Carleton University | Faculty of Engineering and Design

Postdoctoral position on understanding the combustion of metal carbonyls.

The Energy and Particle Technology Laboratory (EPTL) at Carleton University, Ottawa, Canada is accepting applicants for a postdoctoral position on a project focused on understand the combustion properties of metal carbonyls. The successful applicant will assemble a chemical kinetic mechanism and will use it to perform simulations to obtain adiabatic flame temperature and laminar flame speed for combustion of metal carbonyls with air. The candidate will also work with a professional team to assemble an optical diagnostic setup to measure flame properties (temperature and laminar flame speed). This is a 1-year position with a possibility of extension to 2 years and starts on May 1st, 2023 (flexible).

Candidate qualifications

The candidates must have a PhD in chemical, mechanical, aerospace engineering or in a closely related field with experience in chemical kinetics and optical diagnostics. The candidate should have demonstrated experience in the following areas:

- Performing thermochemical calculations with Cantera or Chemkin.
- Experience in developing chemical kinetic mechanisms, including calculation of elementary rate constants, thermodynamics, and transport properties of species.
- Ability to perform high level quantum chemistry and reaction rate theory calculations to determine reaction rate coefficients.
- Knowledge of combustion, chemical kinetics, aerosol dynamics and computational fluid dynamics.
- Basic knowledge of optical diagnostics such as pyrometry and spectrometry.
- Familiar with a programming language such as Matlab, Python and C++.
- Work independently, self-motivated, with a strong work ethic and collaborative skills.
- Applicants must be proficient in both written and oral English and possess excellent communication and interpersonal skills.

Salary

Ranging from $55,000 to $65,000 per year depending on candidate qualification and funding + full complementary insurance coverage, benefits, and three weeks of paid vacation per year.

Energy and Particle Technology Laboratory

EPTL conducts research on combustion and nanoparticle engineering with applications in energy storage, advanced material synthesis, emission sensing and quantification of their impact on the environment. We develop process design tools for scalable gas phase synthesis of nanoparticles with tailored functional properties and study how particle characteristics including their size distribution, morphology and chemical composition are linked to their properties of interest such as optical, sensing and energy storage characteristics.

How to Apply

Applications should include a CV and a cover letter clearly outlining how past research and experience provide the essential qualifications to undertake the project. Additionally, contact info for three references should be available upon request. Please Direct Application to: Professor Reza Kholghy (Director of EPTL): reza.kholghy@carleton.ca