Fabrication of Atomic Scale Devices

Vision and Future Application
This master thesis is about the fabrication of the next generation atomic scale devices. We are going to explore the ultimate limit of device dimensions by implementing devices at an atomic scale. Atomic scale devices are not only supposed to operate faster but also more energy efficient.

Type of Work
Experimental with limited contribution to simulations.

Requirements
Ability to work independently, willingness to learn, good English language skills.

Description
In this master thesis, we first develop an atomic scale lithography technique. Then, by taking in advantage the key assets of this tools, we will realize an ultra-small device, satisfying the requirements of the industrial sector, i.e very low energy consumption and high speed. If proved experimentally successful, such an approach would bring a new paradigm in the design of electro-optical devices.

Figure 1: (a) Schematic of the single-atom transistor; (b) Optical power transmitted at nano scale dimensions.