

Ph.D. Positions in Neurophysiological Interfaces and X-ray  
Bio-imaging Diagnostic Tools  
Lakehead University

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Posted Aug. 25, 2020, expired Dec. 25, 2020

**Job Title** Ph.D. Positions in Neurophysiological Interfaces and X-ray  
Bio-imaging Diagnostic Tools

**Department** Electrical Engineering  
<https://www.lakeheadu.ca/academics/departments/electrical-engineering>

**Institution** Lakehead University  
Thunder Bay, Ontario

**Date Posted** Aug. 25, 2020

**Application Deadline** until filled

**Position Start Date** Sep. 1, 2020

**Job Categories** Graduate Student

**Academic Field(s)** Electrical and/or Electronics  
Bioengineering (all Bio-related fields)

**Apply By Email** [malysaadaly@gmail.com](mailto:malysaadaly@gmail.com)

### **Job Description**

Ph.D. positions in Electrical Engineering are immediately available within the joint research group of Dr. Mohamed Aly Saad Aly and Dr. Salama Ikki. The location of the student will be at Lakehead University, Thunder Bay, Ontario, Canada.

There are three assigned projects for these positions:

1. Neurophysiological Interfaces

a. This project will focus in designing, modeling, analyzing, fabricating and testing microelectrodes to be

used as a neurophysiological interface and neurological diagnostic tool to study and investigate the behavior and functions of neural cells in efforts to detect and further study nervous system diseases.

b. The preferred qualifications include:

i. Background in micro-fabrication and cleanroom environment

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- ii. Background in MEMs Finite element analysis (FEA)
- iii. Previous knowledge of neurobiology or interest in gaining the knowledge
- iv. Background in cell culture is a plus

2. X-ray bio-imaging

a. This project will focus on enhancing the quality of the image in X-ray based bio-imaging diagnostic tools

such as X-ray cinefluorographic systems (C-Arm and U-Arm). This will target the X-ray generation and detection as well as the signal processing stages of the captured image.

b. The preferred qualifications include:

- i. Background in micro-fabrication and cleanroom environment
- ii. Background in X-ray bio-imaging and image processing
- iii. Strong background in electronics
- iv. Experience in Electronics/circuits design/simulation packages

3. Cell lysis and DNA extraction

Skills and conditions:

- 1. Students must have solid experience in using COMSOL and/or ANSYS
- 2. Previous knowledge about velocity, pressure and stress simulation of fluid flowing (in porous medium) is a plus.
- 3. Previous knowledge about image (e.g. Scanning Electron Microscopy (SEM) images) analysis software such as ImageJ is a plus.

The research focus on how the outer membrane of cells in suspension flowing in a tight pores of monolithic porous medium be mechanically sheared. Image processing of SEM image using ImageJ is first used. Flow velocity, pressure and stress simulation is then carried out using ANSYS or COMSOL.

Applicants are required to send the following to Dr. Mohamed Aly Saad Aly at [malysaadaly@gmail.com](mailto:malysaadaly@gmail.com).

- Undergraduate and graduate transcripts
- CV that includes education, experience, list of publications and names and emails of references

If you have questions regarding these positions, you can contact Dr. Mohamed Aly Saad Aly at [malysaadaly@gmail.com](mailto:malysaadaly@gmail.com)

All qualified candidates are encouraged to apply; however Canadians and permanent residents will be given priority. All positions are subject to budgetary approval.

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**About Lakehead University**

Dynamic, modern, and highly learner-centred, we acknowledge all of our students as valued leaders of tomorrow, whose education and success are most paramount to our institution. Both campuses in Thunder Bay and Orillia promise the total university experience: a blend of academic excellence and opportunity with a rich variety of social and recreational activities. We also promise excellence in research; Lakehead is the proud host to nine Canada Research Chairs and revolutionary facilities such as our world-renowned Paleo-DNA Laboratory and our Biorefining Research Institute.

**EEO/AA Policy**

Lakehead University is strongly committed to fostering diversity within its community as a source of excellence, cultural enrichment, and social strength. We encourage applications from members of groups that have been marginalized on any grounds enumerated under the ON Human Rights Code, including sex, sexual orientation, gender identity or expression, racialization, disability, political belief, religion, marital or family status, age, and/or status as a First Nation, Metis, Inuit, or Indigenous person.

**Contact Information**

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

**Contact**     Dr. Salama Ikki  
Electrical Engineering  
Lakehead University  
Thunder Bay, ON  
Canada