AF STFP & NRC RAP: Preparing a Competitive Fellowship Application

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Speaker Biographies

Jennifer Griffiths, PhD is a Senior Program Officer at the National Academies of Sciences, Engineering, and Medicine, where she manages federally sponsored fellowship programs that support top research talent across disciplines. She serves as the primary liaison with government sponsors, ensuring programs run smoothly while fostering strong connections between fellows, mentors, and agencies.

Previously, Jennifer was a Senior Program Officer with the Government-University-Industry-Philanthropy Research Roundtable (GUIPRR), where she led strategy, planning, and execution of workshops that brought together leaders across sectors. She redesigned the Roundtable's programming to be more interactive and reestablished engagement with the White House Office of Science and Technology Policy.

Before joining the National Academies, her background included more than a decade in academic publishing and policy engagement. At Springer Nature, she established the U.S. Research Advisory Council and advanced dialogue on open science, research integrity, and equity. At the Royal Society of Chemistry, she developed publishing strategies for the Americas and managed international offices. She began her publishing career at the American Chemical Society as Managing Editor for several leading journals.

Jennifer earned her Ph.D. in Chemistry from Duke University, completed postdoctoral research at Yale, and holds a B.A. in Chemistry from Earlham College.

Marisa McDonald, PhD is an Associate Program Officer for the Air Force Studies Board at the National Academy of Sciences, Engineering, and Medicine. Marisa's background is in marine biology, with a Bachelor of Science from the University of Miami in Marine Science and Biology and a PhD in Marine Biology from the University of Hawai'i at Mānoa.

Her dissertation research focused on investigations of the visual system of the larval stomatopod crustaceans, commonly known as the mantis shrimp. Her visual system expertise led her to the Air Force Research Laboratory Nature Inspired Team at the Eglin Air Force Base, which is using investigations of insect visual systems to inform bio-inspired technologies. Marisa joined the laboratory as a postdoctoral associate with the University of Florida, before switching to an Air Force Science and Technology Fellowship.

As an Air Force Science and Technology Fellow, Marisa developed independent research investigating the spectral and temporal properties of insect ocelli, secondary visual system that many insects possess composed of two-three single lensed eye spots residing between the primary compound eyes. During this time, Marisa also served as a research mentor for undergraduate AFRL scholars in the laboratory. At the end of her fellowship, Marisa joined the Air Force Studies Board at the National Academies, where she works with senior leaders across government, academic, and industry spaces on matters of science policy and military research. In addition to her professional background, Marisa is very involved with science communication and has previously held leadership

roles in the nonprofit Graduate Women in Science Hawaii and Nerd Nite Honolulu, and continues to volunteer with outreach organizations including Letters to a Pre-Scientist, Skype a Scientist, and the Journal of Emerging Investigators.

Albert Epshteyn, PhD is the Head of the Materials Synthesis and Processing Section in the Chemistry Division of the US Naval Research Laboratory. Dr. Epshteyn's scientific career began at the University of Maryland College Park, where he earned his Ph. D. in Chemistry in 2006. His Ph. D. research focused on organometallic chemistry of transition metal groups 4 and 5 as pertaining to the activation of difficult bonds. In 2006, Dr. Epshteyn was recipient of the Christine Mirzayan Graduate Fellowship in Science Policy from the National Academy of Sciences and participated in the Mirzayan program for ten weeks from January to March of 2007.

Immediately following, Dr. Epshteyn began work at NRL as an American Society for Engineering Education (ASEE) postdoctoral fellow based on his proposal to develop wet chemistry techniques to synthesize reactive metal nanoparticles and nanopowders (RMNPs) for use in applications such as high energy fuels and hydrogen storage materials. He has since worked on a variety of projects involving the design, synthesis, and characterization of novel materials for applications in catalysis, high energy fuels, intermediate temperature proton conductors, high temperature materials for thermal protection, and more.

Dr. Epshteyn has authored or coauthored over 65 peer-reviewed articles and is an inventor on 21 US patents and has been the direct advisor for 11 post-doctoral associates and has been involved in the recruitment and indirect mentorship of many others.

Stephen Holmes, PhD received his B.S. degree from Southwest Texas State University in 1992 (chemistry major and physics minor). He earned his Ph.D. from the University of Illinois at Urbana-Champaign in 1999. He was a Postdoctoral Scholar at Cornell University from 1999-2001. He served in the faculty at the University of Kentucky before joining the Department of Chemistry and Biochemistry at UMSL in 2008. He is an NSF CAREER Awardee (2007 – 2012), NRC-RAP reviewer (since 2017), and now serves as the Chemistry Chair for the panel. His interests are primarily focused on inorganic chemistry synthesis, reaction mechanisms, magnetism, batteries, and spectroscopy.

<u>Research Interests</u>
Magnetic Materials. Understanding the physical origins of single-molecule magnetic behavior in a series of structurally related cyanometalate clusters is an active area of study. Cyanometalates are excellent building blocks for constructing molecule-based clusters because cyanides generally form linear M(CN)M´ linkages between two metal centers, stabilize a variety of transition metal centers and oxidation states, and efficiently communicate spin density information. Furthermore, the sign and magnitude of the local exchange interactions can be controlled via substitution and predicted using simple orbital symmetry arguments. We have developed a synthetic methodology for preparing several well-defined clusters containing a variety of tricyanide complexes (building blocks). The building blocks exhibit significant orbital contributions to their magnetic moments, apparently a necessary feature for the observation of slow magnetic relaxation. Current efforts are focused on how late transition metal centers alter the magnetic (and optical) properties of structurally related clusters.

Photoresponsive Materials. Compounds that change their optical, magnetic, and electrical properties as a function of external stimuli is an exciting area of study in materials science. We recently reported that two polynuclear cyanometalate complexes exhibit reversible changes in their optical and magnetic properties with temperature (up to 250 K) and light. If this is a general phenomenon, then substitution of the metal ions and ligands present may extend the operable switching temperatures of these materials above 300 K. Current efforts are directed at understanding the factors necessary for tuning the photoresponsive behavior in these clusters and one-dimensional networks.