Grants Awarded 2015

Doctoral New Investigator
Starter Grants Awarded to Faculty in Ph.D.-Granting Departments

Dr. Christopher A. Alabi, Cornell University, Synthesis and Evaluation of Sequence-Defined Branched Polymers, $110,000.

Dr. Saman A. Aryana, University of Wyoming, An Experimental Investigation of Flow Instabilities and Time-Dependence of the Constitutive Relationships of Multiphase Flow in Porous Media, $110,000.

Dr. Mohsen Asle Zaeem, Missouri University of Science and Technology, An Experimentally-Validated Phase Field Model for Stress Corrosion Cracking in Steel Pipelines, $110,000.

Dr. Ryan D. Baxter, University of California, Merced, Applications of N-Centered Radicals Generated from Electrochemical Initiation of Stable Organic Precursors, $110,000.

Dr. David L. Blunck, Oregon State University, Influence of Low Temperature Chemistry and Chemical Classes on Mild Combustion of Large Hydrocarbon Fuels, $110,000.

Dr. Jakoah Brgoch, University of Houston, Targeting Earth-Abundant Superhard Materials via Informatics and Optimized Chemical Bonding, $110,000.

Dr. Nicholas A. Brunelli, The Ohio State University, Designing Uniform Paired Copper Catalytic Sites for Conversion of Methane to Methanol, $110,000.

Dr. Michael P. Burke, Columbia University, Understanding Collisonal Energy Transfer in Multi-Component Mixtures of Combustion Systems, $110,000.

Dr. Noah Z. Burns, Stanford University, Titanium-Mediated Selective Dihalogenation for the Vicinal Difunctionalization of Simple Alkenes, $110,000.

Dr. Shengjia Cai, University of California, San Diego, Thermo-Chemo-Mechanics of Swellable Elastomers, $110,000.

Dr. Shengfeng Cheng, Virginia Polytechnic Institute and State University, Computational Modeling of Ionic Polymers: From Solution Interpolyelectrolyte Complexes to Solid-State Membranes, $110,000.

Dr. Bai Cui, University of Nebraska-Lincoln, Controlling Stress Corrosion Cracking of Alloys in Chloride Environments by Laser Shock Peening, $110,000.

Dr. Scott R. Daly, University of Iowa, A Structural Diphosphine Model to Predict Metal-Phosphorus Covalency Variations in Transition Metal Complexes, $110,000.

Dr. Graham E. Dobereiner, Temple University, Incorporating Lewis Acid Anion Co-Catalysts into Homogeneous Transition-Metal Systems for Carbon-Carbon Bond Formation, $110,000.

Dr. Christopher Dockendorff, Marquette University, Hybrid Lewis Acid/Lewis Base Catalysts for Asymmetric Carbon-Carbon Bond Formation, $110,000.

Dr. Brian R. Ellis, University of Michigan, Investigating the Role of Wettability in Enhancing Shale Gas Production, $110,000.

Dr. David P. Fenning, University of California, San Diego, Investigating the Impact of Strain on Electrochemical CO2 Reduction Using Model Bulk Metallic Glass Materials, $110,000.

Dr. Reza Foudazi, New Mexico State University, Nanoemulsion-Templated Porous Polymers, $110,000.

Dr. Ruilan Guo, University of Notre Dame, New Dimensions in Designing Nanohybrid Membrane Materials for Energy-Efficient Gas Separations, $110,000.

Dr. T. David Harris, Northwestern University, Isolation and Studies of Oxoheme Complexes in Metal-Organic Frameworks, $110,000.

Dr. Achim D. Herrmann, Louisiana State University, Understanding the Role of Iron Availability during Early Diagenetic Uptake and Preservation of Molybdenum in Organic Rich Carbonates, $110,000.

Dr. Michael K. Hilinski, University of Virginia, New Organocatalysts for Chemoselective Aliphatic C-H Hydroxylation, $110,000.

Dr. Jessica Hoover, West Virginia University, Mononuclear Iron Mercaptoimidazolyl Complexes for the Reductive Coupling of Isonitriles, $110,000.
Dr. Sarah Hormozi, Ohio University, The Fluid Mechanics of Channel Fracturing Technique, $110,000.
Dr. Yan-Yan Hu, Florida State University, In Situ NMR Studies of the Hydrogen Spillover Phenomenon in Heterogeneous Catalysis, $110,000.
Dr. Pincelli M. Hull, Yale University, Using Shape to Track Open Ocean Community Structure since the Late Cretaceous, $110,000.
Dr. Xiulei (David) Ji, Oregon State University, Syntheses of Polycarboxyl Aromatic Compounds for New Redox Materials, $110,000.
Dr. James E. Johns, University of Minnesota, Surface Chemistry of Few Layer Hydrodesulfurization and Hydrodenitrogenation Catalysts on Sapphire Imaged by Atomic Force Microscopy, $110,000.
Dr. John A. Keith, University of Pittsburgh, Unraveling Heterocycle-Promoted Hydride Transfer Mechanisms for Energetically Efficient Fuel and Petrochemical Production, $110,000.
Dr. Justin G. Kennemur, Florida State University, Petroleum Derived Triblock Terpolymer Templates for Dual-Metal Patternning of Square-Patterned Rectangular Nanostructures, $110,000.
Dr. Rebekka S. Klausen, The Johns Hopkins University, Controlling Polarization in Polystyrene, $110,000.
Dr. Daniel S. Lambrecht, University of Pittsburgh, A Computational Approach for Optimizing Metal-Free Synthesis of Conjugated Polymers, $110,000.
Dr. Sangwoo Lee, Rensselaer Polytechnic Institute, Miscibility and Structures of Polycyclic Aromatic Hydrocarbons and Polymeric Materials, $110,000.
Dr. Yu Lei, University of Alabama in Huntsville, Direct Conversion of Methane to Valuable Chemicals Using Single-Atom Catalysis, $110,000.
Dr. Xinhua Liang, Missouri University of Science and Technology, Nanostructured Catalysts for Tandem Catalysis Prepared by Atomic Layer Deposition, $110,000.
Dr. Mark D. Losego, Georgia Institute of Technology, Effects of the Chemistry and Structure of Petrochemical Polymers on the Vapor-Phase Conversion to Organic-Inorganic Hybrid Materials, $110,000.
Dr. Nathaniel A. Lynd, The University of Texas at Austin, A Versatile Catalytic Approach to Polyether Synthesis, $110,000.
Dr. Martin Maldovan, Georgia Institute of Technology, Metamaterial Membranes for Separation of Chemical Mixtures, $110,000.
Dr. Psaras L. McGrier, The Ohio State University, Synthesis and Design of Novel Metal-Doped Porous Organic Polymers: The Enhancement of pi-Complexation with Small Unsaturated Hydrocarbons, $110,000.
Dr. David S. Mebane, West Virginia University, Dynamic Discrepancy Reduced Modeling for Adaptive, Multi-Model, Nonlinear Model Predictive Control, $110,000.
Dr. David J. Michaelis, Brigham Young University, Early/Late Heterobimetallic Complexes for Catalytic Alkene and Alkyne Functionalization, $110,000.
Dr. Youjin Min, The University of Akron, Interfacial Phenomena of Versatile Janus Particles at Fluid-Adjoining Interfaces and Their Potential Applications in the Petroleum Industry, $110,000.
Dr. Katie Mitchell-Koch, Wichita State University, Toward Improved Non-Aqueous Biocatalysis: Mapping Relationships between Enzyme Structure, Interfacial Solvent Dynamics, and Enzyme Dynamics, $110,000.
Dr. David A. Nagib, The Ohio State University, Catalyst-Directed C-H Functionalization for the Streamlined Use of Petroleum Feedstocks, $110,000.
Dr. John T. Newberg, University of Delaware, Probing the Ionic Liquid-Vapor Interface by Ambient Pressure X-ray Photoelectron Spectroscopy, $110,000.
Dr. Amish J. Patel, University of Pennsylvania, Molecular Determinants of Favorable Clathrate-Surface Interactions: A Computational Study, $110,000.
Dr. Qing Peng, University of Alabama, Stable Ultra Small Noble Metal Nanoparticle Catalysts, $110,000.
Dr. Emily Pentzer, Case Western Reserve University, A Radical Approach to Conjugated Polymers, $110,000.
Dr. Sarah L. Perry, University of Massachusetts Amherst, Designing the Liquid-to-Solid Transition in Polyelectrolyte Complexes, $110,000.
Dr. Hema Ramsurn, University of Tulsa, A Fundamental Study on Non-Oxidative Methane Activation and Oligomerization Reactions using Bi-Metallic Catalysts to form Higher Hydrocarbons and Graphene, $110,000.
Dr. Julia S. Reece, Texas A&M University, Effects of Microbial Activity on Mechanical and Transport Properties of Mudstones, $110,000.
Dr. Emilie Ringe, Rice University, Study of Petroleum-Related Heterogeneous Catalysis via Correlated Fluorescence and Electron Microscopy, $110,000.

Dr. Erik E. Santiso, North Carolina State University, Understanding the Effect of Molecular Topology on Surfactants for Enhanced Oil Recovery, $110,000.

Dr. Derek Sawyer, The Ohio State University, Seismicity-Enhanced Compaction in Deepwater Fine-Grained Sediments, $110,000.

Dr. Scott K. Shaw, University of Iowa, Hydrocarbons from CO₂: Electrochemical Reduction in Task-Specific Solvents, $110,000.

Dr. Simcha L. Singer, Marquette University, Pore-Resolving Simulations of Coal Char Gasification Using Micro-CT Imaging, $110,000.

Dr. Thomas N. Snaddon, Indiana University Bloomington, New Chemical Reactions by Engaging Catalytic Ester Enolate Equivalents in Synergistic Catalysis, $110,000.

Dr. Ryan J. Trovitch, Arizona State University, Mechanism and Scope of Bis(imino)pyridine Manganese-Catalyzed Hydrosilylation, $110,000.

Dr. Ioulia Valla, University of Connecticut, Targeted Size Mesoporous Zeolites for Deep Desulfurization of Petroleum Streams via Adsorption, $110,000.

Dr. Subith S. Vasu, University of Central Florida, Chemical Kinetics of Gasoline Mixtures under Negative Valve Overlap Reforming Conditions, $110,000.

Dr. Casey R. Wade, Brandeis University, Metal-Organic Framework Supported Pincer Complexes: Investigation of the Effects of Site Isolation and Secondary Environment, $110,000.

Dr. Scott C. Warren, University of North Carolina at Chapel Hill, Design of Catalytic Phosphorus-Metal Monolayers for Hydrocarbon Transformation, $110,000.

Dr. Jimmie D. Weaver, Oklahoma State University, Photocatalytic C-F Functionalization: Transforming Perfluoroarenes from Inert Molecules to Synthetic Linchpins, $110,000.

Dr. Christopher E. Wilmer, University of Pittsburgh, Fundamental Study of Heat Transfer Mechanisms in Metal-Organic Frameworks During Gas Adsorption, with Applications to Adsorbed Natural Gas Storage Systems, $110,000.

Dr. Mario Wriedt, Clarkson University, Tunable Host-Guest Interactions in Photo-Functional Metal-Organic Frameworks, $110,000.

Dr. Hongliang Xin, Virginia Polytechnic Institute and State University, Descriptor-Based Molecular Design of Metal-Organic Frameworks for Catalytic C-H Activation, $110,000.

Dr. Bingjun Xu, University of Delaware, Nonaqueous Electrochemical Activation of Methane under Ambient Conditions for High-Value Liquid Fuel Production, $110,000.

Dr. Ye Xu, Louisiana State University, Understanding and Controlling the Regioselectivity in the Catalytic Ring Opening of Naphthenes on Metals, $110,000.

Dr. Kesong Yang, University of California, San Diego, Elucidating Support Effects and Size Effects of the MoS2-Based Catalysts from First-Principles Calculations, $110,000.

Dr. Guihua Yu, The University of Texas at Austin, Rational Synthesis and Characterization of Non-Layered Two-Dimensional Crystals, $110,000.

Dr. Yang Zhang, University of Illinois at Urbana-Champaign, Quasi-Elastic Neutron Scattering Studies of the Dynamic Odd-Even Effect in Liquid n-Alkanes, $110,000.

Dr. Jiahua Zhu, The University of Akron, A Novel Microtubular Mesoporous Carbon Catalyst Support, $110,000.
New Directions
Awards for Fundamental Research

Dr. Eric I. Altman, Yale University, Atomically Thin Size Exclusion Membranes, $110,000.
Dr. Farooq Azam, Scripps Institution of Oceanography, UCSD, Roles of Microbial Hydrolytic Enzymes in Mediating Carbon Cycling in Shale Formations of the Southwestern United States, $110,000.
Dr. Sarbajit Banerjee, Texas A&M University, Is the Road to Hydrodesulfurization Paved in Bronze?, $110,000.

Dr. Udo Becker, University of Michigan, Understanding Microscopic- and Molecular-Level Mechanisms Involved in Wettability Alteration on Mineral Surfaces, $110,000.
Dr. Surita Bhatia, State University of New York at Stony Brook, Strategies To Reduce Interfacial Viscosity in Nanoparticle-Based Enhanced Oil Recovery (EOR) Fluids, $110,000.

Dr. Volker Blum, Duke University, Coupling the Dynamics of Molecules and Spins in Nuclear Magnetic Resonance for Imaging and Oil Borehole Applications, $110,000.
Dr. Suzanne A. Blum, University of California, Irvine, Organic Chemistry Studies in Solution via Single-Molecule Fluorescence Microscopy, $110,000.

Dr. Sarah A. Burke, University of British Columbia, Gaining Mechanistic Insight in Heterogeneous Catalysis at the Single Molecule Level: Orbital Imaging of a Macromolecular Catalyst and Intermediates by Scanning Tunnelling Microscopy, $110,000.

Dr. Giuseppe Buscarnera, Northwestern University, Grain Size Effects in Sediment Compaction: An Augmented Continuum Theory Based on Grain-Scale Fracture Mechanics, $110,000.
Dr. Steven L. Castle, Brigham Young University, Microwave-Promoted Tin-Free and Initiator-Free Cyclizations of Iminyl and Aminyl Radicals: A Convenient New Method of Synthesizing Complex Amines from Simple Precursors, $110,000.

Dr. Paul R. Chiarot, State University of New York at Binghamton, Electrohydrodynamic Atomization of Fuels Using Charge-Injection for Efficient Flameless Catalytic Combustion at Small Scale, $110,000.

Dr. Itai Cohen, Cornell University, Simultaneous 3D Director Imaging and Biaxial Rheology of Lyotropic Chromonic Liquid Crystals, $110,000.

Dr. William Curtis Conner, University of Massachusetts Amherst, Understanding and Improving the Direct Conversion of Methane to Ethylene, $110,000.

Dr. Stephen B. Cronin, University of Southern California, A Novel Platform for Studying Hot Electron Spectroscopy of Electrochemical and Photoelectrochemical Reactions, $110,000.

Dr. Christopher J. Douglas, University of Minnesota, Synthesis of Cyclacenes: Strained Macrocyclic Hydrocarbons with Unique Bonding, $110,000.

Dr. Emilie Dressaire, New York University Polytechnic School of Engineering, Study of Clogging in Suspension Flows Using 2D Particulate Systems, $110,000.

Dr. Ellen R.M. Druffel, University of California, Irvine, Molecular-Level Composition and Cycling of Dissolved Protokerogen: A Combined Nuclear Magnetic Resonance and Carbon Isotopic Study, $110,000.

Dr. Annaliese K. Franz, University of California, Davis, Hypervalent Iodine-mediated Transformation of Silyl-substituted Hydrocarbons, $110,000.

Dr. Lori S. Goldner, University of Massachusetts Amherst, Characterization of Nanoemulsion Droplets, $110,000.

Dr. Christian R. Goldsmith, Auburn University, The Development of Cobalt Catalysts for the Deformylation of Aldehydes to Alkenes, $110,000.

Dr. Laurel B. Goodwin, University of Wisconsin-Madison, Rates of Calcite Cementation, Style of Deformation, and Timing of Flow through the Loma Blanca Fault Zone, Socorro Basin, NM, $110,000.

Dr. Jay Anil Gupta, The Ohio State University, Studies of CO2 Photoreduction on Cu2O at the Single Molecule Level, $110,000.

Dr. Jong-in Hahm, Georgetown University, Micro/Nanosopic Investigation of ZnO towards the Development of Next-Generation Separation Platforms, $110,000.

Dr. Timothy P. Hanusa, Vanderbilt University, Highly Active Organometallic Complexes Obtained through Mechanochemical Synthesis, $110,000.
Dr. Gerard S. Harbison, University of Nebraska-Lincoln, Gas-phase NMR and Computations on Hydrocarbons in Volatile Fractions of Crude Oil, $110,000.

Dr. Ive Hermans, University of Wisconsin-Madison, Fundamental Insights into Heterogeneously Catalyzed Reactions Using Modulation Excitation FT-IR and Raman Spectroscopy, $110,000.


Dr. Feng Jiao, University of Delaware, Low Temperature Activation of Methane, $110,000.

Dr. Karen H. Johannesson, Tulane University, Tungsten in Petroleum Systems: A Potential Paleo-Environment Indicator, $110,000.

Dr. Ayman M. Karim, Virginia Polytechnic Institute and State University, Supported Single-Atom and Subnanometer Pt Clusters for the Selective Oxidative Dehydrogenation of Ethane to Ethylene, $110,000.

Dr. Steven R. Kass, University of Minnesota, Novel Electrostatically Activated Bronsted Acids, $110,000.

Dr. Anatoly K. Khitrin, Kent State University, NMR Characterization and Study of Gasoline-Ethanol Blends, $110,000.

Dr. Benjamin T. King, University of Nevada, Reno, Nanoporous Membranes by Network Polymerization of Discotic Liquid Crystalline Monomers, $110,000.

Dr. Sridhar Komarneni, The Pennsylvania State University, Monolithic Composites of Metal-Organic Frameworks with Aerogels/Xerogels for Adsorbed Natural Gas Vehicles, $110,000.

Dr. Leslie Lamberson, Drexel University, Impact Fatigue Behavior of WC-Co Cemented Carbides: Microstructure and Stress Wave Interactions, $110,000.

Dr. Thomas J. Lapen, University of Houston, Uranium-Thorium-Lead Chronology of Source Rock Deposition and Diagenesis, an in Situ and Whole Rock Study TOC-Rich Shales, $110,000.

Dr. KiBum Lee, Rutgers, The State University of New Jersey (New Brunswick), Photochemical Control of Molecular Optical Switches Using Multicolor Upconversion Nanoclusters, $110,000.

Dr. Yongsheng Leng, George Washington University, Molecular Understanding of Clay Swelling in Enhanced Oil/Gas Recovery, $110,000.

Dr. Kelly H. Liu, Missouri University of Science and Technology, Passive Seismic Investigations for the Formation Mechanisms of Intracratonic Basins, $110,000.

Dr. Ellen K. Longmire, University of Minnesota, Effect of Contact Forces on Displacement of Immiscible Fluids through a Porous Network, $110,000.

Dr. Eugene A. Mash, University of Arizona, Development of New Liquid Crystalline Polyamides with Bicyclo[8.8.8] Hexacosane Flexible Segments, $110,000.

Dr. Aaron M. Massari, University of Minnesota, Measuring Carbon Dioxide Dynamics in Metal-Organic Frameworks on the Time Scale of Computer Simulations, $110,000.

Dr. Eric Masson, Ohio University, Probing Interactions between Hydrocarbons and Auxiliary Guests inside Cucurbit[8]uril Using Fluorinated Metal-terpyridine Complexes, $110,000.

Dr. Jeremy A. May, University of Houston, Conversion of Alkynes to alpha-Branched Products via Propargylic Substitution, $110,000.

Dr. Petar Minev, University of Alberta, Efficient Numerical Techniques for Modelling of Surfactant-Laden Interfacial Phenomena, $110,000.

Dr. Toshikazu Miyoshi, The University of Akron, Elucidation of Chemical Reaction Pathway and Structure of Polycyclonitrile Stabilized under Air and Inert Atmosphere by Solid-State NMR, $110,000.

Dr. Badie I. Morsi, University of Pittsburgh, Hydrodynamics, Mass Transfer Parameters and Modeling of a Microchannel Reactor for Fischer-Tropsch Synthesis, $110,000.

Dr. Jack R. Norton, Columbia University, Enantioselective Hydrogen Atom Transfer Reactions from Transition-Metal Hydrides, $110,000.

Dr. Chinedum Osuji, Yale University, Understanding Asphaltene Dispersion through Coupled Surface Activity and Rheological Studies, $110,000.

Dr. Jonathan S. Owen, Columbia University, Homogeneous Nanoparticle Catalysis: Synthesis, Structural Characterization, and Catalysis Applications of Molecular Transition Metal Clusters, $110,000.

Dr. Derek L. Patton, The University of Southern Mississippi, Sterically-Driven Selectivity in Acyclic Diene Metathesis (ADMET) Polymerization of Asymmetric alpha,omega-Dienes for Sequence-Controlled Polyolefins, $110,000.
Dr. Mark E. Patzkowsky, The Pennsylvania State University, Fossil Occurrences, Associations, and Taphonomy in a Sequence Stratigraphic Framework: Testing Predictions in the San Andres Formation (Middle Permian, New Mexico), $110,000.

Dr. John D. Protasiewicz, Case Western Reserve University, Secondary Coordination Sphere meets Secondary Bonding: Novel Ligand Design and Catalysis, $110,000.

Dr. Robert A. Riggleman, University of Pennsylvania, Quantifying the Interactions Between Nanoparticles and Block Copolymer Defects, $110,000.

Dr. Javid Rzayev, University at Buffalo, State University of New York, Mesoporous Polymer Frameworks by Architectural Control, $110,000.

Dr. Muhammad Sahimi, University of Southern California, Fabrication and Modeling of a Novel Class of Porous Media, $110,000.

Dr. Laurel L. Schafer, University of British Columbia, Amine Containing Polymers: Efficient Access to a New Family of Functionalized Materials, $110,000.

Dr. Eric J. Schelter, University of Pennsylvania, Cheap and Efficient Cerium Photosensitizers: Toward Excited State Metalloradicals for New Reactivity, $110,000.

Dr. Benjamin J. Schwartz, University of California, Los Angeles, Chemistry by Fiat: Quantum Biased Molecular Dynamics, $110,000.

Dr. John S. Singleton, Colorado State University, Kinematics and Strain in an Evaporite Decollement: Insights from the Minas Viejas Basal Shear Zone, Sierra Madre Oriental, Mexico, $110,000.

Dr. Kathleen J. Stebe, University of Pennsylvania, Analogies between Dense Microparticle Monolayers at Fluid Interfaces and 2D Granular Matter, $110,000.

Dr. Ryan P. Steele, University of Utah, Metal-H2 Complexes vs. Metal Hydrides: Nuclear Motion and Implications for Hydrogenation Catalysis, $110,000.

Dr. Brian W. Stewart, University of Pittsburgh, A Chemostatigraphic Study of Regional and Global Controls on Deposition and Preservation of Late Cambrian Shales of the Conasauga Formation, $110,000.

Dr. Liangfeng Sun, Bowling Green State University, Understanding the Photoluminescence Mechanism of Water Soluble Polymer Clusters for Petroleum Exploration, $110,000.

Dr. Michael W. Trenary, University of Illinois at Chicago, Catalytic Pathways for Heteroatom Removal from Heavy Fossil Fuels, $110,000.

Dr. Marcus Weck, New York University, Stimuli Responsive Assemblies of Polymer-Based Colloids, $110,000.


Dr. Ross A. Widenhoefer, Duke University, Hydrogenation of C(sp3)-O bonds Catalyzed by Acidic Group 9 Hydride Complexes, $110,000.

Dr. Arthur H. Winter, Iowa State University, Theoretical and Experimental Investigations of Carbocation Diradicals, $110,000.

Dr. Yadong Yin, University of California, Riverside, Synthesis and Rheological Study of Magnetic Anisotropic Nanocomposites for Potential Applications in Enhanced Oil Recovery, $110,000.

Dr. Tehshik P. Yoon, University of Wisconsin-Madison, Copper-Catalyzed Photochemistry with Simple Alkenes, $110,000.
Undergraduate New Investigator
Starter Grants Awarded to Faculty in Non-Ph.D.-Granting Departments

Dr. Cheyenne Skye Brindle, Trinity College, Tunable Triarylmethyl Carbocation Catalysis, $55,000.
Dr. Michael Cromer, Rochester Institute of Technology, Modeling the Shear Thickening Response of Colloidal Dispersions, $55,000.
Dr. Bright U. Emenike, State University of New York, College at Old Westbury, Cation-pi Interactions Involving Aromatic Hydrocarbons: A Quantitative Study of Substituent and Solvent Effects, $55,000.
Dr. Ali Öğuz Er, Western Kentucky University, Laser-Induced Hydrogen Generation from Coal Powder in Water and its Time-Resolved Pump Probe Investigation, $55,000.
Dr. Derek K. Frantz, California Polytechnic State University, Design, Synthesis, and Properties of Shape-Persistent Molecular Systems Comprising 1,3,5-Triethylbenzene Cores, $55,000.
Dr. Robyn E. Goacher, Niagara University, Studying Weathering Effects at Interfaces Within Wood-Polymer Composites Using Imaging Time-of-Flight Secondary Ion Mass Spectrometry (ToF-SIMS), $55,000.
Dr. Dustin E. Gross, Sam Houston State University, Benzodiazaboroles as Potential Dynamic Covalent Functional Groups for New Molecular Architectures, $55,000.
Dr. Jason M. Keith, Colgate University, Towards Transition Metal Catalyzed Oxidative Functionalization of Alkanes by Molecular Oxygen, $55,000.
Dr. Sean J. Loyd, California State University, Fullerton, The Formation of Salt Dome Cap Rock Calcites and Relationships with Sulfate Reduction, $55,000.
Dr. William R. McNamara, The College of William and Mary, Catalytic Hydrogenations Using First Row Transition Metals, $55,000.
Dr. Joshua J. Melko, University of North Florida, Mechanistic Details of Iron Based Fischer-Tropsch Catalysts: Ion Trap Experiments on Model Active Sites, $55,000.
Dr. Katja M. Meyer, Willamette University, Improving Interpretations of the S-Isotope Composition of Pyrite with Isotopic Measurements of Individual Pyrite Framboids, $55,000.
Dr. Paul L. Raston, James Madison University, Spectroscopic Investigation of Cyano Functionalized Combustion Intermediates, $55,000.
Dr. Dayanand Saini, California State University, Bakersfield, Mechanistic Modeling of Wetting Behavior of Complex Rock/Oil/Water Systems for Estimating Rupture Disjoining Pressure, $55,000.
Dr. Paul A. Vadola, DePaul University, New Methods for the Synthesis of Spirocycles via Lewis Acid Catalyzed Dearomative Arene Alkyne Coupling, $55,000.
Dr. Jessica M. Wilson, Manhattan College, Kinetic Studies to Optimize Chemical Dissolution and Inhibition of Common and Exotic Oilfield Scales, $55,000.
Dr. Jeannette M. Wolak, Tennessee Technological University, Mixed Carbonate-Siliclastic Sediment Gravity Flows: Depositional Processes in the Mississippian Fort Payne Formation, Tennessee, $55,000.
Dr. Alexander Zakhidov, Texas State University-San Marcos, Electrochemical Study of Electronic Properties of Organic Thin Films in Orthogonal Electrolytes, $55,000.
Undergraduate Research Awarded to Faculty in Non-Ph.D.-Granting Departments

**Dr. Ananda S. Amarasekara**, Prairie View A&M University, Room Temperature Friedel-Crafts Alkylation Using Magnetic Nanoparticle Catalysts in Oscillating Magnetic Fields, $70,000.

**Dr. Jennifer L. Aschoff**, University of Alaska, Anchorage, Megaregional Correlation and Sequence Architecture of the Fox Hills Sandstone: Implications for Unconventional and Conventional Reservoir Prediction, $70,000.

**Dr. Zerihun Assefa**, North Carolina Agricultural and Technical State University, Synthesis, Structural, and Spectroscopic Studies of Porphyrin Based Model Asphaltene Lanthane and Group 11 Bimetallic Complexes: Intra- and Inter-Molecular Excimers and Exciplexes Studies in Solution and Solid State, $70,000.

**Dr. Krisanu Bandypadhyay**, University of Michigan-Dearborn, In Situ Generated Two Dimensional Metal and Bimetallic Nanoparticle Catalysts, $70,000.

**Dr. David S. Boucher**, College of Charleston, Employing Light Scattering Analysis and Zeta Potential Measurements to Study the Assembly and Stability of Poly(3-Hexylthiophene) in Binary Solvent Mixtures, $70,000.

**Dr. Nathan P. Bowling**, University of Wisconsin-Stevens Point, Fundamental Studies of 4,4’-Bipyridine Aryleneethynlenes, $70,000.

**Dr. K. Lisa Brod hacker**, Lander University, Petroleum-Based Epoxy Mirrors with Optically Smooth Surfaces, $70,000.

**Dr. Diane Clemens-Knott**, California State University, Fullerton, Testing Models for the Formation of the Great Valley Basin using Detrital Zircon U/Pb Dates: An Early Cretaceous Forearc Basin or a Mid-Jurassic Pull-Apart Basin?, $70,000.

**Dr. Stephen J. Culver**, East Carolina University, Defining and Differentiating Marine Coastal Facies and Subenvironments: A Foraminiferal Approach, $70,000.

**Dr. Emanuele Curotto**, Arcadia University, Quantum Simulations of Lithium Ion Solvation Dynamics in Mixed Stockmayer Clusters, $70,000.

**Dr. C. Wade Downey**, University of Richmond, New Reactivity Mediated by Trimethylsilyl Trifluoromethanesulfonate, $70,000.

**Dr. Jennifer S. Holt**, Valparaiso University, Understanding the Behavior of Guest Molecules within Zeolite Materials, $70,000.

**Dr. Shanina Sanders Johnson**, Spelman College, Organocatalytic Domino Reactions for the Synthesis of Highly Substituted Heterocycles, $70,000.

**Dr. David S. Jones**, Amherst College, Sulfur Isotope Chemostratigraphy as a Potential Tool for Correlation in Paleozoic Dolomite, $70,000.

**Dr. Phyllis A. Leber**, Franklin and Marshall College, The Use of a Cyclopropylcarbiny1 Radical Rearrangement as a Singlet Diradical Probe, $70,000.

**Dr. Janelle M. Leger**, Western Washington University, Electrochemical Interactions between Conjugated Polymers and Polymerizable Salts, $70,000.

**Dr. Mingheng Li**, California State Polytechnic University, Pomona, Computational Studies of Osmotic Membranes for Petroleum Wastewater Reclamation, $70,000.

**Dr. Giovanni Meloni**, University of San Francisco, iPEPICO Investigations of High-Energy Density Fuels, $70,000.

**Dr. Sudipa Mitra-Kirtley**, Rose-Hulman Institute of Technology, Research on Geochemistry of Shale Oil and its Derivatives by Sulfur Speciation, $70,000.

**Dr. Frank C. Peiris**, Kenyon College, Fundamental Properties of Porous Structures and the Dynamics of Adsorbent-Pore Interactions, $70,000.

**Dr. John D. Spence**, California State University, Sacramento, Shedding Light on Diradical Forming Cyclizations and Cycloaromatizations, $70,000.

**Dr. Eric S. Tillman**, Santa Clara University, Stereoregular Vinyl Polymers Prepared by Reversible-Deactivation Radical Polymerization, $70,000.

**Dr. Kraig A. Wheeler**, Eastern Illinois University, Mapping the Structural Boundaries of Quasiracemate Fractional Crystallization, $70,000.

**Dr. Matthew T. Whited**, Carleton College, Stoichiometric and Catalytic Nitrene-Group-Transfer Reactions from Late-Metal Silylamides, $70,000.