

Research, Innovation and Graduate Studies

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Research Fellow in Nonlinear optoelectronics using dielectrics and wide bandgap semiconductors (RF-2021006) – Group of Asst. Prof. Khadga Jung Karki

The Physics Program (group of Asst. Prof. Khadga Jung Karki) is looking for 1 post-doctoral researcher to conduct experimental research in understanding the effects of femtosecond laser pulses on the conductivity of dielectrics and wide bandgap semiconductors.

Project Details

Two photon absorption by semiconductors is a well-known phenomenon in nonlinear light matter interaction. This effect can induce photocurrents in photodiodes. Such effects have also been useful in the characterization of ultrashort pulses. In this project, we aim to investigate even higher order nonlinear absorption in nanostructures of wide bandgap materials that have band gap higher than the combined energy of three photons. Photocurrents in the perturbative and beyond perturbative (nonperturbative) nonlinear regimes will be explored. The experimental work will be supplemented by theoretical calculations done by the group of Prof. Marcelo Ciappina at GTIIT. The results are expected to be important in understanding the role of high-power ultrashort pulse lasers in inducing electric field controllable electro-optical switches. We are looking for an expert in the fabrication of nanostructures of wideband gap materials who is also either familiar or is interested in learning nonlinear spectroscopy.

Keywords

Femtosecond lasers; attosecond control of electron dynamics in solids; phase modulation

Selection Criteria

- PhD in physics (essential).
- Extensive experience in the fabrication of nanostructures and optoelectronic devices or thesis work on related topic (essential).
- Experience in optics and different forms of spectroscopy (preferable).
- Familiarity with programming languages (c, c++ , matlab, python, etc.) and proficient in one of them (essential).
- Ability to author scientific reports and papers (essential).
- Good communication skills and strong command of English (essential).
- Ability to work independently as well as in a team environment (essential).
- Ability to mentor PhD students (preferable).

Program

Physics

Contact

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Application Deadline

Open till filled

Date posted

September 15, 2021

Location

Guangdong Technion – Israel Institute of Technology (GTIIT), China & Technion-Israel Institute of Technology, Israel.