankumar*

Molecular Modeling of Nanoparticle Assemblies Under Extreme Pressures; J. Matthew Lane, Sandia National Laboratories: *Gary Grest*

Morphology and Ion Transport in Sulfonated Precise Ionomers; Karen Winey, University of Pennsylvania: *Amalie Frischknecht*

Morphology evolution in solid metal dealloying; Michael Demkowicz, Texas A&M University: *Yongqiang Y. Wang*

Nanochip fabrication for long-read DNA sequencing; Olga Amosova, Armonica technologies, LLC: *Rohit Prasankumar*

Nanocomposite Waveguides for Laser Cooling Applications; Yuliya Kuznetsova, Picotek, LLC: *John Nogan*

Nanoscale Investigation of Selective Laser Melted Austenitic Stainless Steel Corrosion Pitting Mechanisms; Eric Schindelholz, Sandia National Laboratories: *Katie Jungjohann*

Nanoscale investigation of spin dependent electron scattering; E Dan Dahlberg, University of Minnesota: *Tzu-Ming T. Lu*

Nanowire Field Effect Transistors with DeBye Layer Disrupting Electrode for Ultra-Sensitive Nanobiosensing; Spencer Farr, Vista Therapeutics, Inc: *John Nogan*

New nonadiabatic dynamics protocols for modeling of nonlinear X-ray spectroscopy in complex molecular materials; Niri Govind, Pacific Northwest National Laboratory: *Sergei Tretiak*

Nitrogen Ion Beam-Assisted Doping for Next Generation Electrocatalysts and Supports; Plamen Atanassov, University of California, Irvine: *Khalid Hattar*

Nonlinear optics for topological photonics; Yuri Kivshar, Australian National University: *John Nogan*

Nonlinear THz Metamaterials for THz High Harmonic Generation; Xiaojun Wu, Beihang University: *Hou-Tong HT Chen*

Nonpolar GaN-Based Vertical-Cavity Surface-Emitting Lasers with Nanoporous Distributed Bragg Reflectors; Daniel Feezell, The University of New Mexico: *Willie Luk*

Novel Metal-Oxide Nanocomposites in Epitaxial Thin Film Form; Haiyan Wang, Purdue University: *Hou-Tong HT Chen*

Optical summing of VCSEL array Beams; John Joseph, OptiPulse Inc.: *John Nogan*

Optimized Active AFM Probe for Near-Field Applications; Alexander Ukhanov, Actoprobe LLC: *Doug Pete*

Optoelectronic Characterizations of Nanowire Heterojunctions; Heayoung Yoon, University of Utah: *Jinkyoung Yoo*

Peptoid Microsphere Coatings: The Effects of Chain Length on Packing Density and Thermal Stability; Shannon Servoss, University of Arkansas: *Millie Firestone*

Phase-Change Dynamics in Chalcogenide Glasses for Electronic Memory; Helena Silva, University of Connecticut: *Katie Jungjohann*

Photomixer Development for Economical Spectroscopic Terahertz Sensors; Joseph Demers, Bakman Technologies LLC: *Rohit Prasankumar*

Photophysics of Guanine-Functionalized Single-Wall Carbon Nanotubes; R. Bruce Weisman, Rice University: *Stephen Doorn*

Polarity Control of Piezoelectric Aluminum Nitride Thin Films; Nathan Jackson, University of New Mexico: *Jon Kevin Baldwin*

Polyelectrolyte elasticity; Omar Saleh, University of California at Santa Barbara: *Mark Stevens*

Polymer Nanoparticle Composite Membranes for Gas Separation; Sanat Kumar, Columbia University: *Gary Grest*

Pristine or Highly Defective? Understanding the Role of Graphene Structure for Stable Lithium Metal Plating; David Mitlin, Clarkson University: *John Watt*

Probing charge and magnetic order of correlated electron states in two-dimensional material heterostructures; Jia Li, Brown University: *Andy Mounce*

Raman Scattering Readout in a Nanochannel/Nanopore DNA Sequencing Platform; Hui Xia, Armonica Technologies, LLC: *Rohit Prasankumar*

Reaction of Lithium and sodium with Transition Metal Dichalcogenides; Avinash Dongare, University of Connecticut: *Katie Jungjohann*

Resistively detected NMR as probe of topological order; Vesna Mitrovic, Brown University: *Andy Mounce*

Revealing Nonlocal, Red-Shifting and Tunneling Regimes of Gap Plasmon Resonances; Habteyes Terefe, The University of New Mexico: *Igal Brener*

Role of Strain and Defects on Optical Properties of Epitaxial Uranium Oxide Thin Films; Don Lucca, Oklahoma State University: *Aiping A. Chen*

Solution Phase Behavior of Polymer-Grafted Nanoparticles; Richard Vaia, Air Force Research Laboratory (AFRL): *Amalie Frischknecht*

Spectral function of an electron coupled to nondispersive quantum phonons; Janez Bonca, University of Ljubljana: *Stuart Trugman*

SQUID-Based Parametric Amplifier for High-Fidelity Readout of Spin Qubits; Rupert Lewis, Sandia National Laboratories: *Tom Harris*

Study the alteration of uranium oxides under combined gas-temperature-humidity conditions; Xiaofeng Guo, Washington State University: *Aiping A. Chen*

Sum-frequency generation and second harmonic generation in MoSe2/WSe2 bilayers as a function of twist angle; P. James Schuck, Columbia University: *Rohit Prasankumar*

Sustainable III-V-Bismide Alloys for Infrared Countermeasures and Sensing; Preston Webster, Air Force Research Laboratory (AFRL): *John Nogan*

Synthesis, characterization and optical properties of Cu Zn Ag In and S based nano-crystals for photo-voltaic applications; Mahinda Ranasinghe, New Mexico Tech: *Rohit Prasankumar*

TEM Analysis of Intermetallic Catalysts; Jacob Spendelow, Los Alamos National Laboratory: *John Watt*

Terahertz Quantum Cascade Lasers for Security and Military Applications; Qing Hu, Massachusetts Institute of Technology: *John Reno*

The Effect of Nanotwins on the Precipitation Pathways in Precipitate-Strengthened Superalloys; Brad Boyce, Sandia National Laboratories: *Khalid Hattar*

The effects of Helium on Microstructural Stability and Nanomechanical Property of Copper Dispersed with Tantalum Nanoclusters; Kiran Solanki, Arizona State University: *Yongqiang Y. Wang*

Top-Down Fabrication and Properties of Tailored Semiconductor Nanostructures; George Wang, Sandia National Laboratories: *Igal Brener*

Topological Quantum Materials for Quantum Computation; Wei Pan, Sandia National Laboratories: *John Nogan*

Toughening of nanocrystalline metal lattices; Anthony Garland, Sandia National Laboratories: *Brad Boyce*

Transfer-free and layer-tunable graphene synthesis on an arbitrary substrate; Gang Wang, Ningbo University: *Yongqiang Y. Wang*

Transport of Colloids in Hierarchical Nanochannels Integrated with Electronics; Sun Hae Ra Shin, Los Alamos National Laboratory: *Jinkyoung Yoo*

Transport study in twisted double few-layer WSe2 Moiré superlattice; Xiaoyan Shi, University of Texas at Dallas: *Tzu-Ming T. Lu*

Tunable Control of Mixed Ionic & Electronic Conductivity in Electroceramic Materials for Energy Storage Systems through Ion Implantation; Hui Xiong, Boise State University: *Yongqiang Y. Wang*

Two-Dimensional Terahertz Spectroscopy of BiFeO3; Jeremy Johnson, Brigham Young University: *Rohit Prasankumar*

Ultrafast and non-linear optical studies of magnetic topological materials; Yaomin Dai, Nanjing University: *Rohit Prasankumar*

Ultra-stable two-dimensional layered perovskites with high carrier mobility and their application in optoelectronic devices; Yu-An Su, National Taiwan University: *Sergei Tretiak*

Understanding Spin-dynamics and Spin-current in Non-magnetic Interfaces Sr2IrO4/Bi2Se3; Towfiq Ahmed, Los Alamos National Laboratory: *Jian-Xin Zhu*

Understanding the coupled damage effects of irradiation and corrosion; Nan Li, Los Alamos National Laboratory: *Khalid Hattar*

Use of Field Effect Transistor Nanowires to Conduct Polymerase Chain Reaction as well as to Conduct Temperature-Controlled Nanobiosensing; Spencer Farr, Vista Therapeutics, Inc: *John Nogan*

Using Machine Learning and High-Throughput Simulations to Link Experimental Diffraction to Nanoscale, Irradiation-Induced Defects; Cody Kunka, Sandia National Laboratories: *Remi Dingreville*

Using THz Magnetospectroscopy to Characterize Nonequilibrium Superconductivity; David Hilton, University of Alabama Birmingham: *Rohit Prasankumar*

Widefield Magnetic Microscopy Using Nitrogen-Vacancy Defects in Diamond; Pauli Kehayias, Sandia National Laboratories: *Andy Mounce*