Grants Awarded 2014

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

**Dr. Kareem A. Ahmed**, Old Dominion University, Interaction Physics of Deflagrated Methane Flame with Fluidic Flow for Pressure Gain Combustion, $110,000.

**Dr. Clint Aichele**, Oklahoma State University, Advanced Characterization of Hydrate and Emulsion Formation in Flowing Systems for Flow Assurance Applications, $110,000.

**Dr. Placidus B. Amama**, Kansas State University, Size-Controlled Catalyst Nanoparticles Supported on Superacid-Derived Carbon Nanotube Foams for Synthesis of Clean Fuels, $110,000.

**Dr. Trisha L. Andrew**, University of Wisconsin-Madison, Probing Spin-Exciton and Spin-Charge Interactions in Open-Shell Organic Semiconductors, $110,000.

**Dr. Vaihav Bahadur**, The University of Texas at Austin, Role of Surfaces and Surface Charge on Hydrate Nucleation and Adhesion, $110,000.

**Dr. M. Kevin Brown**, Indiana University Bloomington, Cu-Catalyzed Vicinal Dicarbofunctionalization of Simple Alkenes, $110,000.

**Dr. Matthew F. Bush**, University of Washington, Fundamental Interactions Between Petroleum Ions and Gases, $110,000.

**Dr. Luis M. Campos**, Columbia University, Oxygen Transfer Chemistry with Conjugated Polymers, $110,000.

**Dr. Anthony Chappaz**, Central Michigan University, Chromium Speciation and Distribution in Modern and Ancient Anoxic Settings: Advancing the Paleoproxy, $110,000.

**Dr. Xiang Cheng**, University of Minnesota, Using Confocal Rheometry to Study Single Particle Dynamics in Shear Thickening Suspensions, $110,000.

**Dr. Shelley A. Claridge**, Purdue University, Direct Structural Characterization of Individual Asphaltenes Using Scanning Probe Microscopy and Interface-Sensitive Techniques, $110,000.

**Dr. Brandi M. Cossairt**, University of Washington, Homogeneous Bimetallic Systems for Syngas Conversion, $110,000.

**Dr. Mingji Dai**, Purdue University, Catalytic Carbonylative Macrocyclization of Olefins and Cyclopropanes, $110,000.

**Dr. A. Eugene DePrince**, Florida State University, Fundamental Investigations of Plasmons and Electron Dynamics in Petroleum-Derived Polycyclic Aromatic Hydrocarbons, $110,000.

**Dr. Loi H. Do**, University of Houston, Upgrading Polyethylene: Copolymerization of Ethylene and Polar Vinyl Monomers Facilitated by Lewis Acid Alkylated Ni and Pd Catalysts, $110,000.

**Dr. Kendra A. Erk**, Purdue University, Design and Characterization of Hydrogel-Based Internal Curing Agents for Oil Well Cementing Applications, $110,000.

**Dr. Elif Ertekin**, University of Illinois at Urbana-Champaign, Design of Green, Switchable Oxide Catalysts for Steam Methane Reforming by Quantum Mechanical Simulation, $110,000.

**Dr. Majie Fan**, The University of Texas at Arlington, Influence of Mantle Processes on the Formation of Petroleum-Bearing Basins in the Central Rocky Mountains, Western U.S.A., $110,000.

**Dr. Lei Fang**, Texas A&M University, Bottom-Up Synthesis of Freestanding Two-Dimensional Polymers with Long-Range Order, $110,000.

**Dr. Andrew L. Ferguson**, University of Illinois at Urbana-Champaign, Mesoscale Simulation and Machine Learning of Asphaltene Aggregation, $110,000.

**Dr. Alison R. Fout**, University of Illinois at Urbana-Champaign, Development of Sustainable Co(I) Catalyst Toward C-N Bond Coupling, $110,000.

**Dr. Qi Fu**, University of Houston, Experimental Study of Carbon and Hydrogen Isotope Equilibria among CO$_2$ and Hydrocarbons in Sedimentary Basins, $110,000.

**Dr. Haifeng Gao**, University of Notre Dame, Mechanistic Study on Synthesis of Hyperbranched Polymer with Uniform Structure, $110,000.
Dr. Michael Gonsior, University of Maryland Center for Environmental Science, Hydrosulfurization of Dissolved Organic Matter in Sediments - Linking Sulfate Reduction and Dissolved Organic Sulfur Formation, $110,000.

Dr. Rajamani Gounder, Purdue University, Ethene-to-Propene Metathesis on Nickel-Exchanged Zeolites: A Fundamental Kinetic Study of the Effects of Pore Size and Nickel Structure on Ethene Dimerization Rates, $110,000.

Dr. P. Alex Greaney, Oregon State University, Control of Thermal Transport across Interfaces in Metal-Organic-Frameworks, $110,000.

Dr. Jason R. Green, University of Massachusetts Boston, Emergence of Entropy From the Mixing Dynamics of Complex Liquids, $110,000.

Dr. Stanislav Groyzman, Wayne State University, Preparation of Low-Coordinate Bis(Alkoxide) Metal Complexes and Their Reactivity in Bond Formation and Bond Activation Reactions Involving Azide Precursors, $110,000.

Dr. Kenneth Hanson, Florida State University, Absolute Stereocontrol of Prochiral Substrates with Chiral Excited State Proton Transfer Dyes, $110,000.

Dr. Wenyu Huang, Iowa State University, Inorganic Capping Synthesis of Pure Phase Intermetallic Nanoparticles for Non-Oxidative Propane Dehydrogenation, $110,000.

Dr. Prashant K. Jain, University of Illinois at Urbana-Champaign, Discovery of Active Sites on Nanostructured Oxides for Desulfurization, $110,000.

Dr. David Jashby, University of California, Riverside, Enhanced Oil Recovery from Oil-in-Water Emulsions through the Coupling of Magnetic Amphiphilic Nanoparticles with Electrofiltration, $110,000.

Dr. Junha Jeon, The University of Texas at Arlington, Divergent Access to Hydrosilylation and Dehydrogenative Silylation Reactions Exploiting Grubbs-Type Ruthenium Benzylidene Complexes, $110,000.

Dr. Daniel R. Killelea, Loyola University of Chicago, Scanning Tunneling Microscopy Study of Subsurface Oxygen on Rh(111), $110,000.

Dr. Hojong Kim, The Pennsylvania State University, Corrosion in Extreme Environments, $110,000.

Dr. Jing Kong, Middle Tennessee State University, Study of the Support to Active Site Interaction in Catalysts of Oil Hydrocracking and Hydrodesulfurization Using New Density Functional Theory Methods, $110,000.

Dr. Kirill Kovnir, University of California, Davis, Fundamental Investigation of Inorganic Metal Borophosphides, $110,000.

Dr. Kyle M. Lancaster, Cornell University, Chemically Targeted X-ray Spectroscopic Studies of Chromium-Catalyzed Ethylene Trimerization Reactions, $110,000.

Dr. Lei Li, University of Pittsburgh, Understanding the Solid-Confin ed Ionic Liquid Nanofilms, $110,000.

Dr. Ryan P. Lively, Georgia Institute of Technology, Probing Relationships between Carbon Nanostructure and Binary Molecular Mobility in 'Crowded' Nanoporous Spaces, $110,000.

Dr. Brice Loose, University of Rhode Island, Rates and Controls on Methane Oxidation Beneath Sea Ice, $110,000.

Dr. Sharon M. Loverde, College of Staten Island, CUNY, Molecular Modeling of Shape Transformations in Polystyrene Vesicles, $110,000.

Dr. Patrick T. Lynch, University of Michigan-Dearborn, High Pressure Studies of Aromatic and Aliphatic Soot Formation Behind Reflected Shock Waves, $110,000.

Dr. John B. Matson, Virginia Polytechnic Institute and State University, Tapered Bottlebrush Polymers: A New Polymer Topology, $110,000.

Dr. Brandon McElroy, University of Wyoming, Morphologic Prediction of Reservoir Quality in Deltaic Stratigraphy, $110,000.

Dr. Michael M. McGlue, University of Kentucky, Petroleum Generation in Geologically-Young Lacustrine Rift Basins: Integrated Stratigraphy, Experimental Geochemistry, and Basin Modeling, $110,000.

Dr. Dmitry V. Peryshkov, University of South Carolina, Electron-Donating Carboranyl Ligands for Iron-Catalyzed Hydrocarbon Oxidation, $110,000.

Dr. William A. Phillip, University of Notre Dame, Systems Level Design of Osmotically Driven Membrane Processes for Process Water Reuse, $110,000.

Dr. Sally L. Potter-McIntyre, Southern Illinois University Carbondale, Middle to Late Jurassic Paleogeography, Western Colorado, $110,000.
**Dr. Sean T. Roberts**, The University of Texas at Austin, Visualizing Molecular Organization and Energy Transport Dynamics at Organic Surfaces and Heterojunctions with Interface Specific Femtosecond Spectroscopy, $110,000.

**Dr. Jennifer Lyn Roizen**, Duke University, Site- and Enantioselective Electrophilic Halogen-Transfer Processes, $110,000.

**Dr. Mark F. Roll**, University of Idaho, Diamondoid Block Copolymers for Microporous Membranes, $110,000.

**Dr. Paul A. Rupar**, University of Alabama, The Living Anionic Polymerization of Functionalized Aziridines, $110,000.

**Dr. Sapna Sarupria**, Clemson University, Tackling the 'Fire-In-Ice' Problem in the Petroleum Industry: A Molecular Approach, $110,000.

**Dr. Corinna Stefanie Schindler**, University of Michigan, New Avenues for Iron-Catalyzed Dehydrogenative Cross-Coupling Reactions, $110,000.

**Dr. Kelly M. Schultz**, Lehigh University, Fundamental Studies of Material Properties of Chemically Cross-Linked Gels Concentrated above the Overlap Concentration, $110,000.

**Dr. Timothy F. Scott**, University of Michigan, Reaction Kinetic Elucidation and Gas Transport Characterization of Interfacially Photopolymerized, Intrinsically Microporous Membranes, $110,000.

**Dr. Mohammad Shahvali**, University of Tulsa, A Fundamental Study on Efficient Resolution of the Inherent Nonlinearity of Compositional Formulations for Flow in Porous Media, $110,000.

**Dr. Stefan Stoll**, University of Washington, High-Resolution EPR Characterization of the Ligand Structure in Vanadium Porphyrin Complexes, $110,000.

**Dr. David R. Stuart**, Portland State University, Direct Carbon-Carbon Bond Forming Reactions with Hypervalent Iodine Reagents: Redefining Formal SNAr Reactivity with Carbon Nucleophiles, $110,000.

**Dr. Jin Suntivich**, Cornell University, In Situ Characterization of Small Organic Molecule Oxidation Using Stimulated Raman Spectroscopy, $110,000.

**Dr. Thomas S. Teets**, University of Houston, Two-Stage Catalytic Aerobic Oxidation of Alkanes with Iridium Pincer Complexes, $110,000.

**Dr. Fei Tian**, Stevens Institute of Technology, In-Situ SERS Study of Au-Catalyzed Oxidation of Propene Using Multifunctional Microstructured Optical Fiber Platform, $110,000.

**Dr. Michael T. Timko**, Worcester Polytechnic Institute, The Role of Phase Behavior in Fischer-Tropsch Product Distributions: Supercritical Fluid Studies, $110,000.

**Dr. Ian A. Tonks**, University of Minnesota, Fundamental Studies toward the Copolymerization of Ethylene with Carbon Dioxide: Bimetallic Group 10/Main Group Catalyst Synthesis and Reactivity, $110,000.

**Dr. Vincent Chunchih Tung**, University of California, Merced, Electrohydrodynamically Assisted Dimensional Transition of Crumpled Graphene Balls at Interfaces: Toward Selective Removal of Aromatic and Organosulfur Containments, $110,000.

**Dr. Christopher Uyeda**, Purdue University, Light-Driven Dehydrogenative Carbon-Carbon Coupling Reactions, $110,000.


**Dr. Christopher R. Weinberger**, Drexel University, Understanding the Interfaces Between Iron and Iron-Carbides, $110,000.

**Dr. Ding-Shyue Yang**, University of Houston, Direct Visualization of Interfacial Energy-Transfer and Charge-Transfer Dynamics of Thin Ionic Liquid Films by Ultrafast Electron Imaging, $110,000.

**Dr. Ke Zhang**, Northeastern University, Controlling Polymerization Reactions at the Nanoscale, $110,000.

**Dr. Yu Zhong**, Florida International University, A Novel Integrated Design for the Mixed Ionic-Electronic Conducting (MIEC) Perovskites, $110,000.

**Dr. Yu Zhu**, The University of Akron, Investigating Polymer Templated Graphene Scaffold for Heterogeneous Gold Nanoparticle Catalyst in Selective Oxidation Reactions, $110,000.

**Dr. Paul M. Zimmerman**, University of Michigan, Characterization and Screening of Al-based Olefin Polymerization Catalysts Using Automated Reaction Discovery Approaches, $110,000.
New Directions
Awards for Fundamental Research

Dr. Pinar Akcora, Stevens Institute of Technology, Flow-Induced Organization of Bimodal-Sized Particles in Drying Polymer Droplets, $110,000.

Dr. Erik J. Alexanian, University of North Carolina at Chapel Hill, Intermolecular Aliphatic C-H Functionalization Using Heteroatom-Centered Radicals, $110,000.

Dr. Zhenan Bao, Stanford University, Synthesis, Functionalization, and Processing of Conjugated Microporous Polymers for Refining Stream Separation and Purification, $110,000.

Dr. Ali Beskok, Southern Methodist University, Nanometer-Scale Gas Transport in Shale Reservoirs, $110,000.

Dr. Tanja Bosak, Massachusetts Institute of Technology, Biogeochemical and Lithification Patterns in Microbial Carbonates through Interactions of Sedimentary Bed Forms and Fluid Flow, $110,000.

Dr. Uwe Burghaus, North Dakota State University, Fundamental Properties of Two-Dimensional Zeolites, $110,000.

Dr. Ilya V. Buynevich, Temple University, Geophysical Characterization of Biogenic Structures in Siliciclastic and Carbonate Media, $110,000.

Dr. William J. Chain, University of Hawaii at Manoa, Metal-Free Functionalization of Aromatic Rings - Remarkably Mild Carbon–Heteroatom and Carbon-Carbon Bond Formations, and Dehydrogenative Cross-Coupling Reactions, $110,000.

Dr. Donna A. Chen, University of South Carolina, Metal-Organic Frameworks as Gas-Phase Heterogeneous Catalysts: Understanding Active Sites for Oxidation and Hydrogenation Reactions, $110,000.

Dr. Peng Chen, Cornell University, Mechano-Catalysis Coupling within a Single Growing Polymer, $110,000.

Dr. John D. Chisholm, Syracuse University, Acid Catalyzed Alkylation Reactions of Trichloroacetimidates, $110,000.


Dr. Shanti Deemyad, University of Utah, Kinetic and Isotope Effects in P-T Phase Diagram of Polycyclic Aromatic Hydrocarbons, $110,000.

Dr. Rafael Delgado Buscalioni, Universidad Autonoma de Madrid, Hydrodynamics of Colloidal Clustering in Different Dynamic Regimes, $110,000.

Dr. Jerome Delhomelle, University of North Dakota, Molecular Mechanisms Underlying the Adsorption of Alkanes and their Mixtures in Metal-Organic Frameworks, $110,000.

Dr. Douglas A. Edmonds, Indiana University Bloomington, A Theoretical and Field-Based Study on the Formation and Shape of Fluvial Levees, $110,000.

Dr. Eva Enkelmann, University of Cincinnati, Triggering a Tectonic-Climate Feedback: The Sedimentary Record of Tectonic-Surface Processes Interactions in the St. Elias Range, Alaska, $110,000.

Dr. Fernando A. Escobedo, Cornell University, Molecular Simulation of Vapor-Phase Nucleation of Alkanes, $110,000.

Dr. Ulrich W. Felk, University of Toronto Mississauga, Metals at Tripodal Sites of Adamantane and Graphene-Like Surfaces of Nano-Diamonds: A Unified Strategy for Petroleum-Derived Materials from the Molecular to the Nano-Scale, $110,000.

Dr. Katherine H. Freeman, The Pennsylvania State University, CoEnzyme F430: A Gateway to Anaerobic Methane Oxidation, $110,000.

Dr. Lev D. Gelb, University of Texas at Dallas, Thermodynamics of Acid-Base Equilibria in Protonic Ionic Liquids, $110,000.

Dr. David S. Glueck, Dartmouth College, Chiral Iridium Pincer Complexes for Catalytic Asymmetric Hydrogen Transfer Processes, $110,000.

Dr. Ksenija D. Glusac, Bowling Green State University, Concerted Excited-State Hydride Transfer from Organic Models, $110,000.
**Dr. Gregory M. Grason**, University of Massachusetts Amherst, Mechanics and Stability of Surface-Conﬁned Assemblies, $110,000.

**Dr. Gordon W. Gribble**, Dartmouth College, Novel Interrupted Polyacenes, $110,000.

**Dr. Elizabeth M. Griffith**, The University of Texas at Arlington, Formation and Early Diagenesis of Microbialites in Storr's Lake, San Salvador, Bahamas: An Alkaline Earth Metal Isotope Investigation, $110,000.

**Dr. Robert B. Grubbs**, State University of New York at Stony Brook, Synthesis, Functionalization, and Characterization of Crosslinked Porous Elastomers, $110,000.

**Dr. Keith E. Gubbins**, North Carolina State University, Conﬁnement Effect on Solubility of Oilﬁeld Fluids in Sub-Micron Pores, $110,000.

**Dr. Sidney R. Hemming**, Columbia University, Uranium-Lead Dating and Correlation of Lacustrine Carbonates of the Green River Formation: Context for Paleo-Environmental Architecture of Lake Types, $110,000.

**Dr. Jacob L. Jones**, North Carolina State University, Electrode Stability in High Temperature Sensors for Petroleum Applications, $110,000.

**Dr. Linda C. Kah**, The University of Tennessee, Ocean Ventilation in the Ordovician: Potential Impact on Marine Strontium Isotope Compositions, $110,000.

**Dr. Peter G. Khalifah**, State University of New York at Stony Brook, Understanding a Novel Class of Highly Thermostable Liquids, $110,000.

**Dr. James T. Kindt**, Emory University, Molecular Simulation Studies of Clathrate Hydrate Phase Nucleation, $110,000.

**Dr. Jacob Klein**, The Weizmann Institute of Science, Energy Dissipation and Transport Properties in Polymer-Based Nano-Vector/Hydrogel Complexes, $110,000.

**Dr. David E. Kranbuehl**, The College of William and Mary, Understanding the Effect of Graphene Oxide's C:O Ratio on Particle Polymer Intermolecular Forces and Resulting Macroscopic Properties, $110,000.

**Dr. Christy F. Landes**, Rice University, Spectro-Electrochemical Microscopy of Single Nanoparticle Electrocatalysts, $110,000.

**Dr. Nancy E. Levinger**, Colorado State University, Developing a Metal-Ion Burst Technique to Explore Ionic Strength Jump Dynamics, $110,000.

**Dr. Christopher Y. Li**, Drexel University, Crystal Engineering for High Performance Solid Polymer Electrolytes, $110,000.

**Dr. Marjorie L. Longo**, University of California, Davis, Mechanical and Adhesive Properties of Crude Oil Droplets: Contributions of Interfacial Components, $110,000.

**Dr. George F. Majetich**, University of Georgia, A Metathesis-based Synthesis of Dodecahedrane, Isomers and Analogues Thereof, $110,000.

**Dr. Ashlie Martini**, University of California, Merced, Understanding the Relationship between Fluid Molecular Structure and Pressure-Viscosity Behavior, $110,000.

**Dr. Lisa McElwee-White**, University of Florida, Synthesis and Surface Reactions of Organometallic Precursors Tailored for Electron Beam Induced Deposition, $110,000.

**Dr. Eckart H. Meiburg**, University of California, Santa Barbara, High-Resolution, Massively Parallel, Three-Dimensional, Grain-Resolving Simulation Tools for High-Concentration Particulate Flows, $110,000.

**Dr. Michael D. Morse**, University of Utah, Electronic Spectroscopy of Organic and Organometallic Ions, $110,000.

**Dr. Manashi Nath**, Missouri University of Science and Technology, Study of Transition Metal Chalcogenide Nanostructures as Efﬁcient Oxygen Reduction Catalysts, $110,000.

**Dr. Evgueni E. Nesterov**, Louisiana State University, Photochemistry in Liquid Crystalline Media - A Novel Way to Control Selectivity of Photoreactions, $110,000.

**Dr. Christopher K. Ober**, Cornell University, Sequence Controlled Polymers Using Solid Supported Chemistry, $110,000.

**Dr. Thomas D. Olszewski**, Texas A&M University, Using Postmortem Shell Ages to Reconstruct Sediment Burial Pathways, $110,000.

**Dr. Benjamin H. Passey**, The Johns Hopkins University, Oxygen-17 in Sedimentary and Diagenetic Carbonates, $110,000.

**Dr. Marina A. Petrukhina**, State University of New York at Albany, New Class of Organometallic Single-Ion Lanthanide Molecular Magnets, $110,000.
Dr. Lin Pu, University of Virginia, New Catalysts for Stereoselective Polymerization of Functional Alpha-Olefins, $110,000.

Dr. Alejandro D. Rey, McGill University, Atomistic-to-Continuum Modeling of Gas Hydrates Mechanics: Elasticity, Acoustics, and Phase Nucleation, $110,000.

Dr. Eric Rivard, University of Alberta, N-Heterocyclic Olefins (NHOs) as Tunable Ligands for Metal-Mediated Catalysis, $110,000.

Dr. Mark A. Rizzacasa, University of Melbourne, Catalytic Asymmetric Hydration of Alkenes with Chiral cis-β Metallosalen Complexes, $110,000.

Dr. Antoni Rosell-Mele, Universitat Autonoma de Barcelona, Appraisal of the Postdepositional Diagenetic Alteration of Nitrogen Isotopic Signatures of Sedimentary Chlorins, $110,000.

Dr. Joseph P. Sadighi, Georgia Institute of Technology, New Ligands for Catalysis Through Elaboration of the Phosphatriptycene Framework, $110,000.

Dr. R. Mohan Sankaran, Case Western Reserve University, Non-Equilibrium, Atmospheric-Pressure Microplasmas for Hydrocarbon Gas Conversion, $110,000.

Dr. Eli Sloutskin, Bar-Ilan University, Polyhedral Oil Droplets: Nanoscale Elasticity in Emulsions, $110,000.

Dr. David M. Stanbury, Auburn University, One-Electron Oxidation of Alkylsulfinic Acids, $110,000.

Dr. Jeffrey A. Sutton, The Ohio State University, Investigation of Auto-Ignition Dynamics of Turbulent n-Heptane Fuel Jets in High-Temperature, Vitiated Environments Using Time-Resolved, Multi-Scalar Imaging, $110,000.

Dr. E. Charles H. Sykes, Tufts University, Advancing Radioactive Material Design by Understanding Nanoscale Nuclear Decay Effects in 2-D Films, $110,000.

Dr. Steven L. Tait, Indiana University Bloomington, Anion and Voltage Responsive Crystal Switching at Liquid-Graphite Interfaces for Ion Management in Non-Aqueous Solutions, $110,000.

Dr. Mark C. Thies, Clemson University, Graphenic Materials from Polycyclic Aromatic Hydrocarbon Oligomers, $110,000.

Dr. Mesfin Tsige, The University of Akron, Surfactant Induced Ordering at the Oil-Water Interface: Thermodynamic, Kinetic, and Viscoelastic Considerations, $110,000.

Dr. Aleksey M. Vishnyakov, Rutgers, The State University of New Jersey, Mechanisms of Asphaltene Precipitation From Oil: a Multiscale Simulation Study, $110,000.

Dr. Rory Waterman, University of Vermont, Reductive Elimination at Group 14 Elements: A Pathway Toward Catalysis, $110,000.

Dr. Frederick G. West, University of Alberta, Strained Cyclic Allenes: Novel Methods for Generation, New Trapping Reactions, and Domino/Cascade Processes, $110,000.

Dr. B. Erik Ydstie, Carnegie Mellon University, Closed Loop Reservoir Management Using Optimal Control Theory, $110,000.

Dr. Choong-Shik Yoo, Washington State University, Thermomechanical Reactions of Volatiles in Deep Earth Environments: Formation and Evolution of Abiotic Hydrocarbons, $110,000.

Dr. Edward D. Young, University of California, Los Angeles, Rare Isotopologues as Tracers of Methane Provenance, $110,000.

Dr. Wendy Wei Zhang, University of Chicago, Miscible Displacement Fronts, $110,000.

Dr. Junrong Zheng, Rice University, Reaction Mechanism of C-H Activation of Fe-Catalysts, $110,000.

Dr. Timothy S. Zwier, Purdue University, Broadband Microwave Characterization of Pyrolysis Intermediates Formed by Oxygenated Fuels, $110,000.
Undergraduate New Investigator
Starter Grants Awarded to Faculty in Non-Ph.D.-Granting Departments

Dr. Heather L. Abbott-Lyon, Kennesaw State University, Investigation of Methane Direct Dissociation and Partial Oxidation on Vanadium Surfaces, $55,000.

Dr. Nicholas D. Ball, Amherst College, Mechanistic Investigations of Aryl-SO₂-Heteroatom Bond Formation from Palladium Using Bench-Stable SO₂ Sources, $55,000.

Dr. Nahid D.S. Gani, Western Kentucky University, Timing of Incision of the Ethiopian Plateau, East African Rift System: Integration of Apatite (U-Th)/He and ³⁶°/³⁶°Thermochronometry, $55,000.

Dr. Elizabeth Glogowski, University of Wisconsin-Eau Claire, Designing 'Smart' Polymer Self-Assembling Systems by Tuning Polymer Functionality and Architecture, $55,000.

Dr. Michael L. Griffiths, The William Paterson University of New Jersey, Late Phanerozoic Evolution of Seawater Temperature and Sr/Ca: New Insights from Clumped Isotope Thermometry in Biogenic Apatite, $55,000.

Dr. Patrick Huang, California State University, East Bay, Structure and Energetics of Calcium Carbonate Precrystallization Clusters from Atomic-Scale Simulations: Development of a Novel Interatomic Potential, $55,000.

Dr. Andrew J. Huisman, Union College, A Physicochemical Exploration of the Diffusion of Small Molecules in Glassy and Highly-Viscous Materials, $55,000.

Dr. Elizabeth C. Landis, College of the Holy Cross, Impact of Molecular Ligands on Nanoparticle Electrocatlysis, $55,000.

Dr. Sheri Lense, University of Wisconsin-Oshkosh, Multifunctional Bipyridine Ligands for the Catalytic Reduction of CO₂ to CO, $55,000.

Dr. Xiaopeng Li, Texas State University-San Marcos, Self-Assembly of Three-Dimensional Metallo-Supramolecules Using Adamantane-Based Terpyridine Ligands, $55,000.

Dr. Yu Liu, Northern Michigan University, Supramolecular Catalyst Assembled through Aromatic Donor-Acceptor Interaction and Its Application in Hydrolytic Kinetic Resolution of Epoxides, $55,000.

Dr. Sanela Martic, Oakland University, Structure-Oxidation Potential Relationship of Antioxidants and Peroxide Formation in Gasoline, $55,000.

Dr. Jeni A. McDermott, University of St. Thomas, Cenozoic Evolution of the Southwestern Norwegian Passive Margin, $55,000.

Dr. Tyler K. Meldrum, The College of William and Mary, Investigating the Development of Intermolecular Networks in Coatings with Single-Sided NMR, $55,000.

Dr. Gustavo Moura-Letts, Rowan University, Chiral Diaziridines as Synthetic Building Blocks for the Systematic Synthesis of Nitrogen-Containing Heterocycles, $55,000.

Dr. Seann P. Mulcahy, Providence College, Synthesis of Heterocycles by Palladium-Catalyzed [2+2+2] Cyclizations, $55,000.

Dr. Brittany B. Nelson-Cheeseeman, University of St. Thomas, Engineering Superior Oxide Catalysts via Electrostatic Strain, $55,000.

Dr. Dipendu Saha, Widener University, Methane Adsorption in Dry and Wet Micro-Mesoporous Carbon, $55,000.

Dr. John D. Sivey, Towson University, Kinetics of Electrophilic Aromatic Substitution by Aqueous BrCl, BrOCl, and Br₂O: Catalysis of Alkylbenzene Bromination, $55,000.

Dr. Craig N. Streu, St. Mary's College of Maryland, Investigating Novel Transition Metal Complexes for Use in Asymmetric Catalysis, $55,000.

Dr. Patrick H. Willoughby, Ripon College, Alkene Acylation by Photoredox Catalysis, $55,000.

Dr. Guoqi Zhang, John Jay College of Criminal Justice, CUNY, Non-Precious Metal Catalytic Asymmetric Reduction of Unsaturated Bonds: A Supramolecular Approach, $55,000.
Undergraduate Research
Awarded to Faculty in Non-Ph.D.-Granting Departments

Dr. Joseph L. Allen, Concord University, Influence of Anisotropy on Dynamic Rupture During Incipient Fault Zone Development, $70,000.

Dr. Julie K. Bartley, Gustavus Adolphus College, Stromatolites in Atypical Environments: From Mesoproterozoic to Modern, $70,000.

Dr. Timothy B. Clark, University of San Diego, Phosphine-Directed C-H Borylation of Arenes: Facile Access to Ambiphilic Phosphine Boronate Esters, $70,000.

Dr. Benjamin F. Dattilo, Indiana University-Purdue University Fort Wayne, Do Cincinnatian (Ordovician) Phosphorites Result from Intrinsic Organic Burial Processes or Extrinsic Conditions?, $70,000.

Dr. Stephen Drucker, University of Wisconsin-Eau Claire, Spectroscopic Characterization of Acrolein in Its Lowest Triplet (n,π*) State, $70,000.

Dr. Edyta M. Greer, Baruch College, CUNY, Determining the Significance of Thermally-Activated Heavy-Atom Tunneling in Diradical-Forming Concerted Reactions (Cycloaromatizations) of Pertinence to Organic and Physical Chemistry, $70,000.

Dr. Timothy W. Hanks, Furman University, Surface Modification of Polyaniline Films and Nanofibers with Polymer Brushes, $70,000.

Dr. Hongshan He, Eastern Illinois University, BODIPY-Pd Complexes for Photocatalytic C-C Coupling Reactions, $70,000.

Dr. Thomas A. Hickson, University of St. Thomas, Reservoir Heterogeneity and Facies Characterization of Rift Basin Microbial Carbonate Lakes: Insights from the Miocene Horse Spring Formation and the Modern Lower Pahranagat Lake, $70,000.

Dr. Todd W. Hudnall, Texas State University-San Marcos, Antimony(V) Cations as Lewis Acid Catalysts for C-F Activation, $70,000.

Dr. Peter L. Kelly-Zion, Trinity University, Deciphering the Coupled Diffusive and Naturally Convective Transport during Hydrocarbon Evaporation, $70,000.

Dr. Yun Lu, Southern Illinois University Edwardsville, Structural Effects on the Primary Isotope Dependence of Secondary Kinetic Isotope Effects in Hydride Transfer Reactions in Solution, $70,000.

Dr. Lili Ma, Northern Kentucky University, Palladium Catalyzed α-Heteroarylation of Ketones, $70,000.

Dr. Mahesh Pattabiraman, University of Nebraska at Kearney, Employing γ-Cyclodextrin to Mediate Photo-Heterodimerization of Alkenes in the Solid-State, $70,000.

Dr. David A. Rider, Western Washington University, Understanding and Utilizing Block Copolymer Templates for the Preparation of Bimetallic Catalysts for Fuel Cell Applications, $70,000.

Dr. Robert E. Rosenberg, Transylvania University, The Strength of Intramolecular Hydrogen Bonds in Fluoroorganic Molecules, $70,000.

Dr. John D. Thoburn, Randolph-Macon College, Interaction of Aromatic Hydrocarbons with a Cubic Self-Assembled Metallocage, $70,000.

Dr. Xin Wen, California State University, Los Angeles, Mechanistic Studies of Polyelectrolytes for Efficient Scale Inhibition, $70,000.

Dr. Helen K. White, Haverford College, Exploring the Mechanisms of Organic Matter Degradation by Marine Fungi, $70,000.

Dr. J. Charles Williamson, Willamette University, Investigation of Pre-Transition Droplet Formation in Pseudobinary Liquid-Liquid Systems, $70,000.

Dr. Hua Zhao, Savannah State University, Tailoring Ionic Liquids for Deep Desulfurization of Liquid Fuels by Oxidative Extraction, $70,000.