Grants Awarded 2021

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

**Dr. Jamel Ali**, FAMU-FSU College of Engineering, Multiscale Rheology, Structure, and Dynamics of Anisotropic Colloidal Suspensions, $110,000.

**Dr. Jinhye Bae**, University of California (San Diego), Rheological Responses of Soft Particle Suspensions with Capillary Bridges, $110,000.

**Dr. Peng Bai**, University of Massachusetts Amherst, Computational Analysis of Zeolite-Catalyzed Hydrocarbon Chain Growths, $110,000.

**Dr. Rohini Bala Chandran**, University of Michigan, Investigation of Radiative Transport in Multiphase Flows: Physics-Based Simulations Coupled with Data-Driven Modeling, $110,000.

**Dr. Daniel A. Beller**, Johns Hopkins University, Stabilization of Multilamellar Onion Phases by Colloidal Particles, $110,000.

**Dr. Emily Beverly**, University of Houston, Climatic and Autogenic Controls on Fluvial Fan Architecture Using Paleocene-Eocene Deposits from the San Juan Basin, New Mexico, $110,000.

**Dr. Ngong Kodiah Beyeh**, Oakland University, Effect of Container Molecules on the Colloidal and Bulk Properties of Petroleum Asphaltenes, $110,000.

**Dr. Clara L. Blattler**, University of Chicago, Understanding the Preservation of Sulfur Isotope Ratios in Dolomitized Carbonates, $110,000.

**Dr. Michelle A. Calabrese**, University of Minnesota, Probing the Influence of Magnetic Fields on Polymer-Solvent Interactions in Polymer-Derived Polymer Solutions, $110,000.

**Dr. Justin R. Caram**, University of California (Los Angeles), Accessing Forbidden Excited States through Direct Spectral and Temporal Resolution of Weak Photoemission, $110,000.

**Dr. Yingwen Caram**, Northern Illinois University, Exploring Methane Activation and Conversion on Modified Chevrel Phase Chalcogenides, $110,000.

**Dr. Joseph Clark**, Marquette University, Development of Selective Cu-Catalyzed Alkene and Alkyne Functionalization Reactions, $110,000.

**Dr. Robert J. Comito**, University of Houston, Simple Amination of Polymers and Fine Chemicals by Mild and Selective sp3 C-H Imination, $110,000.

**Dr. Viktor J. Cybulskis**, Syracuse University, Engineering Tandem Catalytic Pathways for Direct Partial Oxidation of Light Alkenes, $110,000.

**Dr. Jenee D. Cyran**, Baylor University, Understanding the Surface Structure of Gas Hydrates to Aid in Rational Design of Inhibitors, $110,000.

**Dr. James M. Eagan**, University of Akron, Olefin/O2 Derived Polyesters: Structure, Mechanism of Formation, and Degradation, $110,000.

**Dr. Rachel Glade**, University of Rochester, The Probabilistic Physics of Sediment Diffusion in Rivers, $110,000.

**Dr. Bo Guo**, University of Arizona, Pore-Scale Modeling of the Compositional Flow and Phase Behaviors of Hydrocarbons in Shale Formations, $110,000.

**Dr. Kai He**, University of California (Irvine), Fundamental Understanding of Colloidal Nanocrystal Growth Mechanism for Controlled Synthesis of Bimetallic Heterogeneous Catalysts, $110,000.

**Dr. David P. Hickey**, Michigan State University, Design of Electrochemically Recyclable NADH Biomimetics, $110,000.
Grants Awarded 2021

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

Dr. Michael S. Inkpen, University of Southern California, Metal Bis(Terpyridine) Self-Assembled Monolayers: New Platforms for Surface-Appended Molecular Catalysts, $110,000.

Dr. MD Mahbubul Islam, Wayne State University, Elucidating Molecular-level Understanding of Graphitizability of Heavy End Aromatic Feedstocks, $110,000.

Dr. Nicholas E. Jackson, University of Illinois (Urbana Champaign), Is There a Tradeoff Between Electronic and Ionic Conduction in Petroleum-Derived Polyelectrolytes?, $110,000.

Dr. Sarah Jacquet, University of Missouri-Columbia, Scratching the Disconformity Surface: Formation of the Lower Cambrian Flinders Unconformity and Distal Equivalents in the Arrowie Basin, South Australia, $110,000.

Dr. Adam Jaffe, University of Notre Dame, Leveraging Atom-Transfer Chemistry to Generate and Study Solid-State Materials Featuring Metal-Oxo and Metal-Sulfido Active Sites, $110,000.

Dr. Jae Chul Kim, Stevens Institute of Technology, Design Principles of Sodium-Functionalized Microporous Membranes for Desulfurization of Petroleum Products, $110,000.


Dr. Jimmy Lawrence, Louisiana State University, Rational Design of Precision Polymer Ligands for Modulating the Distribution of Functional Groups on Nanoparticle Surface, $110,000.

Dr. Yaofa Li, Montana State University, Understanding Pore-Scale Reactive Mineral Dissolution in Porous Media under Single- and Multi-Phase Flow Conditions, $110,000.

Dr. Yuzhang Li, University of California (Los Angeles), Molecular-Scale Adsorption Kinetics of Natural Gas in Metal-Organic Frameworks Revealed by Cryogenic Electron Microscopy, $110,000.

Dr. Chunming Liu, University of Akron, Single-molecule Imaging of Photoinduced Atom Transfer Radical Polymerization, $110,000.

Dr. Max K. Lloyd, Pennsylvania State University, Experimental and Environmental Investigation of Coal Demethylation Using Position-Specific Isotope Analyses, $110,000.

Dr. Xiaoli Ma, University of Wisconsin-Milwaukee, 3D Covalent Organic Framework Membranes: Interfacial Synthesis and Organic Solvent Nanofiltration Properties, $110,000.

Dr. Amanda B. Marcie, Rice University, Single Molecule Investigation of Interfacial Film Dynamics in Asphaltene-Stabilized Water-in-Oil Emulsions, $110,000.

Dr. Neo E.B. McAdams, Texas Tech University, Building a Chronostratigraphic Framework for Silurian Petroleum Reservoir Development in the Permian Basin Using Integrated High-Resolution δ13C Chemostratigraphy, Conodont Biostratigraphy, and Sequence Stratigraphy, $110,000.

Dr. Yashar Mehmani, Pennsylvania State University, Flow-Induced Crack Nucleation and Coalescence in Porous Media, $110,000.

Dr. Alexander V. Mironenko, University of Illinois (Urbana Champaign), Reaction Mechanism and Kinetics of Heterogeneous Carbonylation on Atomically Dispersed Sites from First Principles, $110,000.

Dr. Astrid M. Mueller, University of Rochester, Selective Electrooxidations of Petroleum Products with Laser-Made Water Oxidation Nanocatalysts, $110,000.

Dr. Eric D. Nacsa, Pennsylvania State University, Direct Electrochemical Activation of N-Heteroarenes for C–C and C–N Bond Formation, $110,000.
Grants Awarded 2021

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

Dr. Karthik Nayani, University of Arkansas, Role of Orientational Elasticity in Determining the Stability of the Water-Oil Interface, $110,000.

Dr. Andy I. Nguyen, University of Illinois at Chicago, Upgrading Small Molecule Catalysts with Peptidic Scaffolds to Tune the Selectivity of C(sp3)H Oxidation, $110,000.

Dr. Katharine Page, University of Tennessee, Entropy Stabilized 3-4 Fluorite Nanostructures for Emissions Catalysts, $110,000.

Dr. Christopher Paolucci, University of Virginia, Single Atom Co Cations Supported on Nitrogen-Doped Carbon for Propane Dehydrogenation: Thermodynamic and Kinetic Consequences of Chemical Environment, $110,000.

Dr. Shauna M. Paradine, University of Rochester, Chiral Manganese Carboxylate Complexes for Catalytic, Enantioselective Oxidative Radical Olefin Addition Reactions, $110,000.

Dr. Shima Parsa Moghaddam, Rochester Institute of Technology, Transport of Emulsions in Porous Media, $110,000.


Dr. Abdon Pena-Francesch, University of Michigan, Organic Magnets based on Macromolecular Radical Networks, $110,000.

Dr. Elizabeth Petsios, Baylor University, Tracking and Paleoenvironmental Trends in Response to the Late Paleozoic Ice Age – A Case Study from the Paradox and Midland Basins of the Western U.S.A., $110,000.

Dr. Spencer Pitre, Oklahoma State University, Halogen-Bonding Photocatalysis; Hydroquinones as Photocatalysts for the Radical Functionalization of Petroleum Feedstock Chemicals, $110,000.

Dr. Zhe Qiang, University of Southern Mississippi, Understanding the Confinement Effects on Polymer Chain Conformation and Annealing Dynamics in Thin Films Using Förster Resonance Energy Transfer between Chain Ends, $110,000.

Dr. Richard Remsing, Rutgers, The State University of New Jersey (New Brunswick), Understanding and Controlling Defect States at Catalytic Liquid-Solid Interfaces, $110,000.

Dr. Joaquin Resasco, University of Texas at Austin, Understanding and Controlling Metal-Support Interactions using Nanocrystal Catalysts, $110,000.

Dr. Anthony Statt, University of Minnesota, C-H Alkylation through Sigma-Bond Metathesis, $110,000.

Dr. Timothy A. Su, University of California, Riverside, Cofacial pi-Stacking of Polycyclic Aromatic Hydrocarbons Enforced by Silane Polymerization, $110,000.

Dr. Qing Tu, Texas A&M Engineering Experiment Station, Charge Transport Properties of Asphaltene Thin Films, $110,000.

Dr. Kate M. Waldie, Rutgers, The State University of New Jersey (New Brunswick), Noble-Metal Reactivity at Cobalt: Using Redox-Active Ligands to Promote Multi-Electron Transformations, $110,000.

Dr. Junpeng Wang, University of Akron, Depolymerizable Alternating Copolymers, $110,000.
Doctoral New Investigator
Starter Grants Awarded to Faculty in Ph.D.-Granting Departments

**Dr. Michael Cai Wang**, University of South Florida, Emergent Deformation-Activated Basal Plane Catalytic Domains in Transition Metal Chalcogenides (TMDCs) and Their Influences on Catalytic Petroleum Processing, $110,000.

**Dr. Marissa L. Weichman**, Princeton University, Gas-Phase Polariton Chemistry: Reaction Kinetics of Methane under Vibrational Strong Coupling, $110,000.

**Dr. Julian G. West**, Rice University, New Selectivity in C-H Functionalization via Radical-Organometallic Crossover, $110,000.

**Dr. Xin Yan**, Texas A&M University, Air-Liquid Interface Mediated Electrochemical Transition-Metal-Catalyzed C-H Functionalization, $110,000.

**Dr. Matthias Young**, University of Missouri-Columbia, Impact of Surface Chemistry on the Initiation and Growth of Pyrrolic Gum Deposits in Fuel, $110,000.

**Dr. Chen Zhang**, University of Maryland, College Park, Understanding the Structure-Property Relationships of Carbon Molecular Sieve Membranes Derived from Interfacially Polymerizable Precursors, $110,000.

**Dr. Liwei Zhang**, University of Texas at Arlington, A Computational Study of Detonation Propagation in Stoichiometric Propane/Oxygen Mixtures, $110,000.

**Dr. Wenlin Zhang**, Dartmouth College, Understanding the Roles of Molecular Topology and Entanglement in Polymer Crystallization Using Ring Polymers, $110,000.
Grants Awarded 2021

New Directions
Awards for Fundamental Research

Dr. Placidus B. Amama, Kansas State University, MXene-Supported Bimetallic Catalysts for Dry Reforming of Methane, $110,000.

Dr. Tewodros Asefa, Rutgers, The State University of New Jersey (New Brunswick), Scalable, Microwave-Assisted Synthesis of Zeolite Catalysts with Recyclable Double Salt Ionic Liquids and their Structure-Property Relationships, $110,000.

Dr. Andrey Bekker, University of California, Riverside, Emergence of Eukaryotes and Giant Petroleum Systems of the Neoproterozoic, $110,000.

Dr. Michael A. Bevan, Johns Hopkins University, Energy and Diffusivity Landscapes for Colloidal Transport in Porous Media, $110,000.

Dr. Gregory P. Bewley, School of Mechanical and Aerospace Engineering, Cornell University, The Conditions under Which Sediments Heap beneath Fluctuating Pressure Gradients, $110,000.

Dr. Aditya Bhan, University of Minnesota, Bismuth Molybdates as Catalysts for Selective Hydrogen Combustion, $110,000.

Dr. Sibani Lisa Biswal, Rice University, Synthesis and Characterization of Deep Eutectic Solvent-Based Emulsions, $110,000.

Dr. Paulo S. Brancio, University of Southern California, Pressure Driven Transport of Solid Dispersions in Bicontinuous Nanoporous Media by Dissipative Particle Dynamics, $110,000.

Dr. Matthew F. Cain, University of Hawaii at Manoa, Limitations with Carbenes, Solved with Phospheniums for the Oxidative Addition of Small Molecules and Functionalization of Petroleum Relevant Substrates, $110,000.

Dr. Ye Cao, University of Texas at Arlington, Understanding the Oil-water Stability and Separation in Inhomogeneous Porous Media, $110,000.

Dr. Matteo Cargnello, Stanford University, Active and Stable Catalysts for Propane Oxidative Dehydrogenation with CO2 via Nanocasting of Polymer-Nanocrystal Composites, $110,000.

Dr. Russell J. Composto, University of Pennsylvania, Enhanced Dynamics and Properties of Polymers Confined in Mesoporous Scaffolds, $110,000.

Dr. Hugh C. Daigle, University of Texas at Austin, Structure of the Electrical Double Layer at the Oil-Water Interface, $110,000.

Dr. Guangbin Dong, University of Chicago, Activation of Alkyl Ether Bonds via Nickel-catalyzed Boron Insertion, $110,000.

Dr. Marcus W. Drover, University of Windsor, Expanding the C-H Fluorination Toolbox, $110,000.

Dr. Jean Duhamel, University of Waterloo, Specific Section of a Macromolecule Embedded in a Much Larger Supramolecular Assembly Probed by Pyrene Excimer Fluorescence, $110,000.

Dr. David A. Fike, Washington University in St. Louis, Petrographically Constrained Microscale Carbonate Carbon and Oxygen Isotope Analyses: Reconstructing Cementation Conditions and Fluid Interactions in Complex Sedimentary Carbonates, $110,000.

Dr. Julie C. Fosdick, University of Connecticut, Fingerprinting the Grenville through Multiple Cycles of Burial Heating and Sedimentation in the Acadian Foreland Basin, $110,000.

Dr. Brian G. Frederick, University of Maine, Photocatalytic Methane Oxidation: A Rigorous Kinetics and Materials Characterization Study, $110,000.
Grants Awarded 2021

New Directions

Awards for Fundamental Research

**Dr. Majid Ghayoomi**, University of New Hampshire, Permeability Evolution and Mechanical Response of Propped Fractured Rocks with Multi-Phase Fluid Flow under Continuous Shear, $110,000.

**Dr. Kayla N. Green**, Texas Christian University, Stabilizing Catalysts for HAT Reactivity in Pyridinophane Metallopolymer, $110,000.

**Dr. Lisa M. Hall**, Ohio State University, Modeling Polymers with End-on and Side-on Liquid Crystal Moieties: Effects of Sequence on Phase Behavior and Thermomechanical Response, $110,000.

**Dr. Ryan C. Hayward**, University of Colorado at Boulder, Monitoring Dynamics During Polymer Crystallization by Single Molecule FRET, $110,000.

**Dr. Sidney R. Hemming**, Columbia University, Refining the Meaning of K/Ar Ages of Glaucony at the Single Pellet Level in the Austin Chalk Formation of Texas, $110,000.

**Dr. Michael P. Hoepfner**, University of Utah, The Impact of Entropy and Pore Structure on Non-Ideal Mixture Properties in Mesoporous Confinement, $110,000.

**Dr. Michael Hren**, University of Connecticut, Impacts of Clay Mineralogy on Organic Molecular Stereochemistry, Stable Isotopic Compositions, and Hydrocarbon Generation, $110,000.

**Dr. Joseph T. Hupp**, Northwestern University, Robust Organic-Cage-Encapsulated Polysulfidometallates for Catalytic Hydrodesulfurization, $110,000.


**Dr. Young-Shin Jun**, Washington University in St. Louis, Probing Calcium-containing Nanoparticle Nucleation in Situ at Dynamic Oil-Brine Interfaces, $110,000.

**Dr. Steven R. Kass**, University of Minnesota, Weakly Coordinating Cations, $110,000.

**Dr. Kevin J. Kubarych**, University of Michigan, Electrocatalysis Mechanism and Dynamics using 2D-IR Spectroelectrochemistry, $110,000.

**Dr. Yvette Kuiper**, Colorado School of Mines, Evolution of the Scotian Basin in Offshore Nova Scotia, Canada: A Preliminary Integrated Study Combining U-Pb Detrital Zircon Geochronology and 3-D Modeling of Seismic Data, $110,000.

**Dr. Christine M. Le**, York University, Harnessing the Diverse Reactivity of Acylium Ions in Fluorinative Transformations, $110,000.

**Dr. Kyung Jae Lee**, University of Houston, Mechanisms of Wettability Alteration by the Interactions between Kerogen and Hydraulic Fracturing Fluid and Its Impact on Fluid Transport in Organic-Rich Shales, $110,000.

**Dr. Yue (Stanley) Ling**, Baylor University, Direct Numerical Investigation of the Aerobreakup of Evaporating Droplets, $110,000.

**Dr. Stephan Link**, Rice University, Plasmonically Generated Hydrated Electrons, $110,000.

**Dr. Francis Macdonald**, University of California, Santa Barbara, Organic Matter and Phosphorite Production and Preservation in the Monterey Formation, $110,000.

**Dr. Angel A. Marti-Arbona**, Rice University, Photochemical Olefin Oxidation Using Rhenium-Doped Supramolecular Frameworks, $110,000.

**Dr. Garret M. Miyake**, Colorado State University, Depolymerizable Sulfur Based Plastics, $110,000.
Grants Awarded 2021

New Directions
Awards for Fundamental Research

Dr. Giannis Mpourmpakis, University of Pittsburgh, Elucidating Fundamental Mechanisms of Photocatalytic Methane Activation, $110,000.

Dr. Jonathan Nickels, University of Cincinnati, The Role of Static and Dynamic Structure Factors in the Viscosity Scaling of N-alkanes, $110,000.

Dr. Jonathan S. Owen, Columbia University, Colloidal Nanometer Scale Metal Organic Frameworks for Selective Interfacial Catalysis, $110,000.

Dr. Oleg V. Ozerov, Texas A&M University, Rothwell Hydrogenation of Arenes as a Potential Method for Chiral Phosphate Synthesis, $110,000.

Dr. Michele Pavanello, Rutgers, The State University of New Jersey, Dynamics and NMR Properties of Catalytic MgO and SiO2, $110,000.

Dr. Jeffrey T. Pietras, State University of New York (Binghamton), Linking the Distribution, Surface Morphology, Pore Structure, and Environmental Conditions of Lacustrine Microbialite Reservoir Facies: Fayetteville Green Lake, New York, $110,000.

Dr. Rodney D. Priestley, Princeton University, Nano-Calorimetry of Ultradense Polymer Brushes, $110,000.

Dr. Jian Qin, Stanford University, Defects and Lifetime of Dynamic Clusters Near the Gel Point, $110,000.

Dr. Arun Ramachandran, University of Toronto, The Influence of Shear on Solute Mass Transfer Mechanisms and Rates in Suspensions with Yield Stress, $110,000.

Dr. Scott A. Reid, Marquette University, Experimental Probes of the Thermal Decomposition of Gas Hydrates, $110,000.

Dr. Richard Robinson, Cornell University, Nano-Engineering Copper Defects to Investigate Carbon Monoxide Catalysis, $110,000.

Dr. M. Ravi Shankar, University of Pittsburgh, Field-Driven Mutability of Molecular Order in Ionic Liquid Crystalline Elastomers, $110,000.

Dr. Michael S. Sherburn, Australian National University, New Directions in Hydrocarbon Chemistry, $110,000.

Dr. Jennifer Sinclair Curtis, University of California, Davis, Attrition in Flowing Particulate Systems, $110,000.

Dr. Kuldeep Singh, Kent State University, How the Surface Roughness Contributes to Wettability and its Alteration of Geologic Minerals, $110,000.

Dr. Jeremy M. Smith, Indiana University, Voltage-Programmable Organometallic Catalysis, $110,000.

Dr. Kenan Song, Arizona State University, Aligning Micro and Nanoscale Pores via Additive Manufacturing, $110,000.

Dr. Jake D. Soper, Georgia Institute of Technology, PCET to Single-Site Metal–Oxyls for Hydrocarbon Oxidations in Redox-Active Metal–Organic Frameworks, $110,000.

Dr. Mesfin Tsige, University of Akron, Understanding the Effect of Catenation on the Translocation Properties of Polymers through Nanopores: A Molecular Dynamics Investigation, $110,000.

Dr. Patrick T. Underhill, Rensselaer Polytechnic Institute, Phase Separation of Particles in Flow Using a Stochastic Kinetic Theory, $110,000.

Dr. Casey R. Wade, Ohio State University, Using Enforced Coordination Geometry to Design Base Metal Catalysts for Hydrocarbon Functionalization, $110,000.

Dr. Hui Wang, University of South Carolina, Pathway Switch of Catalytic Hydrogenation Reactions on sub-5 nm Platinum Nanocatalysts, $110,000.
Grants Awarded 2021

New Directions
Awards for Fundamental Research

Dr. Qiu Wang, Duke University, Rapid and Modular Construction of 1,2-Substituted Cycloalkenes from Cyclic Vinyl Triflates, $110,000.

Dr. Adam Wasserman, Purdue University, Fractional Charges and Spins in the Simulation of Carbon-Carbon Bond-Rupture Reactions, $110,000.

Dr. Arthur H. Winter, Iowa State University, Non-Adiabatic Excited State Dynamics of Reactive Intermediate Photoprecursors, $110,000.

Dr. Zijie Yan, University of North Carolina at Chapel Hill, Plasmonic Metal Oxide Nanomaterials for Enhanced Photocatalytic Conversion of Methane, $110,000.

Dr. Kesong Yang, University of California (San Diego), Ab-initio Design of Two-dimensional Perovskite Oxides for Methane Reforming, $110,000.

Dr. Elizabeth R. Young, Lehigh University, Controlling Excited-State Dynamics and Reactivity of Naphthalene-Based Azo Dyes, $110,000.

Dr. Francisco Zaera, University of California, Riverside, Design of Tandem Heterogeneous Catalysts for the Valorization of Petroleum-Derived Feedstocks, $110,000.

Dr. Liming Zhang, University of California, Santa Barbara, Development of Cooperative Pd Catalysis and Ru Catalysis Enabled by Designed Bifunctional Ligands, $110,000.

Dr. Jie Zheng, University of Akron, Design and Understanding of Interfacial Bonding Elastomers under Harsh Conditions, $110,000.
Undergraduate New Investigator
Starter Grants Awarded to Faculty in Non-Ph.D.-Granting Departments

Dr. Rebecca E. Black, New College of Florida, Ruthenium(II) Complexes Bearing Base-Functionalized Bis(diphenylphosphino)biphenyl Ligands for Alcohol Acceptorless Dehydrogenation, $55,000.

Dr. Hong Young Chang, Sul Ross State University, Chiral Polyoxometalate (POM) Clusters based on Strandberg Polyxoanion: Rational Design, Synthesis, Characterization, and Crystal Growth, $55,000.

Dr. Meagan B. Elinski, Hope College, Role of Hydrocarbon Chemical Structure in Composite Film-Forming Surface Reactions, $55,000.

Dr. Vianney Gimenez-Pinto, Lincoln University of Missouri, Modeling Anisotropic-Ordered Polymers and Elastomers, $55,000.

Dr. Rebecca Haley, University of Wisconsin-River Falls, Department of Chemistry, Investigating Reactivity Trends for Mechanochemoacaly Aryl-Aryl and Aryl-Alkyl Cross-Electrophile Coupling Reactions, $55,000.

Dr. Julia Pribyl Ham, United States Naval Academy, Creating Cyclic Polymers from Vinyl Monomers, $33,000.

Dr. Molla Hasan, University of Texas Permian Basin, Leveraging the Phase Behavior of Particles Jammed Emulsion for Designer Porous Materials, $55,000.

Dr. Erik P. Hoy, Rowan University, All-Carbon Electronics: Electron Correlation and Reversed Electrical Conductance Decay in Heavy Oil Derivatives, $55,000.

Dr. Aaditya Khanal, University of Texas at Tyler, Numerical Modeling of the Gas Flow in Nanoporous Media, $55,000.

Dr. Youngmin Lee, New Mexico Institute Of Mining And Technology, Synthesis and Characterization of Reversible Epoxies, $55,000.

Dr. Daniel Maser, Connecticut College, Rotationally Resolved Measurements of the Vibrational Overtones of Benzene using Dual Comb Spectroscopy, $55,000.

Dr. Gretchen M. Peters, James Madison University, Exploring Cooperative Boronic Acid Crosslinking as Trigger Mechanism for Stimuli-Responsive Petroleum-Derived Materials, $55,000.

Dr. Alexandre H. Pinto, Manhattan College, Multifunctional Membranes based on Chitosan, Graphene Oxide, and TiO2 for Simulated Fuel Desulfurization, $55,000.

Dr. Sam Toan, University of Minnesota, Novel Catalytic Chemical Looping System for Bitumen Conversion, $55,000.

Dr. Khanh Hoa Tran Ba, Towson University, Probing Surfactant Dynamics at the Intersection of Oil-Water-Solid Interfaces: Towards a Predictive Enhanced Oil Recovery, $55,000.

Dr. Amanda K. Turek, Williams College, Probing and Leveraging H-Bonding Interactions in Nucleophilic Aromatic Substitution Reactions, $55,000.

Dr. Nicholas Whiting, Rowan University, Fundamental Study of Sulfur Heterocycles using Parahydrogen Enhanced Nuclear Magnetic Resonance Spectroscopy, $55,000.

Dr. Alexander George Zestos, The American University, Fundamental Reactions of Diffusion and Adsorption Kinetics of Phenols on Microelectrode Surfaces, $55,000.
Grants Awarded 2021

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

Dr. Magnus Bebbington, Montclair State University, Catalytic Reactions with Rongalite – Sustainable Approaches to Diverse Sulfonyl Derivatives, $70,000.

Dr. Ellen Chamberlin, Bucknell University, Understanding the Controls on Scroll Bar Morphology and Spacing: Evaluating the Relationship between Channel and Scroll Bar Properties in Rivers with Migrating Chute Channels, $70,000.

Dr. Timothy B. Clark, University of San Diego, New Methods to Access Carbon-Phosphorus and Phosphorus-Boron Bonds, $70,000.

Dr. Keying Ding, Middle Tennessee State University, Base Transition Metal Complexes for Catalytic Amide Formation, $70,000.

Dr. David Forliti, University of St. Thomas, Dynamics and Acoustic Receptivity of High Density-Ratio Two-Jet Impingement Flow Fields, $70,000.

Dr. Christopher R. Graves, Swarthmore College, Development of a Tunable Redox-Active Aluminum Catalyst System for the Atom Transfer Radical Polymerization of Olefins, $70,000.

Dr. Jeffrey L. Katz, Colby College, Development of Heterogenous Nickel Catalysts for C-N Bond Forming Reactions, $70,000.

Dr. John Luczaj, University of Wisconsin-Green Bay, Testing Mechanisms for Regional (Basin-wide) Dolomitization of Triassic Carbonate Platforms in the Nanpanjiang Basin of South China: Implications for Hydrocarbon Reservoirs, $70,000.

Dr. Elodie E. Marlier, Saint Olaf College, Synthesis and Catalytic Exploration of Cobalt(I) and Nickel(I) Complexes Supported by N2P2 Hybrid Ligands, $70,000.

Dr. David A. Rider, Western Washington University, Hybrid Polymers and Composites from a Grafting Thermal Ring-Opening Polymerization Reaction of Benzoxazines and Sulfonyl Ester-Functionalized Materials, $70,000.

Dr. Robert E. Rosenberg, Transylvania University, Examination of Cooperativity in the Complexes of Diols with Hydrogen Bond Donors and Acceptors, $70,000.

Dr. Radu F. Semeniuc, Eastern Illinois University, A Variable Bridging Ligand Strategy for Bimetallic Complexes, $70,000.

Dr. John C. Weber, Grand Valley State University, Toward Resolving some Caribbean-South American Tectonics and Petroleum Systems Problems through Using Detrital Zircon Geochronology, Raman Spectroscopy, and Clumped Isotope Analysis, $70,000.

Dr. David Zigler, California Polytechnic State University, Light and Brimstone: Sulfur-Based Chromophores for Photochemical Synthesis, $70,000.