

## 2009 ACS PRF Grantees

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### Doctoral New Investigator

#### Starter Grants Awarded to Faculty in Ph-D.-Granting Departments

**Dr. Hertanto Adidharma**, University of Wyoming, The Roles of Fluid Properties, Half-Cycle Slug Size, and Timing of Cyclic Injection on Water Alternating Gas Injection Performance in Near-Miscible and Miscible CO<sub>2</sub> Flooding, \$100,000.

**Dr. Christine M Aikens**, Kansas State University, Fundamental Surface Reactions of Lactic Acid with MgO, \$100,000.

**Dr. Alexander Alexeev**, Georgia Institute of Technology, Using Soft Polymers to Regulate Friction Between Sliding Surfaces, \$100,000.

**Dr. Ilke Arslan**, University of California, Davis, 3-D Quantification of Catalysts in a Reducing Environment, \$100,000.

**Dr. Baojun Bai**, Missouri University of Science and Technology, Effect of Polymer and Polymer Gel on Disproportionate Permeability Reduction to Gas and Water for Tight Gas, \$100,000.

**Dr. Zachary T. Ball**, Rice University, Synthesis and Application of Functionalized Organocopper Species by C-Si Bond Activation of Organosilane Precursors, \$100,000.

**Dr. Aditya Bhan**, University of Minnesota, Selective Catalytic Synthesis of Branched C<sub>4</sub>-C<sub>7</sub> Hydrocarbons by Low Temperature C<sub>1</sub> Homologation Reactions over Medium and Large Pore Acidic Zeolites: A Mechanistic Study, \$100,000.

**Dr. Sukalyan Bhattacharya**, Texas Tech University, Fast Simulation of Suspension Dynamics in Presence of Particle-Clusters Inside Partially Blocked Channels, \$100,000.

**Dr. Daniel L. Blair**, Georgetown University, Investigating the Micro-Mechanical Properties of Hydrogel Glasses Using Confocal-Rheology, \$100,000.

**Dr. Christoph M. Boehme**, University of Utah, Mapping of Recombination Mechanisms in Hydrogenated Amorphous Silicon with Coherent Spin Control -- a 21st Century Approach to Unsolved 20th Century Solar Cell Efficiency Challenges, \$100,000.

**Dr. Moises A. Carreon**, University of Louisville, Rational Design of Zeolite Nanocrystals and Membranes at Different Length Scales for Carbon Dioxide Separation, \$100,000.

**Dr. Chong Cheng**, University at Buffalo, State University of New York, Templating Synthesis of Polymeric Nanocages via Interfacial Polymerization of Monomer-Functionalized Surfactant Monolayer Absorbed on Crystallized Microemulsion Nanodroplets, \$100,000.

**Dr. Viktor Chikan**, Kansas State University, Investigation of Dopant Incorporation in Semiconductor Nanoparticles by In Situ Time-Resolved Fluorescence Spectroscopy and Terahertz Spectroscopy, \$100,000.

**Dr. Jih-Wei Chu**, University of California, Berkeley, Modeling the Interplay of Protein Motion and Solvation in Modulating Enzyme Activity, \$100,000.

**Dr. Carlos E. Crespo-Hernández**, Case Western Reserve University, Photochemistry of Environmentally Relevant Nitro-Polycyclic Aromatic Hydrocarbons, \$100,000.

**Dr. Robert P. Doyle**, Syracuse University, Can Vanadium Pyrophosphate Coordination Complexes Perform Butane Oxidation?, \$100,000.

**Dr. Abigail Gutmann Doyle**, Princeton University, Reaction Design for Nucleophilic Fluorination with Chiral Lewis Base Catalysts, \$100,000.

**Dr. Christophe Dupraz**, University of Connecticut, Microbial Processes During Early Diagenesis of Carbonate Reservoirs: A Laboratory Approach, \$100,000.

**Dr. Sven O. Egenhoff**, Colorado State University, Deposition on the Far End: Shale Facies Architecture as an Archive for High-frequency Cyclicality, \$100,000.

**Dr. Christopher J. Ellison**, The University of Texas at Austin, Understanding the Diffusion of Polymers Confined between Interfaces, \$100,000.

**Dr. Eric Matthew Ferreira**, Colorado State University, Ligand-Linked Catalysis: Metal-Catalyzed Functionalization via Transient Directing Group Installation, \$100,000.

**Dr. Kurt L. Frankel**, Georgia Institute of Technology, Investigating Source to Sink Processes with Cosmogenic Nuclide Concentrations in Multiple Alluvial Sediment Grain Size Fractions, \$100,000.

**Dr. Annaliese K. Franz**, University of California, Davis, New Catalytic Asymmetric Reactions of Allylsilanes and Isatins, \$100,000.

**Dr. Xuan Gao**, Case Western Reserve University, Nanowire Thermoelectrics for Energy Conversion, \$100,000.

**Dr. Christian R. Goldsmith**, Auburn University, Halogenation of Petroleum-Based Hydrocarbon Substrates by First-Row Transition Metal Ion Complexes, \$100,000.

**Dr. Michael J. Gordon**, University of California, Santa Barbara, Near-Field Vibrational Spectroscopy and Imaging of Chemical Species on Individual Nanoparticles During Catalytic (De)Hydrogenation, \$100,000.

**Dr. John K. Grey**, University of New Mexico, Uncovering and Understanding Morphology-Dependent Charge Transport and Trapping in Polymer Photovoltaic Materials, \$100,000.

**Dr. Hairong Guan**, University of Cincinnati, New Catalysis with Nickel Pincer Complexes, \$100,000.

**Dr. Kristjan Haule**, Rutgers, The State University of New Jersey, Correlated Electron Materials for Thermoelectric Applications: A Computational DFT+DMFT Approach, \$100,000.

**Dr. Ryan C. Hayward**, University of Massachusetts Amherst, Supramolecular Assembly of Polymers at Interfaces, \$100,000.

**Dr. Sarah C. Heilshorn**, Stanford University, Self-Assembling Materials for Energy Storage and Transport, \$100,000.

**Dr. Seth B. Herzon**, Yale University, Metal-Catalyzed Addition of Aminoborane Reagents to Olefins, \$100,000.

**Dr. Haiying Huang**, Georgia Institute of Technology, Numerical Analysis of Fluid Injection into Granular Media: Transition from Viscous Fingering to Hydraulic Fracturing, \$100,000.

**Dr. Francisco R. Hung**, Louisiana State University, Molecular Modeling of Ionic Liquids Confined in Nanoporous Carbons, \$100,000.

**Dr. Katharine Huntington**, University of Washington, The Use of Carbonate 'Clumped Isotope' Thermometry to Quantify Temperatures of Burial and Diagenesis from 0-200°C, \$100,000.

**Dr. Geoffrey Hutchison**, University of Pittsburgh, Tailorable Organic Nanoscale Piezoelectrics for Energy Harvesting, \$100,000.

**Dr. Junji Iwahara**, The University of Texas Medical Branch at Galveston, NMR Study of Kinetics of Protein/Cellulose Interactions, \$100,000.

**Dr. Malika Jeffries-EL**, Iowa State University, Benzobisazoles as Modular Building Blocks for Novel Organic Electronic Materials, \$100,000.

**Dr. Michael P. Jensen**, Ohio University, Structural and Functional Modeling of Nickel Superoxide Dismutase, \$100,000.

**Dr. Hae-Kwon Jeong**, Texas A&M University, Understanding the Interface between Nanoporous Inorganic Materials and Polymer for Organic-Inorganic Composite Gas Separation Membranes, \$100,000.

**Dr. Miriam E. Katz**, Rensselaer Polytechnic Institute, Constructing Global  $\delta^{13}\text{C}_{\text{carb}}$  and  $\delta^{13}\text{C}_{\text{org}}$  Reference Curves for the Triassic, \$100,000.

**Dr. Chenghong Ke**, State University of New York at Binghamton, Investigating Interfacial Stress Transfer in Carbon Nanotube-Reinforced PMMA Polymers, \$100,000.

**Dr. Peter G. Khalifah**, State University of New York at Stony Brook, Design of Pt-Free Complex Metal Oxide Electrocatalysts for Oxygen Reduction Reactions in Fuel Cells, \$100,000.

**Dr. Michael Kruk**, City University of New York, College of Staten Island, New Opportunities in the Synthesis of Ultra-Large-Pore Ordered Mesoporous Materials, \$100,000.

**Dr. Tristan H. Lambert**, Columbia University, Development of Intramolecular [4+1] Cycloadditions, \$100,000.

**Dr. Christy F. Landes**, Rice University, Transport in Supported Polyelectrolyte Membranes, \$100,000.

**Dr. Yongsheng Leng**, George Washington University, Structure and Dynamics of Aqueous and Aqueous-Hydrocarbon Fluids between Charged Surfaces, \$100,000.

**Dr. Shih-Yuan Liu**, University of Oregon, Exploring the B-N/C=C Isosterism in Carbon-Rich Compounds, \$100,000.

**Dr. Jason Locklin**, University of Georgia, Reconstituting Enzymes for Direct Electron Transfer through Surface Initiated Polymerization of Conjugated Polymers, \$100,000.

**Dr. Rowena B. Lohman**, Cornell University, Active Fold Growth Studies with InSAR, \$100,000.

**Dr. Rene Lopez**, University of North Carolina at Chapel Hill, Control of Fundamental Length Scales in Polymer Solar Cells, \$100,000.

**Dr. Haoxiang Luo**, Vanderbilt University, Three-Dimensional Fragmentation of Core-Annular Flow, \$100,000.

**Dr. Cora E. MacBeth**, Emory University, New Transition Metal Catalysts for Selective C-H Oxidation Chemistry, \$100,000.

**Dr. Spandan Maiti**, Michigan Technological University, Investigation of Crack-Wake Effects on Fracture Toughness of Geological Materials, \$100,000.

**Dr. David W. McCamant**, University of Rochester, Two-Dimensional Raman Spectroscopy of Metallocenes: Probing the Dynamics of Organometallic Bonds, \$100,000.

**Dr. Robert F. McDermott**, University of Wisconsin-Madison, Nuclear Spin Relaxation and Restricted Diffusion in Microtesla Magnetic Fields, \$100,000.

**Dr. V. Faye McNeill**, Columbia University, Sources and Chemistry of Organic Aerosol Material, \$100,000.

**Dr. Ethan Davis Minot**, Oregon State University, Photocarrier Generation and Multiplication in Carbon Nanotubes, \$100,000.

**Dr. Liviu M. Mirica**, Washington University, Renewable Energy Catalysis: The Study of Water Oxidation by Binuclear Metal Complexes, \$100,000.

**Dr. Yuriy Mozharivskyj**, McMaster University, Layered Rare-Earth Antimony and Bismuth Suboxides as Novel Thermoelectric Materials, \$100,000.

**Dr. Bradley L. Nilsson**, University of Rochester, Asymmetric Decarboxylative Protonation of  $\alpha$ -Aminomalonate Esters for the Synthesis of  $\alpha$ -Amino Acids, \$100,000.

**Dr. Justin M. Notestein**, Northwestern University, Surface Organometallic Chemistry for Improved Performance and Understanding of Hydrodenitrogenation Catalysis, \$100,000.

**Dr. Sang Hyun Oh**, University of Minnesota, Harnessing Surface Plasmon Subwavelength Optics in Metallic Nanostructures for Enhanced Efficiency in Thin-Film Solar Cells, \$100,000.

**Dr. Baron Gabriel Peters**, University of California, Santa Barbara, Mechanism of  $\text{CH}_3\text{ReO}_3$  Activation for Olefin Metathesis on Amorphous Silica-Alumina, \$100,000.

**Dr. Ekaterina Pletneva**, Dartmouth College, Ligand Substitution and Conformational Control of a Metal-Site Redox Function, \$100,000.

**Dr. Nick C. Polfer**, University of Florida, Vibrational and Electronic Spectroscopy of Cationic Diamondoids, \$100,000.

**Dr. Rodney Dewayne Priestley**, Princeton University, Nanoengineering Polymeric Membranes for Gas Separations and Proton Exchange, \$100,000.

**Dr. Qiquan Qiao**, South Dakota State University, Demonstrate the Feasibility of Using Triplet Polymers with Variable Bandgaps for Efficient Photovoltaics, \$100,000.

**Dr. William D. Ristenpart**, University of California, Davis, Non-Coalescence of Oppositely Charged Water Drops During Electrostatic Dehydration of Petroleum, \$100,000.

**Dr. Tobias Ritter**, Harvard University, Low-Valent Iron-Catalyzed Transformations of Unsaturated Hydrocarbons, \$100,000.

**Dr. Connie B. Roth**, Emory University, Structural Relaxation of Polymers in Nanoconfined Geometries: Reconciling the Accelerated and Suppressed Physical Aging Observed in Different Systems, \$100,000.

**Dr. James M. Russell**, Brown University, The Methylation Index of Branched Tetraethers (MBT) as a Temperature Proxy in Lakes: Investigation, Calibration, and Validation, \$100,000.

**Dr. Johan Schijf**, University of Maryland, A New Hypothesis for Interpreting the Sedimentary Cerium Anomaly Paleo-Redox Proxy in Oil Shale Depositional Environments: The Influence of Particulate Carrier Fluxes (Mn, Fe, Algal Tissue), \$100,000.

**Dr. Jana Khandogin Shen**, University of Oklahoma, Probing Regular Solution Theory for Mixed Amphoteric/Ionic Surfactant Systems by Molecular Dynamics Simulations, \$100,000.

**Dr. Sara E. Skrabalak**, Indiana University, Electrospray Synthesis of Composite Photocatalysts with Controlled Architectures, \$100,000.

**Dr. Lyudmila V. Slipchenko**, Purdue University, Phase Separation in Hydrocarbon-Alcohol-Water Systems at the Molecular Level: A First-Principles-Based Theoretical Study, \$100,000.

**Dr. Kian Lee Tan**, Boston College, Catalytic Scaffolding Ligands: An Efficient Directing Group Strategy, \$100,000.

**Dr. Barry C. Thompson**, University of Southern California, Development of Stereoregular Electroactive Block Copolymers for the Supramolecular Assembly of Organic Photovoltaics, \$100,000.

**Dr. Michael Tice**, Texas A&M University, Heavy Mineral Sorting Processes and their Geochemical Detection: Development of a New Interpretive and Stratigraphic Tool in the Upper Permian Brushy Canyon Formation, West Texas, \$100,000.

**Dr. Ashutosh Tiwari**, University of Utah, Solid-State Dye-Sensitized Solar Cells: Fabrication and Fundamental Investigations, \$100,000.

**Dr. Maxim G. Vavilov**, University of Wisconsin-Madison, Theoretical Study of Charge Carrier Transport in Nanocomposite Photovoltaic Devices, \$100,000.

**Dr. Bryan D. Vogt**, Arizona State University, Assembly of Organometallics in Polymeric Templates for Metal Coated Mesoporous Materials, \$100,000.

**Dr. Chunlei Wang**, Florida International University, Fabrication and Investigation of Porous Tin Oxide Anodes for Li-Ion Micro Batteries, \$100,000.

**Dr. Adam Wasserman**, Purdue University, Density Functional Resonance Theory of Metastable Negative Ions, \$100,000.

**Dr. Daniel John Weix**, University of Rochester, Transition-Metal Catalyzed Direct Addition of Organohalides to Carbonyls and Imines, \$100,000.

**Dr. Benjamin A. Wilhite**, University of Connecticut, Electroceramic Materials for High-Purity Hydrogen Extraction from Liquid Hydrocarbon Fuels: Fundamental Investigations of Coupled Electrochemical and Catalytic Phenomena, \$100,000.

**Dr. Elsa Yan**, Yale University, Transport Kinetics of Surfactant Molecules between Emulsion Particles Probed by Surface Specific Second-Harmonic Generation, \$100,000.

**Dr. Gleb Yushin**, Georgia Institute of Technology, Metal Oxide Nanoparticles for High Energy Electrochemical Capacitors, \$100,000.

**Dr. Ye Zhang**, University of Wyoming, Evaluation of CO<sub>2</sub> Modeling Uncertainties in Deep Saline Aquifers: a Flow Relevance Study using Experimental Stratigraphy and Field Verification (Mt. Simon Sandstone, Illinois Basin), \$100,000.

**Dr. Peihong Zhang**, University at Buffalo, State University of New York, New Mechanisms of Hydrogen Storage from Chemical Frustration, \$100,000.

**Dr. Weilie Zhou**, University of New Orleans, Direct Growth of Type II Core/Shell Nanowire Array on Transparent Conducting Oxide (TCO) Substrate for Potential Solar Cell Application, \$100,000.

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**New Directions  
Awards for Fundamental Research**

**Dr. Chelsey D. Baertsch**, Purdue University, Understanding the Function of Supported Redox Catalysts Using New Capabilities for Measuring Domain Size and Turnover Rate, \$100,000.

**Dr. Allen J. Bard**, The University of Texas at Austin, Renewable Energy from a Neglected Photovoltaic Material: Boron Arsenide, \$100,000.

**Dr. Eric Borguet**, Temple University, Acid-Base Chemistry at Aqueous-Mineral Interfaces, \$100,000.

**Dr. Steven L. Bryant**, The University of Texas at Austin, Evaluation of Nanoparticle-Stabilized Emulsions for Improved Oil Recovery, \$100,000.

**Dr. Bulbul Chakraborty**, Brandeis University, Pattern Formation in Spatially Structured Active Media: Theory and Simulations, \$100,000.

**Dr. Shaowei Chen**, University of California, Santa Cruz, Nanoplasmonics-Based Photovoltaics, \$100,000.

**Dr. Sung Kwon Cho**, University of Pittsburgh, Bubble Detachment on Micro/Nano Structured Solid Surfaces in Energy Applications, \$100,000.

**Dr. Michael R. Detty**, University at Buffalo, State University of New York, Engineering the Photosensitizer-Semiconductor Interface in Dye-Sensitized Solar Cells, \$100,000.

**Dr. Anthony D. Dinsmore**, University of Massachusetts Amherst, Phase Transitions in Mixtures of Micelles and Polyelectrolytes: Electrostatic Assembly of Soft Colloids, \$100,000.

**Dr. William A. Ducker**, Virginia Polytechnic Institute and State University, Direct Measurement of the Force between Neutral Dipolar Materials Induced by External Electrostatic Fields, \$100,000.

**Dr. Gregor P. Eberli**, University of Miami, RSMAS, Controls on Cold-Water Coral Mound Morphology in the Straits of Florida, \$100,000.

**Dr. James D. Farquhar**, University of Maryland, Temperature Dependence of  $^{13}\text{C}$ - $^{18}\text{O}$  'Clumping' in Synthetic Aragonite: Calibration of a New Paleothermometer, \$100,000.

**Dr. Martha A. Grover**, Georgia Institute of Technology, Coarse-Graining of Molecular Dynamics Simulation via Model Reduction with Application to Polyolefin Tacticity for Morphology Control, \$100,000.

**Dr. Hua Guo**, University of New Mexico, Catalytic Mechanisms for Hydrogen Production by Methanol Steam Reforming, \$100,000.

**Dr. Ronald C. Hedden**, Texas Tech University, Non-Affine Swelling and Swelling Kinetics of Microporous Polyelectrolyte Gels, \$100,000.

**Dr. Robin G. Hicks**, University of Victoria, 'Nindigo': Indigo Diimines as a New Functional Bridging Ligand Family, \$100,000.

**Dr. Andrew P. Hong**, University of Utah, Interaction of Expanding Microbubbles with Heavy Hydrocarbon in Multiphase Environment, \$100,000.

**Dr. Kai Carsten Hultsch**, Rutgers, The State University of New Jersey, Alkali and Alkaline Earth Metal Complexes for Catalytic Hydroaminations, \$100,000.

**Dr. Li Jia**, The University of Akron, Design and Synthesis of n-Type Conjugated Polymers with Exceptionally High Electron Affinities for Photovoltaic Application, \$100,000.

**Dr. Cherie R. Kagan**, University of Pennsylvania, Organic and Inorganic Architectures for Solution-Processable, Solar Photovoltaics, \$100,000.

**Dr. Paul Kapp**, University of Arizona, Wind Erosion in the Qaidam Basin: Records, Rates, and Broader Implications, \$100,000.

**Dr. Steven R. Kass**, University of Minnesota, Novel Hydrogen-Bonded Acids and Bases, \$100,000.

**Dr. Anne Myers Kelley**, University of California, Merced, Metal Nanoparticle Enhancement of Organic Polymer Solar Cell Efficiency: Raman and Optical Studies, \$100,000.

**Dr. Richard A. Kemp**, University of New Mexico, pi-Bonded Cationic Ligands as Catalysts and Precursors, \$100,000.

**Dr. Donald M. Kurtz**, The University of Texas at San Antonio, A Protein Scaffold Approach to Photochemical H<sub>2</sub> Production, \$100,000.

**Dr. Thein Kyu**, The University of Akron, Photoisomerization Induced Mesophase Transitions in Mixtures of Crystalline Liquid Crystalline Azobenzene with Photocurable Mesogenic Monomers, \$100,000.

**Dr. Tianquan (Tim) Lian**, Emory University, Vibrational Sum-Frequency Probe of Interfacial Electron Transfer Dynamics, \$100,000.

**Dr. Yun-Ming Lin**, University of Toledo, Probing the Mechanism of the Asymmetric Wynberg Reaction Promoted by a New Lewis Acid-Lewis Base Bifunctional Catalyst, \$100,000.

**Dr. Charles L. Liotta**, Georgia Institute of Technology, Sustainable Synthesis of Nanoparticles, \$100,000.

**Dr. Timothy W. Lyons**, University of California, Riverside, Distinguishing Between Marine and Nonmarine Deposition on Early Earth: New Perspectives on Precambrian Source Rocks Gained from Modern Lakes, \$100,000.

**Dr. E. Neil G. Marsh**, University of Michigan, Mechanism of Aldehyde Decarbonylase, a Novel Enzyme Involved in Hydrocarbon Biosynthesis, \$100,000.

**Dr. Maria M. Martinez-Inesta**, University of Puerto Rico at Mayaguez, Development Of A Scattering Characterization Technique To Study The Nucleation And Growth Mechanism Of Supported Metals, \$100,000.

**Dr. Garrett Matthews**, University of South Florida, Tampa, An Investigation of Rolling and Sliding Friction on the Nanoscale, \$100,000.

**Dr. J. Scott McIndoe**, University of Victoria, Prising Open the Black Box: Probing the Nature of Methylaluminoxane Using Mass Spectrometry, \$100,000.

**Dr. Jeffrey F. Morris**, City University of New York, City College, Boundary Wear Induced by Flow of Concentrated Suspensions, \$100,000.

**Dr. Alexander V. Neimark**, Rutgers, The State University of New Jersey, Adsorption and Chromatographic Separation of Chain Molecules on Nanoporous Substrates, \$100,000.

**Dr. Frank E. Osterloh**, University of California, Davis, Photocatalytic Conversion of Cellulosic Biomass into Gaseous Fuels, \$100,000.

**Dr. Matthew F. Paige**, University of Saskatchewan, Photoluminescence Upconversion in Solution and Solid-State via Triplet-Triplet Annihilation, \$100,000.

**Dr. Adina Paytan**, University of California, Santa Cruz, A Paleotemperature Proxy Record Across the End-Permian Extinction Horizon and Through the Triassic Recovery Interval from Oxygen Isotopes in Conodont Apatite, \$100,000.

**Dr. Jamie D. Phillips**, University of Michigan, Intermediate-band Optoelectronic Transitions in ZnTeO for High-efficiency Solar Energy Conversion, \$100,000.

**Dr. Flynn W. Picardal**, Indiana University, Biogenic Coalbed Methane Production: Determination of Chemical Compound Classes Supporting Microbial Methanogenesis, \$100,000.

**Dr. Lionel W. Poirier**, Texas Tech University, Accurate Quantum Dynamical Exploration of Fundamental Interactions between Hydrogen and Carbon Nanotubes,, \$100,000.

**Dr. Elsa Reichmanis**, Georgia Institute of Technology, A Graft Semiconductor Approach to Novel Materials for Photovoltaic Applications, \$100,000.

**Dr. Scott A. Reid**, Marquette University, Experimental Probes of Key Organometallic Reactive Intermediates: Metal Carbenes, \$100,000.

**Dr. Jeffrey M. Rickman**, Lehigh University, Modeling the Coupling of Elastic Anisotropy and Network Topology in Poroelastic Transport, \$100,000.

**Dr. Kenneth D. Ridgway**, Purdue University, Geodynamics of Flat-Slab Subduction, Sedimentary Basin Development, and Hydrocarbon Systems Along the Southern Alaska Convergent Plate Margin, \$100,000.

**Dr. Laurel L. Schafer**, University of British Columbia, Catalytic C-H Functionalization of  $sp^3$  Hybridized Bonds Adjacent to Nitrogen. New Metal Complexes for the Atom Economic Synthesis of  $\alpha$ -Chiral Amines, \$100,000.

**Dr. Susannah L. Scott**, University of California, Santa Barbara, PGM-Substituted Complex Oxide Catalysts for Selective Hydrocarbon Transformations, \$100,000.

**Dr. Trevor J. Sears**, State University of New York at Stony Brook, Frequency-Based Optical Spectroscopy, \$100,000.

**Dr. Jason M. Shearer**, University of Nevada, Reno, Designed Porphyrin-Peptide-Peptide Nucleic Acid Hybrids as Oxidation Catalysts, \$100,000.

**Dr. Michael J. Solomon**, University of Michigan, Small-Angle Dynamic Light Scattering of Dilute Poly(ethylene oxide) Aggregates, \$100,000.

**Dr. David A. Spivak**, Louisiana State University, Synthesis and Development of Novel Bis-Siloxy Arenes for Functionalized Magnetic Nanoparticles, \$100,000.

**Dr. Dean J. Tantillo**, University of California, Davis, Transition State Complexation in the Design of Hydrocarbon Rearrangements, \$100,000.

**Dr. Jeffrey D. Winkler**, University of Pennsylvania, Design and Synthesis of Novel Chiral Clefts and Helical Structures, \$100,000.

**Dr. David Tai-Wei Wu**, Colorado School of Mines, Hybrid Theory and Simulation of Polymer Electrolytes for Batteries, \$100,000.

**Dr. Choong-Shik Yoo**, Washington State University, High-Pressure Kinetic Studies of Formation, Phase Transition and Crystal Growth of Methane Hydrates in Dynamic-DAC, \$100,000.

**Dr. Lei Zhu**, Case Western Reserve University, Unimolecular Polymeric Janus Nanoparticles: Synthesis, Self-Assembly and Applications, \$100,000.

**Dr. Steven C. Zimmerman**, University of Illinois at Urbana-Champaign, Monovalent, Ultra Long-Lived Fluorescent Organic Nanoparticles, \$100,000.

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**Type SE**  
**ACS PRF Grants for Scientific Education**

**Dr. Alex Adronov**, Macromolecular Science and Engineering Division, Polymers in Nanoscale Composites and Assemblies, at the 92nd Canadian Society for Chemistry Conference and Exhibition, May 30-June 3, 2009, Hamilton, ON, \$3,000.

**Dr. Ross J. Angel**, American Crystallographic Association, Transactions Symposium on Phase Transitions, at the American Crystallographic Association meeting, July 24-30, 2009, Toronto, ON, Canada, \$4,200.

**Dr. Thomas Autrey**, ACS Division of Fuel Chemistry, Advances in Experimental and Computational Studies of Chemical Hydrides for Hydrogen Storage, at the ACS National Meeting, August 16-20, 2009, Washington, DC, \$4,500.

**Dr. Ignacio Vargas Baca**, CSC Division of Inorganic Chemistry, Novel Bonding and Structural Modalities in Main-Group Chemistry, at the 92nd Canadian Society for Chemistry Conference and Exhibition, May 30-June 3, 2009, Hamilton, ON, \$4,500.

**Dr. Zlatko Bacic**, ACS Division of Physical Chemistry, Molecular Hydrogen in Nanoporous Materials: Meeting Ground for Theory and Experiment, at the ACS National Meeting, March 22-26, 2009, Salt Lake City, UT, \$4,500.

**Dr. Andre D. Bandrauk**, ACS Division of Physical Chemistry, Attosecond Science - The Next Frontier, at the ACS National Meeting, March 22-26, 2009, Salt Lake City, Utah, \$4,500.

**Dr. Kenneth G. Caulton**, ACS Division of Inorganic Chemistry, Advances in Metal-Mediated Bond Activation: From Unusual Bonding Motifs to Applications in Catalysis, at Pacifichem, December 15-20, 2010, Honolulu, HI, \$4,500.

**Dr. Donna A. Chen**, ACS Catalysis & Surface Science Secretariat, George Olah Award Symposium in Honor of Cynthia Friend, at the ACS National Meeting, Salt Lake City, UT, \$4,500.

**Dr. Sarah L. Codd**, Groupement Ampere, Nuclear Magnetic Resonance Research in Petroleum Related Topics, at the 10th International Conference on Magnetic Resonance Microscopy (ICMRM), Aug. 30-Sept. 4, 2009, West Yellowstone, MT, \$4,500.

**Dr. Paul S. Cremer**, ACS Division of Colloid and Surface Chemistry, The Influence of Ions and Osmolytes on Aqueous Macromolecules, at the ACS National Meeting, March 22-26, 2009, Salt Lake City, UT, \$1,500.

**Dr. Warren T. Ford**, ACS Division of Polymer Chemistry, Polymers and Carbon Nanotubes, at the ACS National Meeting, March 22-26, 2009, Salt Lake City, UT, \$4,500.

**Dr. Elena Galoppini**, Inter-American Photochemical Society, 19th Inter-American Photochemical Society Winter Conference, January 2-5, 2009, St. Pete Beach, FL, \$4,500.

**Dr. Gillian R. Goward**, Physical Theoretical and Computational Division of CSC, Materials and Magnetic Resonance, at the 92nd Canadian Society for Chemistry Conference and Exhibition, May 30-June 3, 2009, Hamilton, ON, \$1,500.

**Dr. Gillian R. Goward**, Physical Theoretical and Computational Division of CSC, Energy Storage and Conversion, at the 92nd Canadian Society for Chemistry Conference and Exhibition, May 30-June 3, 2009, Hamilton, ON, \$3,000.

**Dr. C. Allan Guymon**, ACS Division of Polymer Chemistry, Polymerizations in Nanostructured and Nanocomposite Systems, at the ACS National Meeting, March 22-26, 2009, Salt Lake City, UT, \$2,500.

**Dr. Ryan C. Hayward**, ACS Division of Polymer Chemistry, Active and Responsive Surfaces, at the ACS National Meeting, March 22-26, 2009, Salt Lake City, UT, \$4,500.

**Dr. Hendrik Heinz**, ACS Division of Polymeric Materials: Science and Engineering, Simulation of (Bio)Organic-Inorganic Interfaces and Nanostructures Using MD, MC, and Multiscale Approaches, at the ACS National Meeting, August 16-20, 2009, Washington DC, \$4,500.



**Dr. Cecilia D. Hernandez**, American Chemical Society - Project SEED, ACS Project SEED Summer Experiences for the Economically Disadvantaged High School Students, \$180,000.

**Dr. Mei Hong**, Rocky Mountain Conference on Analytical Chemistry, Solid-State NMR Symposium of the 51st Rocky Mountain Conference on Analytical Chemistry, July 19-23, 2009, Snowmass, CO, \$3,600.

**Dr. Robert J. Hughes**, American Chemical Society - ACS Scholars, American Chemical Society Scholars Program, \$150,000.

**Dr. Frieder Jaekle**, ACS Division of Inorganic Chemistry, Organoboron, Organosilicon and Organophosphorus as Optoelectronic and Energy-related Materials, at Pacifichem, December 15-20, 2010, Honolulu, HI, \$4,500.

**Dr. Ben W.-L. Jang**, ACS Division of Fuel Chemistry, Fuels of the Future, at the ACS National Meeting, March 21-25, 2010, San Francisco, CA, \$4,500.

**Dr. Regis J. Kline**, ACS Division of Polymeric Materials: Science and Engineering, Chemical and Morphological Influences on the Efficiency and Lifetime of Organic Photovoltaics, at the ACS National Meeting, August 16-20, 2009, Washington, DC, \$4,500.

**Dr. Christopher Y. Li**, Materials Research Society, Synthesis of Bio-inspired Hierarchical Soft and Hybrid Materials, at the MRS Spring Meeting, April 13-17, 2009, San Francisco, CA, \$4,000.

**Dr. Leonard R. MacGillivray**, ACS Iowa Local Section, Supramolecular Chemistry, at the Midwest Regional Meeting of the American Chemical Society, Oct. 21-24, 2009, Iowa City, IA, \$1,500.

**Dr. Mark J. MacLachlan**, CSC Division of Inorganic Chemistry, Multimetallic Complexes: New Molecules and Materials, at the 92nd Canadian Chemistry Conference and Exhibition, May-June 2009, Hamilton, ON, \$4,500.

**Dr. Mark J. MacLachlan**, CSC Division of Inorganic Chemistry, Schiff Base Macrocycles and Materials, at Pacifichem, December 15-20, 2010, Honolulu, HI, \$3,000.

**Dr. Guangzhao Mao**, ACS Division of Colloid and Surface Chemistry, Hybrid Colloids, Interfaces, and Nanomaterials, at the ACS National Meeting, August 16-20, 2009, Washington, DC, \$1,500.

**Dr. Yuriy Mozharivskyj**, Canadian Society for Chemistry CIC, Solid-State Materials: Structure, Bonding and Properties, at the Canadian Society for Chemistry Conference and Exhibition, May 30-June 3, 2009, Hamilton, ON, Canada, \$4,500.

**Dr. Georgii I. Nikonov**, CSC Division of Inorganic Chemistry, Organometallic Chemistry of the d- and f-block Metals, at the 92nd Canadian Society for Chemistry Conference and Exhibition May 30-June 3, 2009 Hamilton, ON, Canada, \$3,000.

**Dr. Frank E. Osterloh**, International Society for Optical Engineering (SPIE), Solar Hydrogen and Nanotechnology IV Symposium, August 2-6, 2009, San Diego, CA, \$4,500.

**Dr. Kirt A. Page**, ACS Division of Polymer Chemistry, Polymers in Membrane Technology, at the ACS National Meeting, August 16-20, 2009, Washington, DC, \$3,000.

**Dr. Maria M. Santore**, ACS Division of Colloid and Surface Chemistry, Patchy Particles and Surfaces of Engineered Heterogeneity: Synthesis to Dynamic Function, at the ACS National Meeting, August 16-20, 2009, Washington DC, \$3,000.

**Dr. Michael S. Silverstein**, ACS Division of Polymeric Materials: Science and Engineering, Porous Polymers, at the ACS National Meeting, August 16-20, 2009, Washington, DC, \$4,500.

**Dr. Stuart L Soled**, ACS Catalysis & Surface Science Secretariat, Chemistry for Catalyst Synthesis, at the ACS National Meeting, March 22-26, 2009, Salt Lake City, UT, \$4,500.

**Dr. Ponisseril Somasundaran**, ACS Division of Colloid and Surface Chemistry, At the Fluid Interface: Monolayers of Surfactants, Microparticles and Nanoparticles, at the 83rd ACS Colloid and Surface Science Symposium, June 14-19, 2009, New York, NY, \$4,500.

**Dr. Yuhua Tong**, ACS Division of Polymer Chemistry, Polymers in Electrophotography, at the ACS National Meeting, March 22-26, 2009, Salt Lake City, UT, \$3,000.

**Dr. Rik R. Tykwinski**, CSC Division of Organic Chemistry, Modern Acetylene Chemistry, at the 92nd Canadian Society for Chemistry National Meeting, May 30-June 3, 2009, Hamilton, ON, \$3,000.

**Dr. Art van der Est**, Brock University, The 11th International Symposium on Spin and Magnetic Field Effects in Chemistry and Related Phenomena, August 9-14, 2009, ON, Canada, \$4,500.

**Dr. Mario Villalobos**, ACS Division of Geochemistry, Geochemical Processes, Reactivity, and Applications of Mn Oxides, at the ACS National Meeting, March 22-26, 2009, Salt Lake City, UT, \$1,500.

**Dr. Andriy Voronov**, ACS Division of Polymeric Materials: Science and Engineering, Hybrid Smart Micro- and Nanoparticles, at the ACS National Meeting, August 16-20, 2009, Washington, DC, \$4,200.

**Dr. Boris Zemva**, ACS Division of Fluorine Chemistry, Neil Bartlett Memorial Symposium: the Realization of a Legacy to Inorganic Fluorine Chemistry, at the 19th International Symposium on Fluorine Chemistry and the 19th International Symposium on Fluorous Technologies, August 23-28, 2009, Jackson Hole, WY, \$1,500.

**Dr. Julian X. X. Zhu**, IUPAC POC 09, Electroactive and Photoactive Organic Polymers: Synthesis, Characterization, and Their Uses, in the 13th International IUPAC Conference on Polymers and Organic Chemistry (POC 09) July 5-9, 2009, Montreal, Canada, \$3,000.

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**Type UFS****Undergraduate Faculty Sabbaticals**

**Dr. Janice E. Chadwick**, Fullerton College, Doping, Charge Transport and Junction Formation in Colloidal Nanocrystal Films.

**Dr. Jennifer T. Heath**, Linfield College, Effect of Grain Boundary Type on Sub-bandgap Defects in Polycrystalline Silicon Films.

**Dr. Donald A. Krogstad**, Concordia College, Development and Study of Water-soluble Bifunctional P,N Ligands for Green Catalysis.

**Dr. Randolph K. Larsen**, St. Mary's College of Maryland, Abundance and Stable Carbon Analysis of Phospholipid Fatty Acids in Association with Methane Hydrates in the Arctic Ocean.

**Dr. Eileen M. Spain**, Occidental College, Chemistry in Numbers: Natural Products for Sustainability from Bacteria at Interfaces.

**Dr. Gabriel C. Spalding**, Illinois Wesleyan University, Optical Landscapes for Studies of Droplets and Emulsions Filled or Decorated with Tailored Particles.

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## Undergraduate New Investigator Starter Grants Awarded to Faculty in Non-Ph.D.-Granting Departments

**Dr. Veronica Barone**, Central Michigan University, Light Metal Mediated Hydrogen Storage Capacity of Graphene Nanoribbons, \$50,000.

**Dr. Nathan P. Bowling**, University of Wisconsin-Stevens Point, Elaboration of Petroleum-Derived Aromatics for the Generation of Conjugated Discotic and Cruciform Structures: Controlling Electronic Properties via Transition Metal Coordination, \$50,000.

**Dr. Christopher M. Burba**, Northeastern State University, Polymer Chain Alignment and Conductivity for Polymer Electrolytes Relevant to Lithium Rechargeable Batteries, \$50,000.

**Dr. Marisa C. Buzzeo**, Barnard College, Probing the Dynamics of Ion Transport by Scanning Electrochemical Microscopy: Towards the Development of Enhanced Fuel Cell Membranes, \$50,000.

**Dr. Zhaohua Dai**, Pace University, Enantiospecific Hydroxylation of Alkanes Catalyzed by Transitional Metal Complexes of Chiral Tripodal Ligands Based on Tris(2-pyridylmethyl)amine, \$50,000.

**Dr. Andrew P. Duncan**, Willamette University, Stereocontrolled Organocatalytic Synthesis of Oxacycles, \$50,000.

**Dr. Johan P. Erikson**, Saint Joseph's College of Maine, Effect of Sorting of Detrital Minerals within Depositional Environments on their Use as Provenance Indicators, \$50,000.

**Dr. J. Frantz Folmer-Andersen**, State University of New York, College at New Paltz, Chirality Recognition by Macrocyclic and Multi-Functional Metal Complexes, \$50,000.

**Dr. John D. Gilbertson**, Western Washington University, Methanol Synthesis from CO<sub>2</sub> and H<sub>2</sub> Utilizing Bimetallic Nanoparticle Catalysts, \$50,000.

**Dr. Daniel Ian Hembree**, Ohio University, Using Actualistic Studies to Interpret the Paleoenvironmental, Paleoclimatic, Paleoecological, and Sequence Stratigraphic Significance of Continental Ichnofossils, \$50,000.

**Dr. Brad Hubeny**, Salem State College, Organic Carbon Sources and Accumulation Rates Along a Regional Transect of Meromictic Lakes, Maine, \$50,000.

**Dr. Antun Husinec**, Saint Lawrence University, High Resolution Sequence Stratigraphy of Ordovician Red River Formation, Williston Basin, North Dakota, \$50,000.

**Dr. Jennifer A. Irvin**, Texas State University-San Marcos, Ionic Liquid Mobility in Electroactive Polymers, \$50,000.

**Dr. Jianfeng Jiang**, Yeshiva University, Rational Design and Synthesis of Structural Analog Complexes of the Active Site of Ni-Fe Hydrogenases, \$50,000.

**Dr. Jade Star Lackey**, Pomona College, Sandstone Silicification in a Caldera Lake: Implications for Cementation at High Geothermal Gradients, \$50,000.

**Dr. Justin Conrad Lytle**, Pacific Lutheran University, Order vs. Disorder: Does Pore Geometry Affect the Electrochemical Performance of Carbon Electrode Nanoarchitectures?, \$50,000.

**Dr. Michael C. Machczynski**, Yeshiva University, Towards Solar Fuels: Using Laccases as Catalysts to Evolve Oxygen from Water, \$50,000.

**Dr. Vanessa P. McCaffrey**, Albion College, Electronic Tuning of Magnetic Exchange in Phenoxy-bridged Dinuclear Transition Metal Complexes, \$50,000.

**Dr. Emily C. McLaughlin**, Bard College, Aziridination and Retro-Aldol Fragmentation of Dioxenones: Application in the Synthesis of  $\alpha$ -Amino Acids and 2-Benzazepine Derivatives, \$50,000.

**Dr. Kevin M. Metz**, Albion College, Synthesis and Characterization of Molecular Monolayer Directed Nanoscale Catalysts, \$50,000.

**Dr. Gregory W. O'Neil**, Western Washington University, Metathesis Reactions of Acyloxysulfones for Polyene Synthesis, \$50,000.

**Dr. Katherine E. Plass**, Franklin and Marshall College, Adsorption of Thiophenes at Liquid/Solid Interfaces, \$50,000.

**Dr. Manal A. Rawashdeh-Omary**, Texas Woman's University, Development of Light-Harvesting Metallopolymers with Tunable Optical and Electronic Properties, \$50,000.

**Dr. Elizabeth A. Raymond**, Western Washington University, Second Harmonic Generation (SHG) Spectroscopic Studies of Polycyclic Aromatic Hydrocarbons (PAH's) at Liquid Water Surfaces, \$50,000.

**Dr. Gregory Thomas Roman**, Mount Holyoke College, Synthesis of Poly(dimethylsiloxane) Microspheres with Homogeneous, Stable, and Tunable Surface Chemistries Using Microfluidic Segmented Flows, \$50,000.

**Dr. Joshua Schrier**, Haverford College, Comprehensive Atomistic Modeling of Thermoelectric Semiconductor Nanowire Heterostructures, \$50,000.

**Dr. Alexander D. Schwab**, Appalachian State University, A Systematic Approach Towards the Synthesis of Metal Coordination Cross-Linked Polymer Networks, \$50,000.

**Dr. Steven T. Shipman**, New College of Florida, Room Temperature Chirped-Pulse Fourier Transform Microwave Spectroscopy for the Study of Radical Reaction Dynamics, \$50,000.

**Dr. Daniela Tapu**, Kennesaw State University, Redox-Switchable N-Heterocyclic Carbenes and their Corresponding Homo- and Heterometallic Complexes, \$50,000.

**Dr. Kwok-Siong Teh**, San Francisco State University, Nanostructured ZnO Energy Generator: Influence of Dimensional and Mechanical Properties, \$50,000.

**Dr. Andrew K. Udit**, Occidental College, Bioelectrochemical Hydrocarbon Oxidation using Engineered P450 Cytochromes, \$50,000.

**Dr. Justyna Widera**, Adelphi University, Development and Investigation of Multijunction Hybrids of Nanocrystalline: TiO<sub>2</sub>/quantum dots/conducting Polymer Nanowires for Solar Cells Applications, \$50,000.

**Dr. Wei-Dong Zhu**, Saint Peter's College, Fundamental Studies of Atmospheric Pressure Microhollow Cathode Discharge Plasma Jet Interaction with Liquid Media, \$50,000.

**Dr. Jake R. Zimmerman**, Ohio Northern University, Stereoselective Tin-Free Radical Reactions, \$50,000.

**Dr. Tykhon Zubkov**, Ball State University, Identification of Photocatalytically Active Surface Sites on Layered Transition Metal Sulfides, \$50,000.

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**Undergraduate Research**  
**Awarded to Faculty in Non-Ph.D.-Granting Departments**

**Dr. Hind A. Al-Abadleh**, Wilfrid Laurier University, Fundamental Studies on the Surface Chemistry of Methylated Organoarsenicals Using Infrared Spectroscopy and Quantum Mechanical Calculations, \$65,000.

**Dr. Ananda S. Amarasekara**, Prairie View A&M University, Cellulose Dissolution and Hydrolysis in Acidic Ionic Liquids, \$65,000.

**Dr. Mark R. Anklam**, Rose-Hulman Institute of Technology, The Effects of Surfactants on Adhesion between Hydrate Particles and the Flow of Hydrate Slurries, \$65,000.

**Dr. Nan C. Arens**, Hobart and William Smith Colleges, Testing Hypotheses of Black Shale Deposition in the Late Devonian Catskill Basin, Watkins Glen State Park, New York, \$28,026.

**Dr. Samir Bali**, Miami University, Measurement of the Refractive Index of Highly Turbid Media, \$65,000.

**Dr. Holly D. Bendorf**, Lycoming College, Rhodium(I)-Catalyzed Hydroacylation Promoted by Chelating Amines, \$65,000.

**Dr. Diane Clemens-Knott**, California State University, Fullerton, Age and Provenance of Clastic Sediments from the Nonmarine Goldstein Peak Unit: Stratigraphic Relations to Marine Sediments of the Jurassic(?) - Cretaceous Great Valley Forearc Basin and the Jura-Triassic Kings Sequence, Central California, \$65,000.

**Dr. David C. Easter**, Texas State University-San Marcos, Spectroscopy, Monte Carlo, and Electronic Structure Studies of Benzene-Derivative Solvation Clusters, \$65,000.

**Dr. Brian W. Gregory**, Samford University, Determination of Surface Mole Fractions in Mixed Binary AlkaneThiol Self-Assembled Monolayer Films on Gold by Thin-Layer Electrochemical Mass Spectrometry, \$65,000.

**Dr. Patrick E. Hoggard**, Santa Clara University, Photocatalytic Dechlorination of Chloroalkanes in Hydrocarbon Mixtures, \$65,000.

**Dr. Andrew W. Holland**, Idaho State University, Demystifying Microwave Assistance in Homogeneous Catalysis: Chemical Kinetics of Microwave-Heated Palladium Reactions, \$65,000.

**Dr. Peter L. Kelly-Zion**, Trinity University, Experimental Study of Transport Phenomena of Evaporating Fuel Films, \$65,000.

**Dr. Farooq A. Khan**, University of West Georgia, Understanding the Role of Metal Ions in Mass Spectrometric Ionization Processes: Experimental and Computational Studies, \$65,000.

**Dr. Daniel J. Lehrmann**, University of Wisconsin-Oshkosh, Patterns of Tectonics, Provenance, and Sediment Fill in Large Complex Foreland Basins: Field, Petrographic and Detrital Zircon Analysis of Siliciclastic Turbidites in the Nanpanjiang Basin of South China, \$65,000.

**Dr. Mingheng Li**, California State Polytechnic University, Pomona, Adsorption of CO<sub>2</sub> by MgO Aerogels for Enhanced Steam Reforming, \$65,000.

**Dr. Harmon D. Maher**, University of Nebraska-Omaha, Shallow Fracture Formation and Fluid Mobilization During Diagenetically Driven Deformation: the Tertiary Badlands Chalcedony Vein Systems of South Dakota and Nebraska, \$65,000.

**Dr. Sudipa Mitra-Kirtley**, Rose-Hulman Institute of Technology, Elucidation of Sulfur Chemical Forms in Petroleum and Coal Derived Asphaltenes, \$65,000.

**Dr. Lee Y. Park**, Williams College, Controlling Morphology in Bulk Heterojunction Solar Cells via Chemical Design and Surface Patterning Methods, \$65,000.

**Dr. Ian J. Rhile**, Albright College, Investigating Proton-Coupled Electron Transfer with Radical Cations Appended with Bases, \$65,000.

**Dr. John D. Roberts**, California Institute of Technology, New Directions in Understanding Conformational Preferences of 1,2-Disubstituted Ethanes, \$65,000.

**Dr. Kevin M. Shea**, Smith College, Expanding the Scope of the Diels-Alder Reaction: Development of Cationic Dienophiles Stabilized by Cobalt-Complexed Alkynes, \$65,000.

**Dr. Young-Seok Shon**, California State University, Long Beach, Synthesis of Nanoparticle-Cored Dendrimers with Single Molecular Weight Using Dendritic Functionalization of Monodisperse Gold Nanoparticles, \$65,000.

**Dr. Douglas A. Vander Griend**, Calvin College, In Situ Thermodynamic Characterization of Supramolecular Assembly Processes that Lead to Discrete Nanosize Structures, \$65,000.

**Dr. Russell Derrek Viirre**, Ryerson University, Development of Enantioselective Nitrogen Arylation Reactions, \$65,000.

**Dr. Thottumkara K. Vinod**, Western Illinois University, Oxidation of Alkenes in Aqueous Solvent Mixtures Using Environmentally Benign Reagents, \$65,000.

**Dr. James R. Vyvyan**, Western Washington University, Gold(I)-Catalyzed Aromatic Claisen Rearrangements, \$65,000.

**Dr. Steve A. Westcott**, Mount Allison University, Copper Zwitterions for the Generation of Hydrogen, \$65,000.

**Dr. Wan Yang**, Wichita State University, Anatomy of a Half-Graben - Stratigraphic Architecture, Basin-Fill History, Controlling Processes, and Strategies of Nonmarine Stratigraphic Correlation, Bogda Mountains, NW China, \$65,000.

**Dr. Feimeng Zhou**, California State University, Los Angeles, Enhancing Conversion Efficiency of Dye-Sensitized Solar Cells by Synthesis of Highly Ordered Titania Structures and Judicious Selection of Redox Couples, \$65,000.