Henry Dreyfus Teacher-Scholar Awards Program

Institution	Awardee	Project
2020		
Pomona College	Nicholas D. Ball	New One-Electron Strategies in S(VI) Fluoride Chemistry
Mount Holyoke College	Katherine E. Berry	Molecular Mechanisms of Bacterial RNA-Binding Proteins
Sam Houston State University	Christopher E. Hobbs	Recycling Polymer-Supported Catalysts from Monomer to Polymer and Back to Monomer
Skidmore College	Juan G. Navea	Shedding Light on Atmospheric Interface Processes through Undergraduate Physical Chemistry Research
Creighton University	Kayode D. Oshin	Developing New Catalyst Systems for Atom Transfer Radical Addition (ATRA) Reactions
Western Washington University	David A. Rider	Research at the Intersection of Polymer Chemistry, Applied Polymer Science and Nanomaterials.
Towson University	John D. Sivey	Environmental Transformations Involving Commonly Overlooked Constituents in Disinfected Water and in Agrochemical Formulations
Lafayette College	Lindsay Soh	Designing Sustainable Biorefinery Products and Processes using Green Chemistry and Engineering
2019		
Santa Clara University	Paul Abbyad	Sorting Cancer Cells Based on Metabolism Using Droplet Microfluidics
Furman University	Mary Elizabeth Anderson	Bottom-Up Assembly of Nanomaterials: Investigating Fundamentals of Formation to Tailor Material Structure and Properties
Haverford College	Louise K. Charkoudian	Unveiling Molecular Underpinnings of Natural Product Biosynthesis
San Jose State University	Lionel Cheruzel	Light-Driven P450 Biocatalysis Featuring Ru(II)-Diimine Complexes
Swarthmore College	Christopher R. Graves	Enabling New Catalytic Chemistry for Aluminum with Non-Innocent and Redox-Active Ligands
University of North Florida	Amy L. Lane	Revealing Biosynthetic Secrets to Unleash Nature's Chemical Aptitude
The College of William & Mary	William R. McNamara	Catalyst-Sensitized Metal Oxides for Photocatalytic Hydrogen Generation
Wellesley College	Rachel H. R. Stanley	The Gas Toolbox: Chemical Clues for Understanding the Effect of Climate Change on the Ocean
2018		
University of Wisconsin-Stevens Point	Nathan Bowling	Controlling Conformations of Unsaturated Molecules
Lafayette College	Justin K. Hines	Impact of Amino Acid Content on Amyloid and Molecular Chaperone Interactions in Live Cells
Butler University	R. Jeremy Johnson	Mycobacterial Serine Hydrolases and their Roles in Dormant Tuberculosis Infection
University of Colorado Denver	Jefferson Knight	Chemistry of Interfacial Protein-Membrane Interactions Central to Insulin Secretion
Furman University	Greg Springsteen	Protometabolic Pathways Toward the Origin of Life
Santa Clara University	Korin E. Wheeler	Toward Prediction of Nanoparticle Biomolecular Interactions and Reactivity
James Madison University	Nathan T. Wright	Towards Stabilizing Disease-causing Desmoplakin Mutations
The College of William & Mary	Kristin L. Wustholz	Development of Stimulus-Responsive SERS Probes for Biosensing

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2017		
University of San Diego	Lauren Benz	The Surface Chemistry of Complex Materials
Reed College	Juliane L. Fry	NOx and Particulate Matter: Determining the Chemical Mechanisms Behind Regional Air Pollution
Santa Clara University	Amelia A. Fuller	New Functions of Biomimetic Oligoamides as Sensors for Water Contaminants
Western Washington University	John D. Gilbertson	Bioinspired Movement of Protons and Electrons for Small Molecule Activation
Central Michigan University	Benjamin M. Swarts	Illuminating the Mycobacterial Cell Wall through Undergraduate Chemical Biology Research
Haverford College	Helen K. White	Physicochemical and Biochemical Insights into the Cycling of Organic Contaminants in Marine Environments
The College of William & Mary	Douglas D. Young	Application of Unnatural Amino Acids to Prepare Multivalent Bioconjugates
2016		
The State University of New York at Potsdam	Fadi Bou-Abdallah	Iron Oxidation and Deposition Mechanisms in WT Heteropolymer Ferritins and Ferritin Variants Causing Neuroferritinopathy
University of San Diego	Timothy B. Clark	Metal-Catalyzed Borylation Reactions
University of Richmond	Kelling J. Donald	Weak Interactions and Chemical Bonding Phenomena in Inorganic and Organic Systems: Understanding, Predicting, and Applying
Pomona College	Jane M. Liu	Molecular Understanding and Applications of Bacterial RNAs
Franklin & Marshall College	Katherine E. Plass	Engineering Copper Sulfide Nanoparticles to Modulate Ion Exchange and Photocatalysis
Carleton College	Matthew T. Whited	Exploiting Metal/Main-Group Cooperation in Small Molecule Activation
Swarthmore College	Liliya A. Yatsunyk	Deciphering the Structure and Dynamics of Quadruplex DNA and DNA-ligand Complexes
2015		
Franklin & Marshall College	Scott H. Brewer	Exploring Protein Structure and Hydration with Spectroscopic Reporter Unnatural Amino Acids and Modified Nucleosides
Doane College	Andrea E. Holmes	DETECHIP: The Development of a Solid Supported Chemical Sensor Array
Hope College	Jeffrey B. Johnson	Carbon-Carbon Single Bond Activation: Mechanistic Understanding Leading to New Methodology
St. Olaf College	Dipannita Kalyani	Pd- and Ni-Catalyzed Carbon-Carbon Bond Formations
Haverford College	Casey H. Londergan	Development of Site-Specific Vibrational Probes of Dynamic Protein Structure
The College of William & Mary	Jonathan R. Scheerer	Studies Directed Toward the Synthesis, Reactivity, and Application of Polycyclic Alkaloid Natural Products
Western Washington University	Paul Clinton Spiegel	Structure and Function of Ribosome-Dependent GTPases and Blood Coagulation Factor VIII
2014		
Hamilton College	Myriam L. Cotten	

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Hope College	Jason G. Gillmore	Synthesis, Photochemistry, Electrochemistry & Computation: Undergraduate Research Toward Photochromic Photooxidants
University of Colorado Denver	Hai Lin	Open-Boundary QM/MM Methods for Multiscale Modeling and Simulations of Chemical Reactions in Complex Environments
Western Washington University	Gregory W. O'Neil	New Sulfone and Silicon-Based Methods for Complex Target Oriented Synthesis
Haverford College	Joshua A. Schrier	Designing Organic Semiconductors, Gas Separation Membranes, and Inorganic Solids
Gustavus Adolphus College	Dwight R. Stoll	Fundamental studies in two-dimensional liquid chromatography – Informing the next era in liquid chromatography
Calvin College	Douglas A. Vander Griend	Thermodynamic Modeling of Molecular Ensembles in Solution, from Supramolecular Assemblies to Biomolecules
2013		
University of Richmond	Chiles Wade Downey	Silyl Triflates in the Development of New One-Pot Reactions for the Production of Synthetic Building Blocks
Bowdoin College	Danielle H. Dube	Chemical tools to discover & target Helicobacter pylori's glycoproteins
Macalester College	Paul J. Fischer	Studies on Group VI and Group VIII Metal Complexes of Donor-Functionalized Cyclopentadienyl and Anionic Bis(phosphino)borate Ligands
Villanova University	Amanda M. Grannas	Characterization and reactivity of natural organic matter in environmental ices relevant to atmosphere/snow/ice interactions and glaciology
Oberlin College	Catherine M. Oertel	Materials Old and New: Solvothermal Synthesis of Complex Oxides and their Role in Corrosion Mechanisms
Claremont McKenna College	Kathleen L. Purvis-Roberts	Chemical Mechanism for Particulate Matter Formation from Amines Utilized in Carbon Sequestration Technologies
Harvey Mudd College	David A. Vosburg	Biomimetic Synthesis and Molecular Self-Assembly
2012		
Lafayette College	James Ferri	Toward Stimulus-Responsive Stability Control in Fluid/Fluid Dispersions using Functionalized Nanoparticles
Furman University	Brian Goess	Total Synthesis of Furanosteroids
Southwestern Oklahoma State University	Tim Hubin	Development and Screening of Transition Metal Complexes as Chemokine Receptor Antagonists
University of San Diego	Peter Iovine	Undergraduate Research and Mentoring in Polymeric Materials: Polymers and Self-Assembled Structures from Plant-Derived Biopolymers
University of South Alabama	Alexandra Stenson	Chromatographic and Mass Spectral Characterization of Environmental Mixtures
University of Wisconsin-Eau Claire	Kurt Wiegel	Enhanced Stability and Formation of Hydrogen-bonded Mesophases in Macromolecules
Savannah State University	Hua Zhao	Accelerating Enzymatic Hydrolysis of Cellulosic Biomass by Ionic Liquid Pretreatment
2011		
Bard College	Craig M. Anderson	Synthesis, Characterization, and Reactivity of Hetero-Multinuclear, Anti-Cancer, Metal Complexes
Wellesley College	Donald E. Elmore	Characterization of a Histone-Derived Peptide Library

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University of San Diego	Jeremy Kua	Multiscale Modeling of Formaldehyde Chemistry
Swarthmore College	Stephen Miller	Biochemical and structural studies of interspecies bacterial communication
Mount Holyoke College	Megan Núñez	Biophysical Chemistry of DNA Damage and Bacterial Predation
Oberlin College	Rebecca Whelan	Analytical approaches to the characterization and detection of ovarian cancer biomarker proteins
2010		
Amherst College	Anthony Bishop	Target-Specific Control of Protein Tyrosine Phosphatase (PTP) Activity: Chemical-Genetic Tools for the Study of PTP-Mediated Cell Signaling
The College of William & Mary	Elizabeth Harbron	New Stimulus-Responsive Fluorescent Systems: Rhodamine Spirolactam Sensors for Mercury and pH
Colby College	Jeffrey Katz	The Development and Quantitative Measurement of Acetylene-Activated SNAr Reactions and their Application for Complex Macrocycle Synthesis
Chapman University	Christopher Kim	Nanoscale Environmental Chemistry: Studies of Metal Adsorption / Desorption Interactions with Iron Oxyhydroxide Nanoparticle Aggregates
University of Richmond	Michael Leopold	Nanoparticle Film Assemblies as Interfaces for Protein Adsorption and Electrochemistry – Amperometric Sensing Materials for Biomedical Applications
Haverford College	Alexander Norquist	Organically Template Vanadium Tellurites: A New Target for Novel Microporous Materials
2009		
California State University, Northridge	Jussi Eloranta	Spectroscopy in condensed phases
Oberlin College	Manish Mehta	Ab initio, diffraction, and NMR studies of solvation and hydrogen bonding in small peptides in condensed phases
College of the Holy Cross	Kenneth Mills	The mechanism of protein splicing: non-canonical inteins
Eastern Illinois University	Sean Peebles	Microwave spectroscopic studies of transition metal complexes prepared by laser ablation
Smith College	Kate Queeney	Nanoscale topography in a beaker: characterization and development of patterned Si surfaces
Bucknell University	Eric Tillman	Direct synthesis of cyclic polymers using nitrones
Trinity University	Adam Urbach	Rigid receptors for multivalent peptide recognition
2008		
California State University, Long Beach	Xianhui Bu	Chirality in Metal-Organic Framework Materials
Smith College	Shizuka Hsieh	Photochemistry and Overtone-Initiated Chemistry of Atmospheric Hydroperoxides
San José State University	Gilles Muller	Development of Circularly Polarized Luminescence as an Attractive Complementary Method to the Presently Available Techniques for Probing Specific Chiral Structural Changes
University of Puerto Rico, Mayagüez Campus	Belinda Pastrana-Rios	An Interdisciplinary Approach Towards the Study of Proteins and Protein-Protein Interactions: From Bioinformatics to Molecular Biophysics
Williams College	Thomas E. Smith	Asymmetric Methods for the Synthesis of Pyran-Based Anticancer Natural Products

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2007		
Trinity University	Bert D. Chandler	Functional Bimetallic Model Catalysts: Nanoparticle Chemistry and Reaction Kinetics for Characterizing, Evaluating, and Understanding the Active Sites in Heterogeneous Catalysts.
Wellesley College	Nolan T. Flynn	Development of an electrochemical method for triggering the assembly of metal nanoparticles in aqueous solution.
Mount Holyoke College	Maria Gomez	The Elusive Proton: Finding Conduction Pathways in Solid and Liquid Phases.
University of Richmond	Michelle L. Hamm	Studies into the base pairing, repair and replication of the prominent promutagen 8-oxo-2'-deoxyguanosine using modified nucleotides.
Kenyon College	Mo Hunsen	Green Chemistry: Chemical, Enzymatic, and Enzychemical Catalysis for the Synthesis of Novel Glycosidase Inhibitors and Biodegradable Polymers.
California State University, Northridge	Thomas G. Minehan	Development of Green Methodology for the Synthesis of 2-deoxy-ß-C-Aryl Glycosides and Application to the Preparation of Natural Products and Nucleoside Analogs.
College of Charleston	Pamela J. Riggs-Gelasco	Oxygen Activation by Metalloenzymes: The case of Ribonucleotide Reductase from Coryneform ammoniagenes and its facultative metal cofactor.
2006		
Mount Holyoke College	Wei Chen	Probing the Fundamentals of Wetting and Biocomptibility for the Design of New Materials
University of Wisconsin-Eau Claire	Stephen Drucker	We will use jet-cooled cavity ringdown spectroscopy to characterize a series of cyclic enones in their triplet excited states.
University of South Alabama	David C. Forbes	Thermally induced decarboxylation of carboxymethylsulfonium betaines results in formation of the corresponding sulfur ylides in situ.
College of the Holy Cross	Kimberley A. Frederick	Studies of flow processes in microfluidic systems involving polyelectrolyte multilayers, thermoresponsive polymers and guanosine gels
Macalester College	Keith T. Kuwata	Computational studies of oxidation intermediates that serve as aerosol precursors and free radical sources in the troposphere
University of North Carolina at Wilmington	Michael Messina	Viewing enzyme active sites as "quantum controllers" of proton transfer, we propose a quantum control study of the quantum dynamics of proton transfer and tunneling in enzyme active sites.
The College of William & Mary	John C. Poutsma	Investigation the consequences of non-protein amino acid substitution on the thermochmistry and fragmentation patterns of small peptides
2005		
Barnard College	Linda H. Doerrer	Transition metal complexes with fluorinated aryloxide ligands are investigated for reactivity with strongly oxidating reagents and potential organic substrate oxidation.
Mount Holyoke College	Darren G. Hamilton	Design, synthesis, and characterization of self-organizing molecular systems expressing useful emergent properties.
Swarthmore College	Kathleen P. Howard	Development and application of spectroscopic methods (NMR and EPR) to the conformational analysis of membrane-bound viral proteins
University of Richmond	Carol A. Parish	Computational investigations of biologically important systems: Determining the conformational flexibility of HIV protease inhibitors and the cyclization barriers in enediyne warhead drugs.

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Furman University	Jeffrey T. Petty	Small silver and platinum nanoclusters will be investigated for their potential use as fluorescent biological labels and as chiral catalysts.
State University of New York at Geneseo	Wendy K. Pogozelski	We will measure deletion events in mitochondrial DNA as a function of gamma ray dose and investigate the effect on NADH:Q oxidoreductase.
New Mexico Institute of Mining and Technology	Donald H. Weinkauf	Conformal plasma polymer coatings for the surface modification of micon and nanoscale particles: reactor design and coating characterization
2004		
Bates College	Rachel N. Austin	The reaction mechanisms and active site structures of diiron monooxygenases.
Wheaton College	Daniel L. Burden	The use of single-molecule techniques for the study of ion-channel dynamics and the optical manipulation of DNA.
Amherst College	Sandra L. Burkett	Polymerization from inorganic lamellae: nanocomposites of polymer brushes and organically functionalized synthetic clays.
Santa Clara University	Michael R. Carrasco	Site-specific attachment of small organic molecules to peptides and proteins; structure and function of peptides and proteins altered by attached molecules.
Colby College	Julie T. Millard	Small molecule-DNA interactions with an emphasis on the mechanism of anti-cancer activity.
University of the Sciences in Philadelphia	Guillermo Moyna	Use of theoretical 13C chemical shift surfaces and experimental NMR data in the study of the conformation and dynamics of histo-blood group antigen oligosaccharides.
University of Wisconsin-Eau Claire	James A. Phillips	Matrix-isolation FTIR-spectroscopic, computational, and crystallographic studies of condensed phase effects on structure in nitrile donor-acceptor complexes.
California State University, Los Angeles	Matthias Selke	The reactivity, kinetics, and mechanisms of singlet oxygen reactions with metal-bound amino acids and heteroatoms.
Concordia College	Darin J. Ulness	An investigation of the fundamental behavior of light-matter interaction in liquids using noisy light spectroscopy.
2003		
Mount Holyoke College	Sean M. Decatur	Studies of protein folding and misfolding in vitro: isotope-edited infrared spectroscopy of protein aggregates
Oberlin College	Matthew J. Elrod	Overall rate constant and branching ratio kinetics measurements of the reaction of alkene-derived peroxy radicals with nitric oxide
Wabash College	Scott E. Feller	Computational studies of lipid-protein interactions
James Madison University	Gina M. MacDonald	An infrared investigation of substrate binding, salt effects and domain movement in yeast phophoglycerate kinase
Swarthmore College	Paul R. Rablen	A Computational Investigation of the Mechanism of Addition of Carbenes to Bicyclobutanes and Cyclopropenes
Occidental College	Eileen M. Spain	Interfacial chemistry of microbial processes relevant to biofilms and nanotechnology
Furman University	Paul S. Wagenknecht	Exploitation of metal complexes of new constrained macrocyclic ligands in electronic energy transfer studies and catalysis
2002		
Haverford College	Karin S. Akerfeldt	Synthetic peptides: applications to Ca2+-binding proteins of the EF-hand type, voltage-gated ion channels and novel biomaterials

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The College of William & Mary	Robert J. Hinkle	Rearrangements and substitution reactions in beta,beta-disubstituted alkenyl(aryl)iodonium salts: exploiting the extremely labile aryliodonio moiety
Trinity University	Christopher Pursell	Heterogeneous chemistry on solid films of nitric acid, ammonia, and hydrogen sulfide
The University of North Carolina at Charlotte	Daniel Rabinovich	An investigation of the syntheses and structures of nickel compounds in a sulfur-rich environment that mimics hydrogenase enzymes
Missouri State University	Mark M. Richter	Electrochemiluminescence of ruthenium(II) polyazine complexes containing crown-ether moieties in the presence of metal ions
Western Washington University	James R. Vyvyan	Computational investigation of phenol epoxide cyclizations
2001		
University of Wisconsin-Eau Claire	Jason A. Halfen	Analysis of the molecular architecture of copper catalysts for olefin aziridination
Occidental College	Michael G. Hill	In Vitro selection of redox-active ribozymes featuring transition-metal cofactors
Illinois Wesleyan University	Ram S. Mohan	Environmentally friendly organic synthesis using bismuth compounds
Western Washington University	David L. Patrick	Liquid crystal solvents for engineered growth of molecular electronics materials
California State University, Los Angeles	Feimeng Zhou	DNA sensing and protein metal-electron transfer at the metal-solution interface
2000		
The University of North Carolina at Greensboro	Alice E. Haddy	Enzymatic and electron paramagnetic resonance characterization of anion inhibitors of chloride-activated oxygen evolution
Swarthmore College	Robert S. Paley	The chemistry of enantiopure 1-sulfinyl diene iron(0) tricarbonyl complexes
California State University, Fullerton	Fu-Ming Tao	Computational investigation of atmospheric oxidation chemistry of volatile organic compounds
Furman University	John F. Wheeler	Preparation and characterization of DNA-binding and potential photonuclease activity of several chiral transition metal complexes
Carnegie Mellon University	David J. Yaron	Development of semiempirical quantum chemistry models for the photophysical and electronic properties of conjugated polymers and other organic semiconductors
1999		
Hope College	Maria A. Burnatowska-Hledin	Biochemical characterization of VACM-1, a novel protein involved in the regulation of water balance and related to genes that regulate cell growth.
Wake Forest University	S. Bruce King	Bio-organic chemistry of N-hydroxyureas and related compounds
Fort Lewis College	Robert E. Milofsky	Type II Photooxidation of Substituted Pyrroles: Towards the Development of Solid- and Liquid-Phase Reactors for Environmental and Biomedical Analysis
Pomona College	Daniel J. O'Leary	Studies in Organic Synthesis and Conformational Analysis
The College of William & Mary	Robert D. Pike	Chemical Investigations of New Metal-Organic Polymeric Networks
Connecticut College	Marc Zimmer	Computational Analysis of Biologically Important Systems

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1998		
University of Richmond	Samuel A. Abrash	An investigation of anomalies in the photochemistry of weakly bound complexes
College of the Holy Cross	Timothy P. Curran	Creating peptide tertiary structures by linking enforced peptide secondary structures
Haverford College	Julio C. de Paula	Energy transfer processes in biology and medicine probed by laser spectroscopy
The University of North Carolina at Charlotte	Bernadette T. Donovan-Merkert	Redox-promoted reactions of organometallic complexes
Mount Holyoke College	Helen O. Leung	Studies of intermolecular interactions between nonbonded molecules by Fourier transform microwave spectroscopy
Florida International University	Kevin E. O'Shea	Fundamental studies of the degradation of organic contaminants using advanced oxidation technologies
San Francisco State University	Ursula Simonis	Synthesis and characterization of porphyrins and iron porphyrins embedded in model membranes
Bucknell University	Timothy G. Strein	Activation, characterization and application of carbon fiber microelectrodes
Macalester College	Thomas D. Varberg	Laser spectroscopy of second- and third-row transition-metal monohydrides
1997		
United States Naval Academy	Mark L. Campbell	
Central Washington University	JoAnn Peters DeLuca	
University of Puerto Rico, Mayagüez Campus	Gustavo López	
University of South Alabama	Jeffry D. Madura	
University of Massachusetts Dartmouth	Bal Ram Singh	
1996		
The College of William & Mary	Christopher J. Abelt	
Wellesley College	Christopher R. Arumainayagam	
University of Massachusetts Dartmouth	Gerald B. Hammond	
Florida Atlantic University	Russell G. Kerr	
Amherst College	Mark D. Marshall	
1995		
Rutgers, The State University of New Jersey, Camden	Georgia A. Arbuckle	
Trinity University	Michelle M. Bushey	
Western Washington University	Mark E. Bussell	
Illinois State University	Karen I. Goldberg	
Bates College	Thomas G. Lawson	

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Institution	Awardee	Project
1994		
Harvey Mudd College	Kerry K. Karukstis	
Middlebury College	James A. Larrabee	
Furman University	Moses Lee	
Rutgers, The State University of New Jersey, Camden	Jing Li	
University of Puerto Rico, Mayagüez Campus	Juan López-Garriga	
Michigan Technological University	Faith A. Morrison	
Swarthmore College	Thomas A. Stephenson	
Wake Forest University	Mark E. Welker	