

Organic Electronics Nanotechnology Laboratory

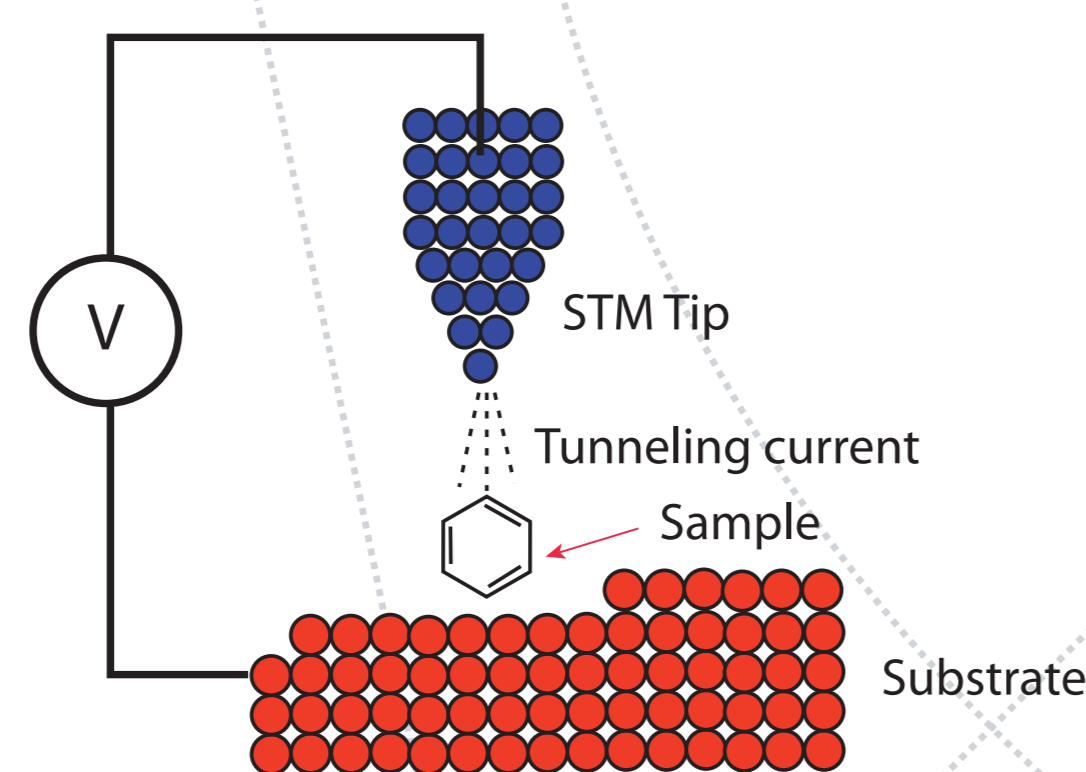
Future electronics will be molecular

Manipulation of molecules to fabricate devices 20 times smaller than present transistors.

Activities

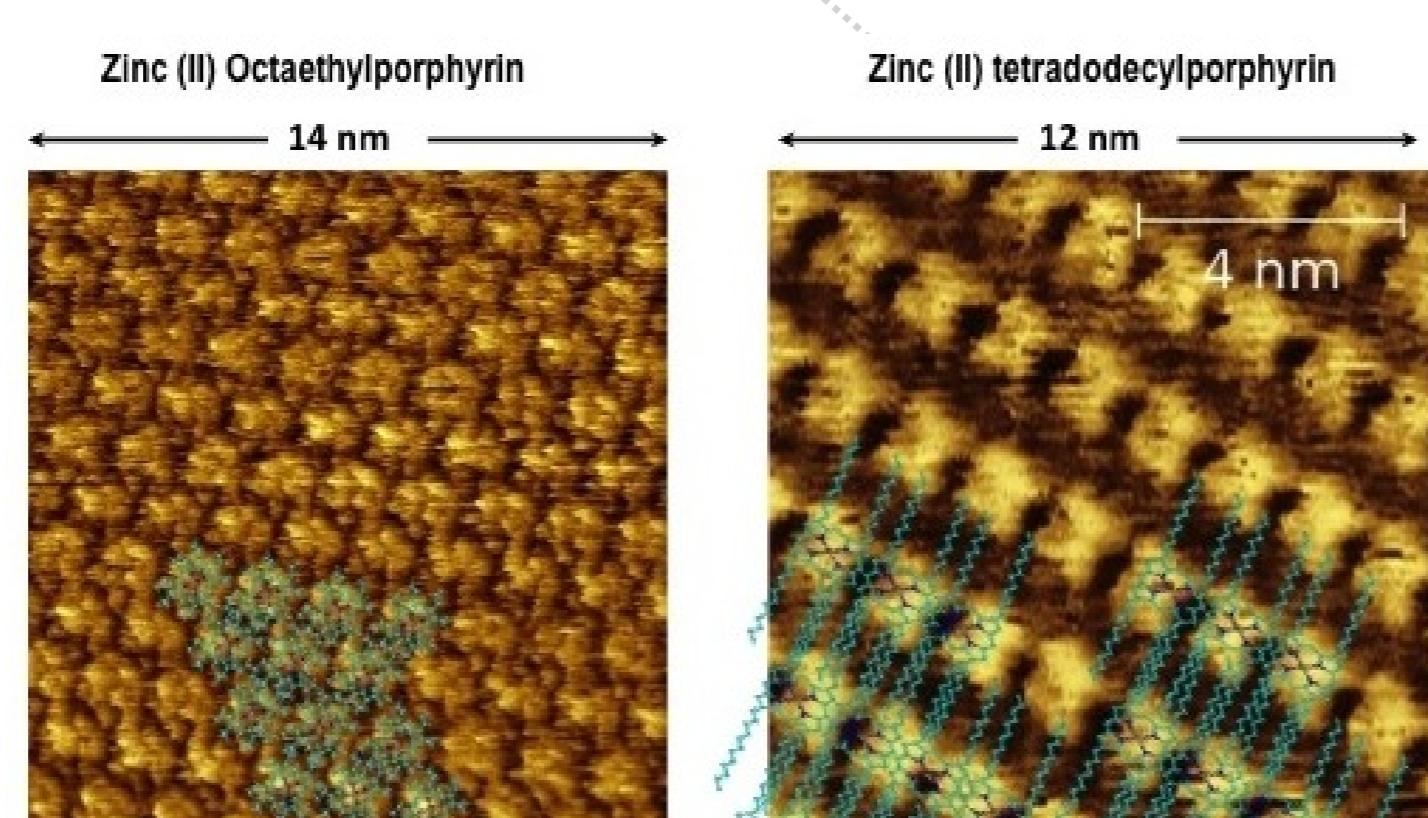
- Unimolecular devices (e.g. molecular wires).
 - Patterns on graphite using conductive molecules to anchor 1D molecular wires.
 - Fabrication of conductive molecular wires with diameter less than 1 nm.
 - Measurement of the electrical transport of conductive supramolecular structures.
- Surface analysis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

Surface analysis with atomic resolution



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

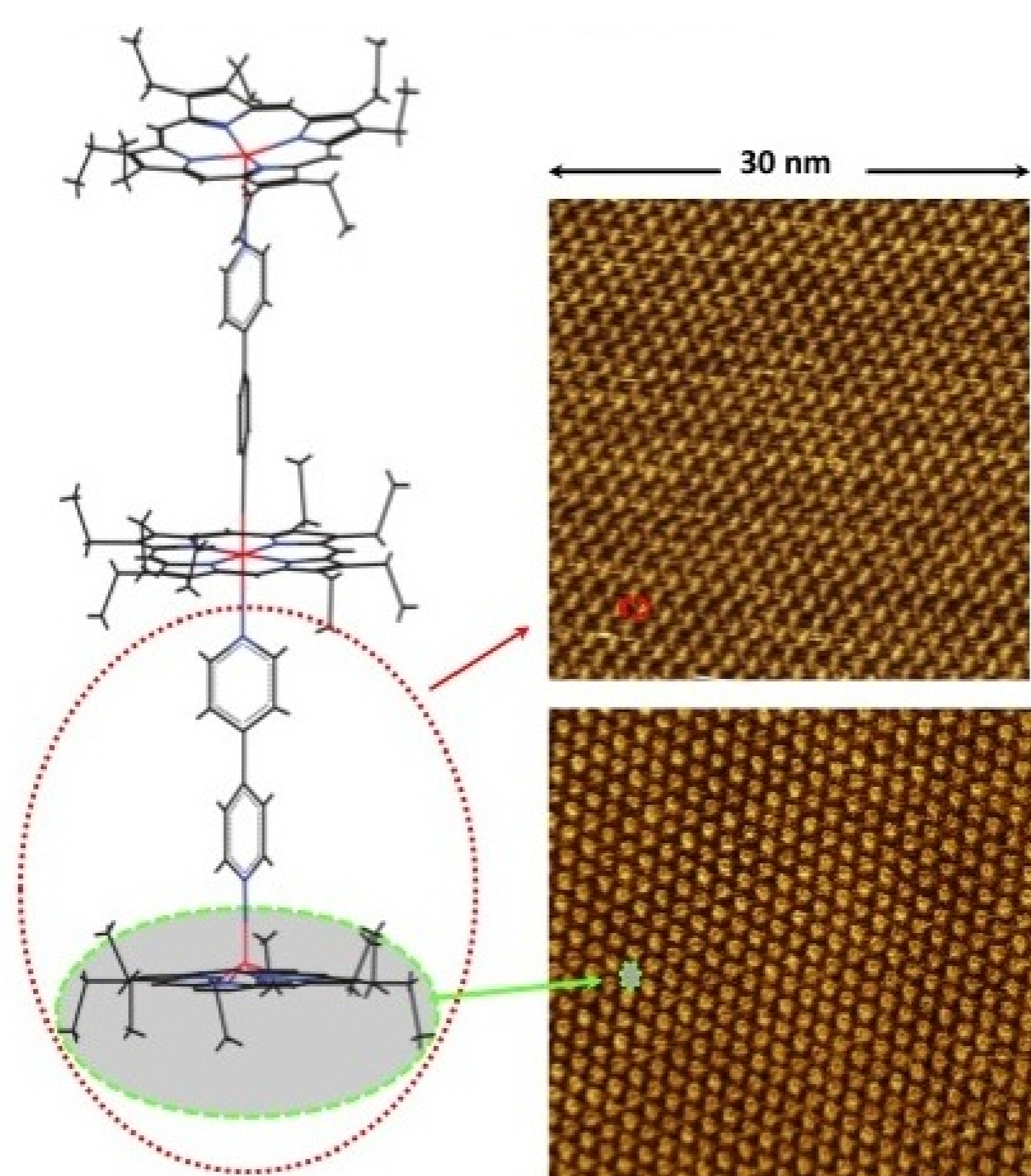
Patterns on graphite



pattern size \approx 1 nm

STM images of conductive molecules on graphite.

Molecular Wires

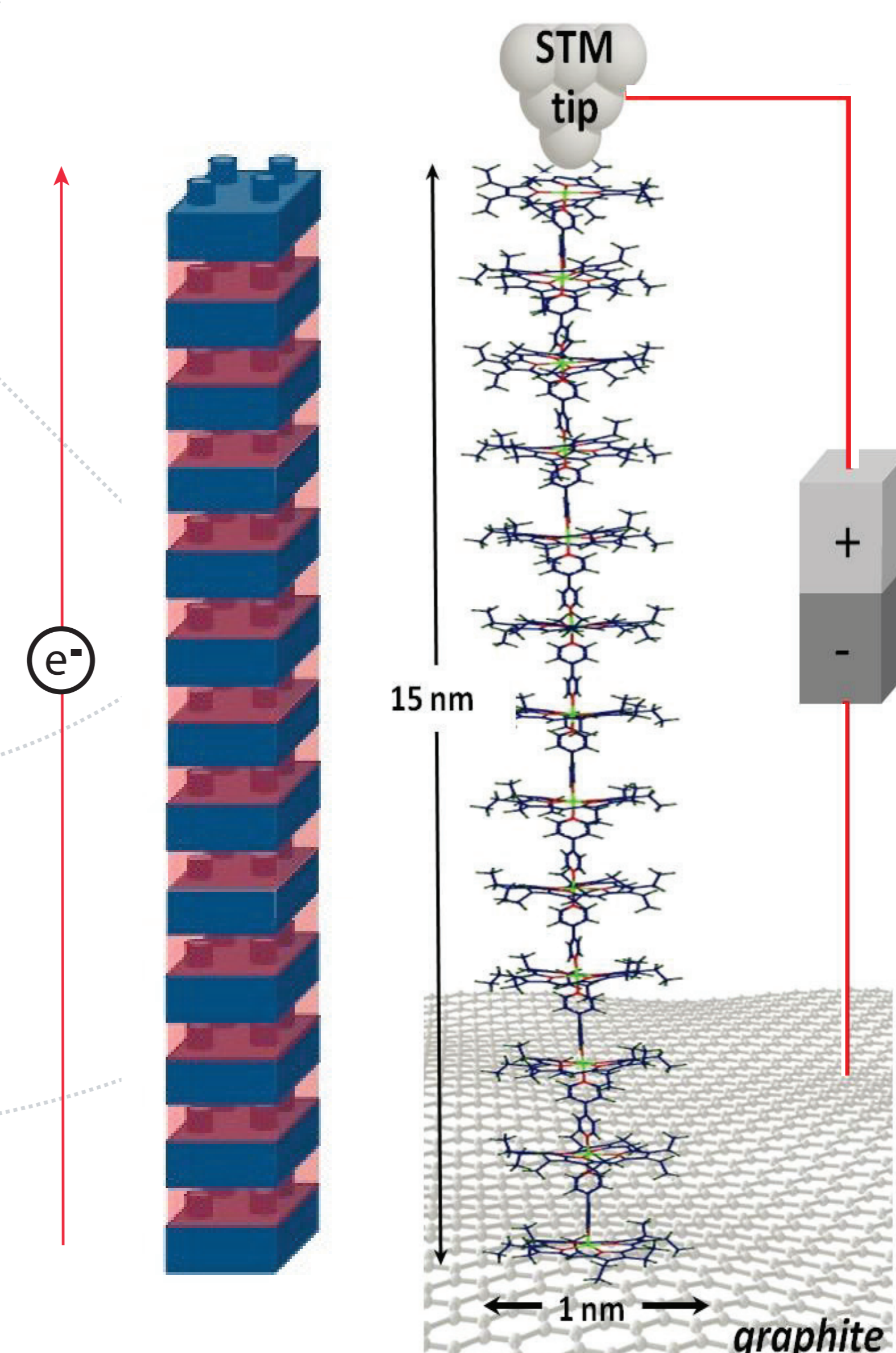


Preparation and characterisation of conductive supramolecular structures with molecular resolution using the STM.

Equipment

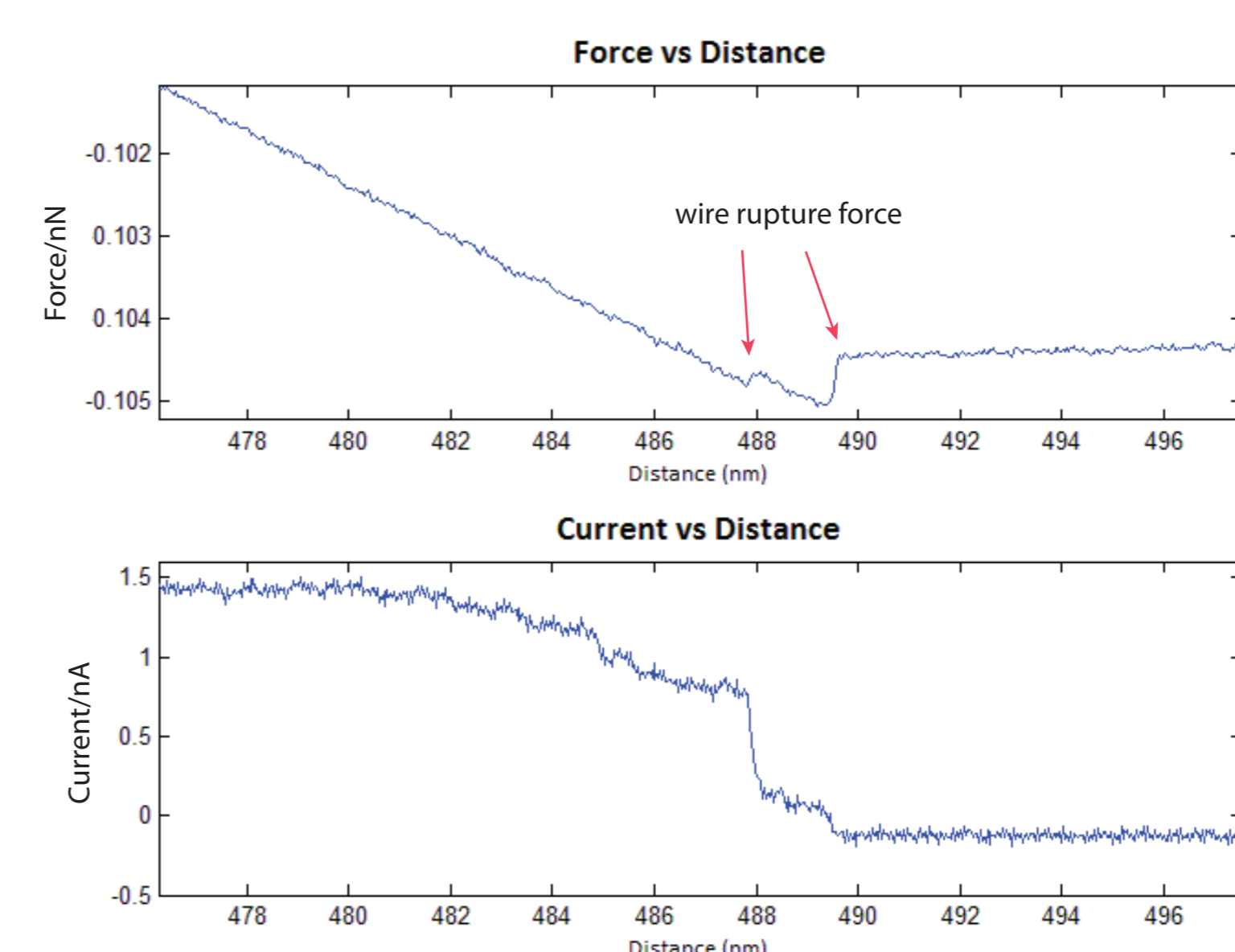
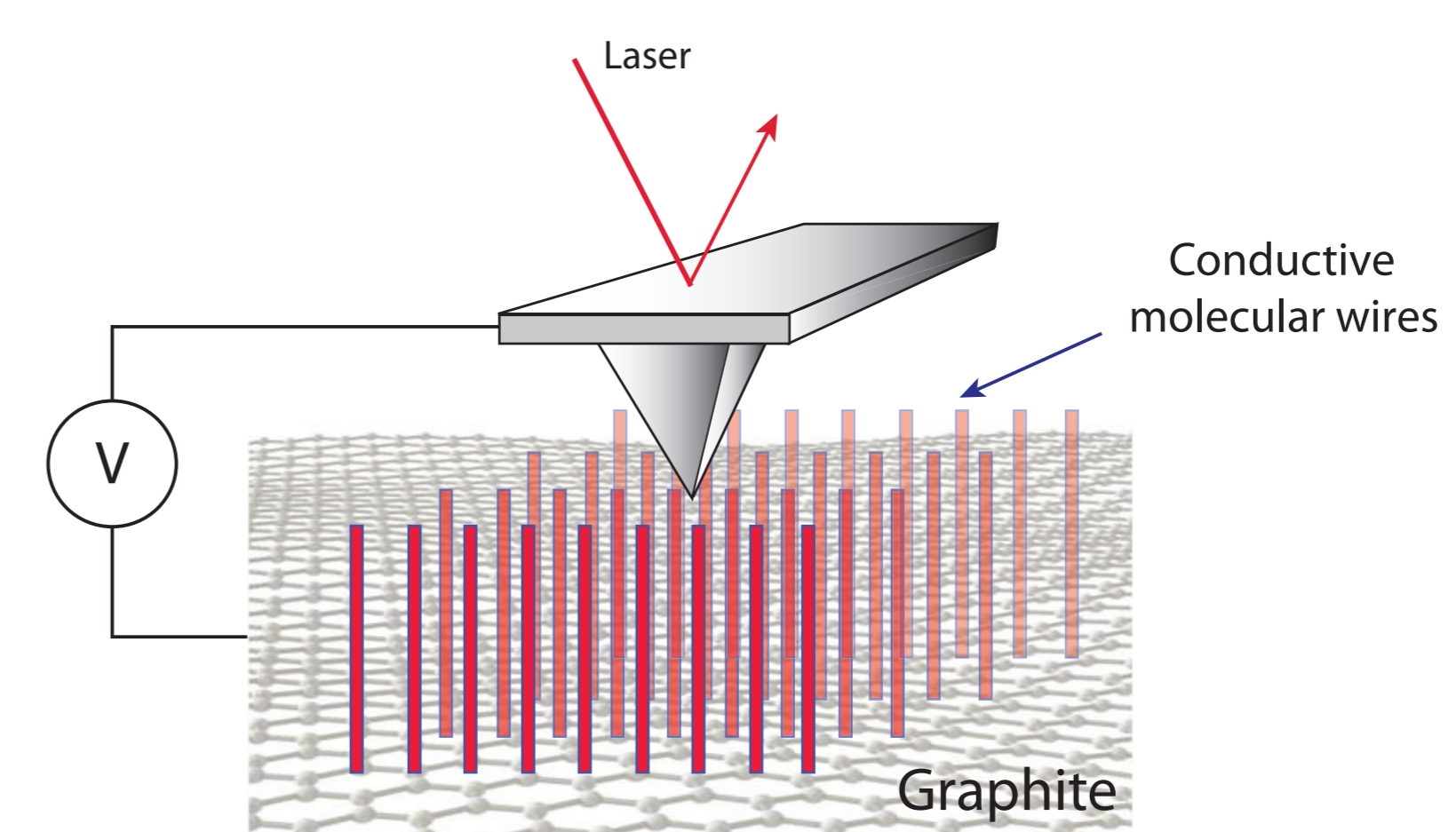
Atomic Force/Scanning Tunneling Microscopes (AFM/STM).

Charge transport along a molecular wire



25 molecules linked to each other forming a conductive molecular wire, assembled in a way similar to a Lego.

AFM Break Junctions



Measurement of force and conductance of molecular junctions using AFM.