

“Physics and Chemistry of Single-Molecule Circuits”

PHYSICAL SEMINAR
MONDAY

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4:00 P.M.

HUTCHISON HALL 473
DEPARTMENT OF
CHEMISTRY
UNIVERSITY OF
ROCHESTER



GUEST SPEAKER:
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Abstract:

The proposal to create molecular analogs of circuit components dates back to the work of Aviram and Ratner from 1974, where they suggested using a single molecule as a diode circuit element in giving birth to the field of molecular electronics. This field has advanced tremendously since then; nanoscale single-molecule devices are now also used as test beds for understanding and controlling electron transfer across metal/organic interfaces. Despite the long-standing interest in creating molecular diodes, their experimental realization has been difficult, with only a handful of studies showing rectification at the single molecule level. In this talk, I will present methods to create single-molecule devices and measured their physical properties, including electronic transport and thermopower. I will then show how their molecular structure as well as the environment around these nanoscale systems can control their electronic characteristics.

Host: Professor Ignacio Franco Email: franco@chem.rochester.edu