PhD Openings in the Labram Group at Oregon State University
The Labram Group in the School of Electrical Engineering and Computer Science (EECS) at Oregon State University is looking to hire two full-time PhD students starting August 15th 2018. You will be fully-funded by the Labram Group, and will work on experimental projects in the development of next-generation flexible electronics. Candidates must have received an undergraduate degree in electrical engineering, materials science, physics, or a related discipline by August 15th 2018. Interested candidates should email a full CV / resume to John Labram at: john.labram@oregonstate.edu, by 30th November 2017. Informal inquires can be made via the same email address.

Oregon State University is located in Corvallis, in the beautiful Pacific-Northwest of the United States. Further information can be found below:

- The Labram Group: http://web.engr.oregonstate.edu/~labramj/.
- Oregon State University: http://oregonstate.edu/.
- Information about Corvallis: https://visitcorvallis.com/.

Project 1: Quantum Devices Based on Disordered Metal Oxide Semiconductors
The future of electronics will be defined by a diversification in its physical form, enabling devices to be cheap, ubiquitous and disposable. This vision includes conformal, stretchable, transparent and bio-compatible electronics embedded into our natural surroundings, present whenever needed and enabled by simple and effortless interactions. To achieve this goal, we require semiconductors which can processed using low-cost, scalable techniques, such as from solution (printing, spray-coating, etc.)

Solution-processed metal oxide semiconductors have been shown as a highly-promising route to achieve low-cost, light-weight flexible electronics. In this project you will be developing devices based on ultra-thin (<10nm) layers of disordered metal oxide semiconductors. Despite traveling in disordered systems, charge carriers in metal oxide semiconductors have been shown to possess quantized energy states when confined to 2-dimensions. By studying and exploiting this phenomenon, you will be developing new and novel electronic devices, with a range of previously unobserved capabilities and performance characteristics.

Project 2: High-Performance Optical Sensor Circuits Based on Hybrid-Halide Perovskites
Hybrid halide perovskites are a class of materials possessing optoelectronic properties which are, by many metrics, remarkable. Despite being extensively studied for only 5 years, and processed from solution at low-temperature, solar cells based on these compounds have already exhibited power-conversion efficiencies in excess of polycrystalline silicon (the commercial standard). Yet in spite of their amazing electrical properties, they have been scarcely studied for electronics (transistor) applications.

In this project you will develop thin-film transistors from these compounds, with the goal of creating circuits capable of processing information based on optical signals, as well as electrical signals. The superb absorption- and charge-transport-properties of these compounds suggest they are excellent contenders for commercial applications. The field of hybrid halide perovskites is a young, but fast-moving field, where you will have the opportunity to generate high very impact work.