



Open Position: Postdoctoral Research Associate

Duration: 1 year with the potential to extend

Location: Western Michigan University, Kalamazoo MI

Deadline to apply: Application review will begin on November 25, 2024. Application acceptance may be extended beyond that date.

Contact for questions: Kristina Lemmer: kristina.lemmer@wmich.edu

Application link: <https://www.wmujobs.org/postings/3028>

Position Description:

We are seeking a highly qualified and motivated individual to lead an Air Force Office of Scientific Research sponsored project focused on characterizing the excitation and ionization of simple molecules within a low-pressure RF plasma system.

Traditionally, plasma-based electric propulsion systems use krypton or xenon as the gas propellant, and the understanding of excitation and ionization mechanisms of these propellants within plasma systems is fairly mature. While the utilization of these propellants possesses several advantages, several disadvantages also exist. As a consequence, there has been an increasing interest in utilizing molecular propellants for plasma-based electric propulsion applications. Understanding the excitation/dissociation/ionization of simple molecules will help develop the fundamental knowledge base needed to apply more complex molecules to a similar plasma system. With this knowledge, propellants and/or plasma systems can be designed for highly efficient plasma-based electric propulsion.

Work on other sponsored projects may also be required, including work from the Space Force, NASA, and the National Science Foundation.

Applicants must possess a Ph.D. or have finished all requirements for the Ph.D. in physics, chemistry, mechanical/aerospace engineering or a closely related field prior to the start of the appointment. If the Ph.D. has not yet been conferred, a letter from the institution declaring that all requirements for degree have been met is acceptable. Candidates expecting to finish all requirements for their Ph.D. before the start of employment are welcome to apply. The anticipated start date will be on or after November 25, 2024.

Required Skills:

Several laser-based spectroscopic techniques will be used throughout this study: coherent anti-Stokes Raman Scattering, laser-induced fluorescence spectroscopy, cross-beam absorption spectroscopy, and Thomson scattering. Demonstrated experience with one or more of these spectroscopic techniques is required. Additionally, applicants must possess demonstrated proficiency in cavity alignment, optical design, source/signal alignment, and optical detection systems. Demonstrated proficiency using Matlab and Labview is required.

Desired Skills:

Knowledge of discharge, plasma, combustion, or closely related systems is highly desired. Experience with vacuum chambers, vacuum pumps, associated flange/gasket components, and gas handling systems is also preferred. Some experience with CAD software (Solidworks), basic machining (mill/lathe), and simple circuit modeling (LTspice) and design would also be desired.