Opportunities for undergraduate students in Quantum Optics and Device Engineering

Prof. Laraoui at at the Mechanical & Materials Engineering Department is hiring undergraduate students to join the Quantum Sensing & Defect Discovery and Spectroscopy Lab. His primary research focuses on developing new quantum materials based on color centers in diamond, defects in wide bandgap semiconductors and two-dimensional (2D) materials for applications in quantum sensing, nanoscale imaging, and quantum information processing.

Two projects are available:
1. Magneto-optical imaging of individual transition-metal nanoparticles using nitrogen vacancy centers in diamond.
2. Hybrid photonics based on coupling single-photon emitters in 2D materials to plasmonic micro-structures.

These research activities are mainly experimental and involve:

- designing and building optical setups, magneto-optical microscopes (confocal, far-field), and RF/MW electronics circuits (PCB/ stripline design, pulse control).
- Interfacing equipment (laser, AOM, RF/MW signal generators, cMOS cameras, photodetectors, DAQ...) for measuring weak signals.
- device fabrication (E-beam, evaporation, etching...).
- device characterization (AFM, TEM, SEM…)

Motivated students interested to learn new laboratory skills in quantum optics and magnetic nanomaterials are encouraged to contact Dr. Laraoui at **alaraoui2@unl.edu** or just stop by his office **312 NH** for more details. In your email, please include your student NUID # and academic resume (CV). Ideally students should have a basic background in programming (LabView, Python, Matlab), data analysis (Mathematica, Matlab), design (CAD, solidworks...), MW/RF electronics, PCB design, and performing experiments in optics. **A competitive hourly rates will be offered!**

More information about his research can be found here:
https://engineering.unl.edu/mme/faculty/abdelghani-laraoui/
https://ncmn.unl.edu/faculty/laraoui