



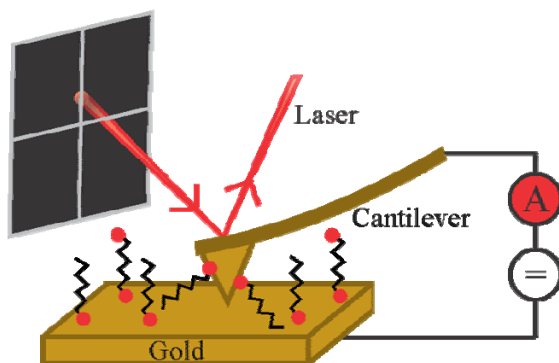
Electromechanics of molecular junctions

Fabricating electronic devices with atomic precision is extremely challenging. To reach this goal, we combine micro-fabrication techniques with self-assembly of molecular compounds to build devices containing only a few molecules. Molecules can be seen here as the smallest building blocks where structure and atomic function can be engineered.

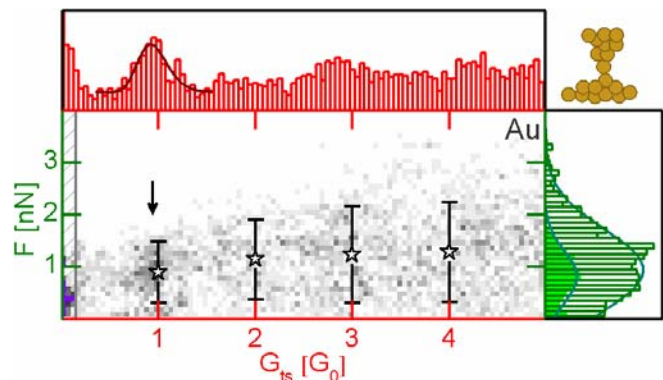
A major challenge in **molecular electronics** is the arrangement and understanding of stable and reproducible contacts. Therefore **Conducting Atomic Force Microscopy** is an attractive approach, enabling the correlation of mechanical and electrical properties in individual molecular junctions.

In this highly interdisciplinary project, you will investigate the stability and breaking forces of atomic and molecular junctions. After learning how to contact single molecules, you will investigate the conductance, stability and breaking forces of molecular junctions for molecules with different binding groups. Further experiments may include the breaking of contacts established through π -stacking of the molecules or stability measurements on a gold-gold bond in different environments and conditions.

Schematic drawing of the C-AFM setup



2D-histogram containing conductance and force data of contacts made of only a few gold atoms



Info starting date: possible immediately
duration: 6 months
contact persons: Cornelia Nef, Michel Calame
phone / room: 0612673780 / 0.23
email: c.nef@unibas.ch, michel.calame@unibas.ch