Graduate Research: Optical Tools for Laser-based Metal Additive Manufacturing

Posted on: October 5, 2018
Deadline: This position will remain open until it is filled. Review of applications will begin **December 1, 2018**.
Start date and duration: Full-time 2-year appointment starting May 1, 2019
Supervisor: Dr. James Fraser
Where: Department of Physics, Engineering Physics, and Astronomy at Queen's University in Kingston, Ontario, Canada

Job Summary:

Additive manufacturing (AM) is at the forefront of the advanced manufacturing industry. Unfortunately, its progress is impaired due to the absence of real-time process monitoring and defect detection techniques to ensure consistent high part quality. Queen's Ultrafast has recently applied a low-coherence interferometric technique known as **inline coherent imaging (ICI)** to a branch of additive manufacturing known as **selective laser melting (SLM)** to determine its utility as a possible feedback control mechanism for this and other additive manufacturing processes. ICI has a proven track record including successful commercialization in the fields of laser welding, cutting and micromachining. Join Queen's Ultrafast to aid in the application of ICI to SLM and develop the next-generation of optical tools for monitoring, controlling and improving SLM. Two graduate positions are available as part of this effort under the supervision of Dr. James Fraser.

Required Qualifications:

- Candidates must have obtained a Bachelor's degree in physics, applied physics, engineering or a related discipline.
- The successful candidate needs to demonstrate the ability to perform independent research as well as effectively communicate their results both verbally and in writing.
- The ability to work as part of a team including both graduate and undergraduate students is required, and interact regularly with industrial collaborators.

Preferred Qualifications:

- Hands-on training with advanced photonics (high power lasers, fibre optics, etc) and optical monitoring techniques
- Knowledge of materials science
- Proficiency in Matlab, LabVIEW, or G-code
- Experience with additive manufacturing techniques

Required Documentation:

- Cover letter
- CV
- 2 letters of recommendation

Application Procedure

- Please contact Prof. James Fraser at james.fraser@queensu.ca

Employment Equity:

The University invites applications from all qualified candidates. Queen's is committed to employment equity and diversity in the workplace and welcomes applications from women, visible minorities, Aboriginal peoples, persons with disabilities, and persons of any sexual orientation or gender identity.

All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority. The University will provide support in its recruitment processes to applicants with disabilities, including accommodation that takes into account an applicant's accessibility needs.

If you require accommodation during the interview process, please contact Prof. James Fraser at james.fraser@queensu.ca.