Toby John Woods

Graduate Institution: Texas A&M University

Graduate Discipline: Inorganic Chemistry

Hometown: Wibaux, MT

Relevant SC Research: Basic Energy Sciences

Research Interest:

Current methods for the fabrication of electronic components, especially magnetic memory devices, are quickly approaching the limits of miniaturization. In order to continue to make smaller and more efficient devices a new approach must be taken. One approach is to move away from printed circuits and toward molecular devices. My research project is focused on developing new materials that are able to act as Single Molecule Magnets (SMMs). These SMMs are capable of maintaining a net magnetization even after removal of an external magnetic field. SMMs have potential applications as magnetic storage devices and quantum computers. The magnetic properties of these molecules often lie at the intersection between classical and quantum mechanical behavior, so we are also interested in developing better theoretical models to describe the properties of SMMs. Better models are crucial to being able to tune the properties of SMMs so that they can operate in an industrially practical environment.

About Me:

My path to graduate school was a little different than most people. I joined the Navy after graduating from high school and spent eight years operating the nuclear reactor on fast attack submarines. After leaving the Navy I obtained my undergraduate degree from Eastern Washington University. While at EWU I investigated the magnetic properties of silver complexes of pyridine carboxylate derivatives under the direction of Dr. Jamie Manson. My graduate studies at Texas A&M University with Professor Kim Dunbar have continued in the magnetochemistry vein in a search for high-temperature Single Molecule Magnets. I am currently an active member of the American Chemical Society, Phi Lambda Upsilon, and Phi Kappa Phi. I have been involved in several outreach programs during my two years at TAMU including the Regional Science Bowl and Chemistry Open House. After completing my graduate studies I plan to pursue an independent research career in academia.