Organic Electronics
Nanotechnology Laboratory

Future electronics will be molecular
Manipulation of molecules to fabricate devices 20 times smaller than present transistors.

Activities

- Unimolecular devices (e.g. molecular wires).
  - Patterns on graphite using conductive molecules to anchor 1D molecular wires.
  - Fabrication of conductive molecular wires with diameter less than 1 nm.
  - Measurement of the electrical transport of conductive supramolecular structures.
- Surface analysis with nanometer resolution.

Surface analysis with atomic resolution

STM—Scanning Tunneling Microscopy: a powerful technique to view atoms on a surface.

Patterns on graphite

STM images of conductive molecules on graphite.

pattern size = 1 nm

Molecular Wires

Preparation and characterisation of conductive supramolecular structures with molecular resolution using the STM.

Equipment

Atomic Force/Scanning Tunneling Microscopes (AFM/STM).

Charge transport along a molecular wire

AFM Break Junctions

Measurement of force and conductance of molecular junctions using AFM.