



The Combustion Institute

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PhD position in multiscale design of nanoparticle formation

The Energy and Particle Technology Laboratory (EPTL) at Carleton University, Ottawa, Canada is accepting applicants for a PhD position on multiscale modeling of nanoparticle formation in gas phase. The successful applicant will develop an open source computational fluid dynamics (CFD) software for simulating nanoparticle formation in flames and reactors. The goal of this project is to use insight from detailed mesoscale simulations in the CFD code to improve the accuracy of simulations for nanoparticle formation with low computational cost. This is a fully funded position for up to four years conditional to the performance of the candidate starting from January 1st, 2020.

EPTL conducts research on 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.

Essential Requirements

Candidates must have completed a masters degree (exceptional bachelor graduates are also considered) in Mechanical, Chemical, Physics or in a closely related field. The candidate should have demonstrated experience in the following areas:

- Programming with C++, Python, MATLAB and Fortran;
- Computational Fluid Dynamics simulations with Cantera, OpenFoam, CHEMKIN or Fluent;
- Data visualization and analysis;
- Strong knowledge of thermodynamics, fluid mechanics, heat/mass transfer and combustion;
- Work independently, self-motivated, with a strong work ethic and collaborative skills; and
- Applicants must be proficient in both written and oral English and possess excellent communication and interpersonal skills.

Experience in performing molecular dynamic simulations would be an added asset.

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

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