

## Grants Awarded 2021

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### 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 Asphaltene, \$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 Petroleum-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 Cheng**, 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  $sp^3$  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/CO<sub>2</sub> 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.

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- 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. Stephanie Kwon**, Colorado School of Mines, Kinetic, Spectroscopic, and Theoretical Study of Benzene Alkylation with Light Alkenes on Zeolites: The Role of Micropores on Catalytic Reactivity, Selectivity, and Stability, \$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. Marciel**, 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  $\delta^{13}\text{C}$  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.

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**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(sp<sup>3</sup>)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. Amanda L. Patrick**, Mississippi State University, Investigating Ionic Liquid Thermal Stability and Degradation Pathways in the Gas and Liquid Phases via Mass Spectrometric Monitoring: Toward Better Predictive Power, \$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. Courtney C. Roberts**, University of Minnesota, C-H Alkylation through Sigma-Bond Metathesis, \$110,000.

**Dr. Tomce Runcevski**, Southern Methodist University, Liquid-Solid Equilibria and Composition-Temperature Phase Diagrams of Organic Binary Mixtures, \$110,000.

**Dr. Antonia Statt**, University of Illinois (Urbana Champaign), Understanding Flow Induced Crystallization of Polymers, \$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.

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**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

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### 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. Branicio**, 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 CO<sub>2</sub> 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.

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### 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 Metallopolymers, \$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. Zane Jobe**, Colorado School of Mines, Carbonate Sediment-Gravity-Flow Experiments: How do Particle Characteristics Affect Flow Structure, Deposit Texture, and Reservoir Quality in Deep-Marine Settings?, \$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.

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### 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 Phosphine Synthesis, \$110,000.

**Dr. Michele Pavanello**, Rutgers, The State University of New Jersey, Dynamics and NMR Properties of Catalytic MgO and SiO<sub>2</sub>, \$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.

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#### 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.

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## Grants Awarded 2021

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### 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 Polyoxoanion: 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 Mechanochemical 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 TiO<sub>2</sub> 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.



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**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.