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# Nano Seminar
## Molecules in Circuits: a New Breed of Microelectronics?
## <span style="color:red">Prof. Richard L. McCreery</span>

*Dep. of Chemistry, National Institute for Nanotechnology, University of Alberta, Canada*

## Abstract:

Molecules may be considered electronic systems, with electrons rapidly moving through molecular orbitals and also long distances in biological metabolism and photosynthesis. The prospect of incorporating molecules into microelectronic circuits based on silicon and metallic conductors has great potential for enhancing consumer electronics, providing solar energy conversion, and permitting new functions not possible with silicon. In order to combine the electronic properties of molecules with conventional microelectronics, we need to understand how to "connect" to molecules as well as how electrons are transported through molecules. Once the "rules" of charge transport through molecules are understood, it should be possible to "rationally design" new molecular electronic devices for valuable functions not currently possible with silicon. While Molecular Electronics holds great promise, it also presents significant challenges in handling and fabrication of devices with dimensions of only a few nanometers. We use surface chemistry, spectroscopy, and conjugated organic molecules to make "molecular junctions" consisting of a single layer of molecules between conducting carbon and copper electrodes, then we study the behavior of molecules as circuit elements. The primary goal is to design and build functional molecular electronic components to greatly enhance the already powerful world of silicon microelectronics. A demonstration of the first commercial application of molecular electronics will be presented, involving audio processing not possible with silicon.
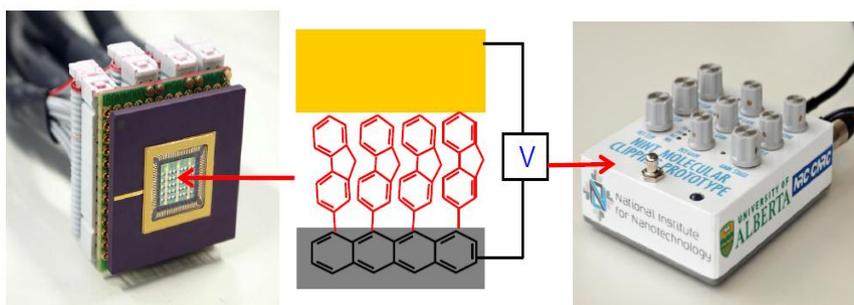


### Gathering & Refreshments at 10:50
Please contact Liron Dover at 6584919 if you are interested in meeting the lecturer.

### Wednesday, May. 4th 2016, 11:00 at the Seminar Hall
Los Angeles Building, entrance floor.