

Postdoctoral Position Available in Quantum-dot (QD) Technology

Department of Electrical and Computer Engineering, Queen's University, Kingston, ON, Canada

Motivation

With the growing demand for highly efficient, energy-effective, and cost-effective optoelectronic devices, quantum-dot light-emitting diodes (QD-LEDs) are among the best candidates for display and lighting technologies. In recent years, specifically, there has been a rising interest in full-color QD-LED displays, owing to their extremely narrowband emission and high efficiency, competing shoulder to shoulder with organic LEDs (OLEDs). Moreover, a large amount of electrical energy produced from burning fossil fuels- consumed worldwide for residential and industrial lighting causes a tremendous amount of carbon dioxide emission, which is one of the main reasons behind the ongoing catastrophic climate change. For this reason, there is an urgent need for low power-consuming light sources. While both OLEDs and QD-LEDs can be used as efficient light sources, QD-LEDs have been proven less air/moisture sensitive and more durable compared with OLEDs, making them excellent materials for large-scale manufacturing in ambient conditions. More importantly, these devices can be fabricated by inexpensive and easy-to-manufacture solution processing techniques. These techniques not only lower the cost of manufacturing but they also enable making large-area, foldable, wearable, and roll-to-roll devices on flexible plastic substrates. This is not apparently possible with the existing inorganic LEDs that are fabricated on rigid substrates at a very high manufacturing cost.

A postdoc position is available for a highly qualified applicant experienced in QD-LEDs/solar cells. Applicants experienced in other organic and organic-inorganic hybrid devices are also welcome to apply. The main goal of this project is to fabricate efficient, low-cost, large-area, and flexible QD-LEDs for practical lighting and display applications. The qualified applicant will work closely with our industry partners under a Mitacs contract.

Qualifications

The applicant should have the following qualifications and experimental experiences.

- PhD degree in physics, chemistry, materials science, or engineering with strong publication record on organic and organic-inorganic hybrid electronic devices: QD-LEDs/solar cells, OLEDs, perovskite LEDs/solar cells etc. The priority will be given to the applicants experienced in the QD technology.
- Experience in designing, fabrication, and characterization of organic and/or hybrid devices
- In-depth knowledge in organic and inorganic semiconductors: charge transport, photoluminescence and electroluminescence properties
- Experience in synthesizing QDs is an advantage
- Detail oriented with good time management skills
- Teamwork experience with strong written/oral communication skills

What you will do

You will be working with a highly experienced team of researchers in an experimental lab under the supervision of Prof. Majid Pahlevani at Queen's University, Kingston, Ontario. The research project will be focused on designing and fabrication of solution-processed QD-LEDs but there might be more projects on other device types in the future. The postdoc position will be under a Mitacs contract with a negotiable salary. More details will be provided during the interview process.

Contact

Interested applicants should contact Prof. Majid Pahlevani at majid.pahlevani@queensu.ca directly to set up an interview.

EMPLOYMENT EQUITY: The University invites applications from all qualified individuals. 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 LGBTQ persons.

ACCOMMODATION IN THE WORKPLACE: The University has policies in place to support its employees with disabilities, including an Accommodation in the Workplace Policy and a policy on the provision of job accommodations that take into account an employee's accessibility needs due to disability. 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. Majid Pahlevani at majid.pahlevani@queensu.ca.