Ann Deml

Graduate Institution: Colorado School of Mines

Graduate Discipline: Materials Science

Hometown: Medford, WI

Relevant SC Research: Basic Energy Sciences

Research Interest:

I am interested in the fundamental understanding of materials phenomena from an atomic perspective. My research project addresses that pursuit by allowing me to examine specific material systems using density functional theory-based methods. In particular, I am using these computational methods to study ceramic materials for application in solar thermochemical (STC) production of fuels. STC fuel production is a high temperature process which uses concentrated solar radiation to thermochemically split gas molecules like water and/or carbon dioxide and produce hydrogen and/or carbon monoxide. In this way, clean and renewable resources can be exploited to produce useful fuels and chemical precursors. My research, therefore, aims to identify promising new materials for STC fuel production and to build our fundamental understanding of the properties and mechanisms governing these processes.

About Me:

I am currently a Ph.D. materials science candidate with advisors at the Colorado School of Mines and at the University of Colorado at Boulder. These two intimate connections have served as invaluable resources, one providing direct guidance regarding the computational methodology of my research and the other providing experimental expertise on the materials and applications of interest.

I am also a student affiliate of the Renewable Energy Materials Research Science and Engineering Center (REMRSEC), a National Science Foundation-sponsored center devoted to renewable energy research. My involvement with the REMRSEC has included assisting with the development of a mentoring program, serving as the graduate student representative to the executive committee, and participating in the annual Teachers Renewable Energy Summer Workshop. I am also a member of the Materials Research Society and the American Chemical Society.

In addition to my interest in the fundamental science of materials research, I am also interested in policy and societal perceptions of technological advancements. Successful implementation of new technologies faces numerous barriers including human aspects which cannot be addressed by good science alone. Therefore, it is my goal to be well rounded in my expertise in order to effectively communicate with different groups of people. In doing so, I would like to work with a nonprofit or humanitarian effort, using my technical skills in a managerial role to directly impact and improve others' quality of life.