

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 Collisional 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. Shengqiang 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 Polycarbonyl 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 Patterning 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. Younjin 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. Jeffrey T. Pietras, State University of New York at Binghamton, Rhenium-Osmium Isotope Systematics: Application of Osmium Isotope Stratigraphy and Geochronology in Lacustrine Organic-rich Mudstones, \$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 R. 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 Tunneling 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. Caroline E.H. Dessent**, University of York, Electronic Laser Photodissociation Spectroscopy of Gas-Phase Metalloporphyrins and Metalloporphyrin-Aromatic Molecule Complexes: Investigating the Evolution of the Soret Band of Petroporphyrins, \$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. Michael T. Hren, University of Connecticut, Evaluating the Preservation Potential of Buried Organic Carbon: A Laboratory and Field Study of the Impact of Burial Diagenesis on Stable Isotopic and Organic Molecular Records, \$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 Polyacrylonitrile 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. Riggelman, 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 Chemostratigraphic 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. Alan G. Whittington, University of Missouri-Columbia, Temperature-Dependent Physical Properties of Evaporites and Related Rocks: New Constraints on the Thermal Evolution of Sedimentary Basins, \$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 Oguz Er**, Western Kentucky University, Laser-Induced Hydrogen Generation from Coal Powder in Water and its Time-Resolved Pump Probe Investigation, \$55,000.
- Dr. Derik K. Frantz**, California Polytechnic State University, Design, Synthesis, and Properties of Shape-Persistent Molecular Systems Comprising 1,3,5-Triethynylbenzene 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 Lanthanide and Group 11 Bimetallic Complexes: Intra- and Inter-Molecular Excimers and Exciplexes Studies in Solution and Solid State, \$70,000.
- Dr. Krisanu Bandyopadhyay**, 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 Aryleneethynylenes, \$70,000.
- Dr. K. Lisa Brodhacker**, 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 Cyclopropylcarbinyl 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, *i*PEPICO 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.
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