Smart Materials for Sustainable Future

Position Title: Research Assistant in Chemistry and Materials Science

Research Project Title: Smart Materials for Sustainable Future

Faculty Name & Title: Pance Naumov, Associate Professor of Chemistry

Research Project Description

While the energy derivable from renewable sources holds tremendous potential and tops the priority list in the materials research, its practical application requires new materials for energy conversion that would ultimately provide an unlimited power on demand. Fundamentally new concepts for efficient energy conversion and storage hold the key to major advances in the alternative energy technology, which is of societal relevance in facing the challenges imposed by global warming. Elucidation of the basic mechanisms of processes that govern energy conversion is a milestone toward that goal.

Smart materials are materials that can respond to multiple external stimuli, such as heat, light or pressure. In this project, the researcher will work closely with the members of the Naumov’s lab to develop, synthesize and characterize new smart materials with new and exciting properties. The researcher will prepare crystalline materials which when heated, exposed to light or pressure display a rapid and efficient mechanical response. By using diffraction and spectroscopic methods, the molecular and crystal structure of these materials will be determined and correlated with their properties and energy conversion efficiency. The new smart materials will then be used to build small gears to demonstrate the possible applications in practice.

Responsibilities of the Position

- Design, preparation and characterization of novel smart materials with possible applications in nanotechnology, spintronics, and biomedicine
- Active participation in the research activities of the Naumov Research Group, including participation in weekly group seminars

Essential Qualifications:

BSc, MSc or PhD in Chemistry, Physics, or related physical sciences.

Preferred Experience / Skills:
The candidate should be highly motivated and enthusiastic to pursue research work, with supervision by
the Naumov group members, on a research project assigned by the PI. The candidate should have basic
practical experience of working in a chemical laboratory or alternatively experience with
theoretical/computational chemistry and/or materials science.

APPLICANTS TO PROVIDE:

1. Statement of interest in the position
2. Transcript of degree(s)
3. CV
4. Two letters of recommendation