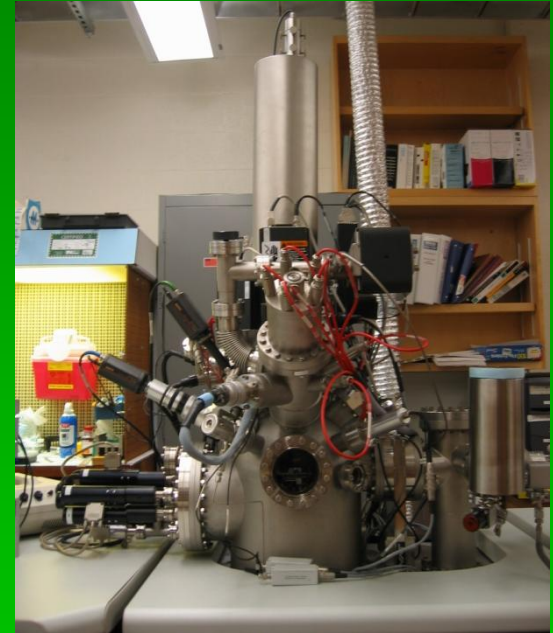
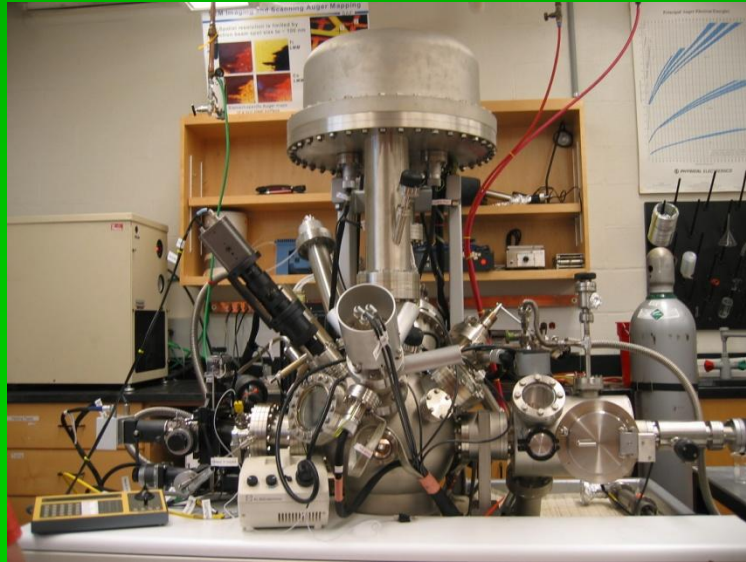


Ms. Longsdorf's Research



My path to research in chemistry



What is Research to You?

- What do you think of when you hear the word “research”?
 - Scientists working in laboratories
 - Doing a lot of experiments
 - Costs a lot of money
 - Takes a long time
 - Hard work
 - Only smart people do research

The Definition of Research

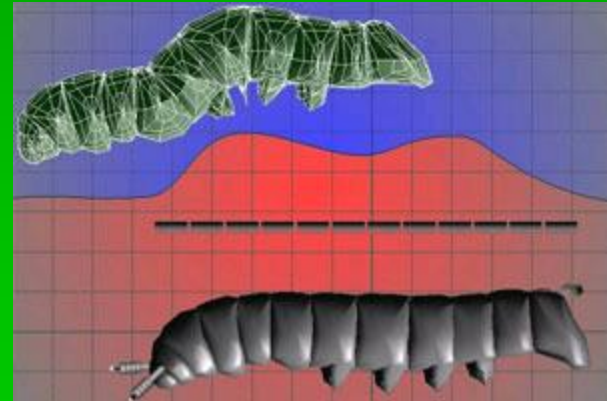
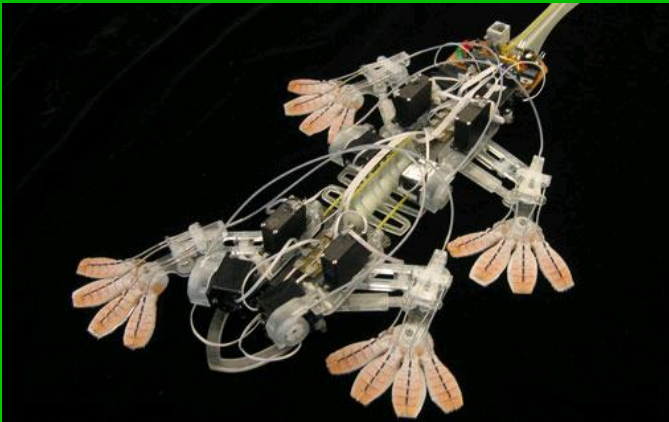
- Research is defined as:
 - #1 “diligent inquiry into a subject in order to discover facts or theories”
 - Which means constantly asking question about something you are interested in getting more information about
 - #2 “investigating thoroughly and carefully”
 - Which means taking your time to find out more information about something

What Research Really Is

- Research is really just being curious about something and not giving up when you take the time to get information about how or why something happens.
- What does this mean for you?
 - Research can be about ANYTHING.
 - Research can be done by ANYONE.
 - Research can be done in ANY WAY.

My Research

- Creating “Biomimetic” surfaces with proteins
 - Surfaces that mimic or act like surfaces in biology or in the body



What are proteins?

- Atoms – smallest form of matter
- Molecule – a bunch of atoms that are connected
- Amino acids – a type of molecule with atoms of HONC
- Proteins – even bigger molecule made up of lots of amino acids

Why is This Important?

- For biomedical devices
 - Pacemakers
 - Prosthetics (fake limbs)
- Many times people's bodies reject these devices.
 - This happens because the body sees the device as a foreign object and attacks it to try to get rid of it.



Why is This Important?

- So, the devices need a disguise!
 - Finding a way to put proteins on the devices gives them a disguise.
 - Since the body recognizes the proteins as being “normal”, it won’t attack the pacemaker and try to kick it out of the body!

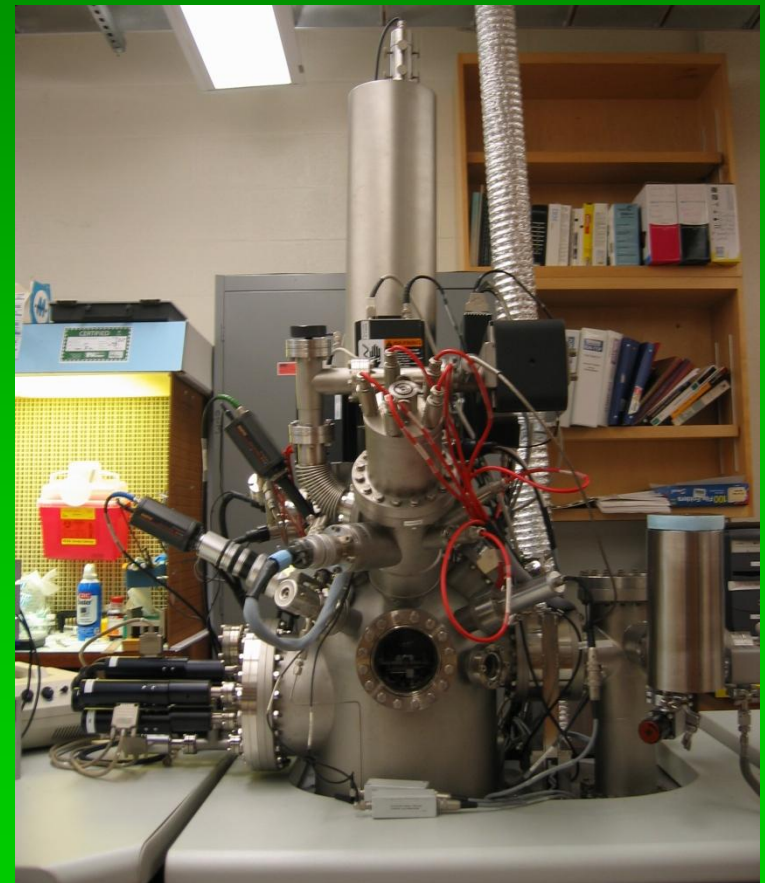
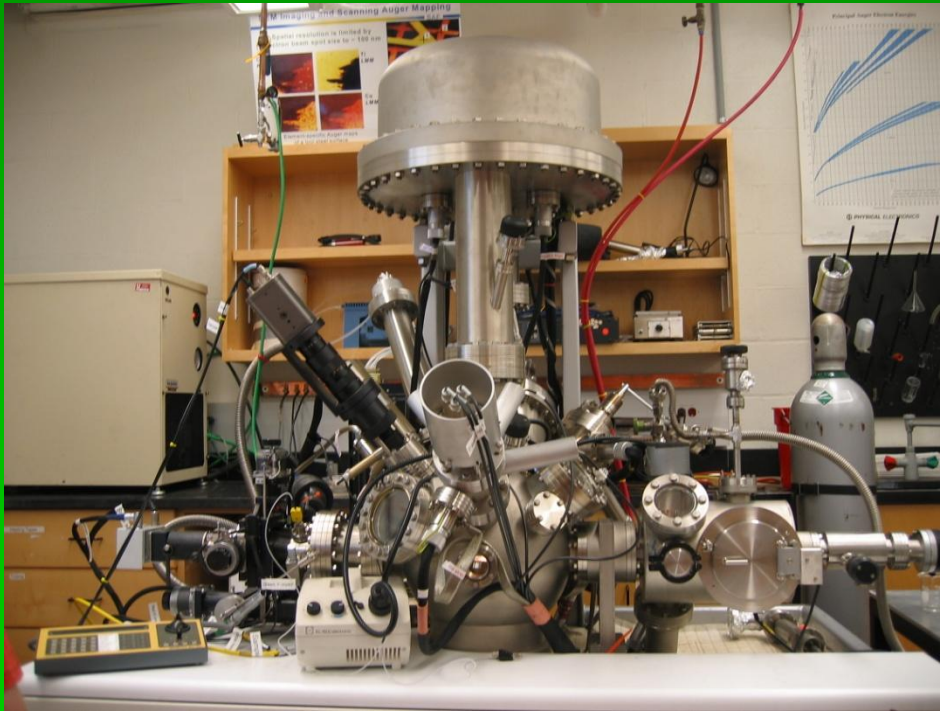
No foreign objects here, just good old proteins!



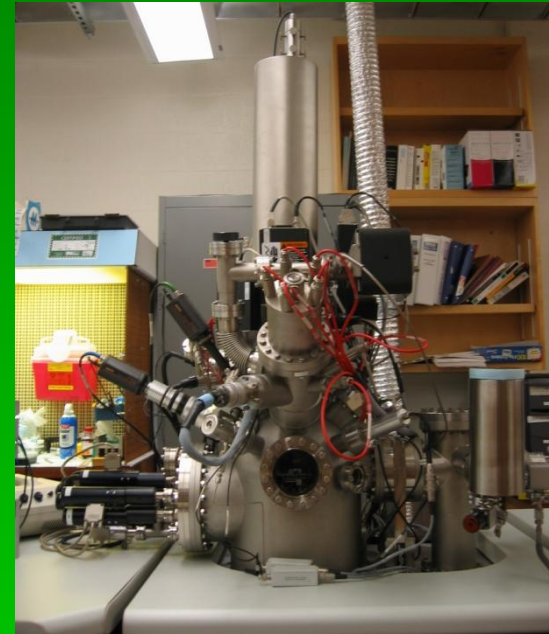
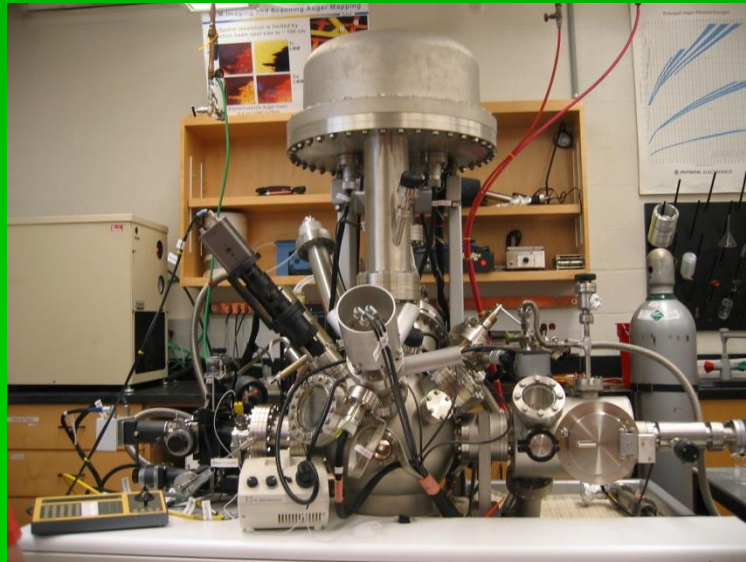
Main Goals of My Research

- Creating new surfaces with compounds and proteins
- Making patterns with these molecules
- Using several instruments and methods to identify the compounds on the surface
 - After all of the chemical steps are done, there needs to be proof that the compound is actually there!

Instruments are Important

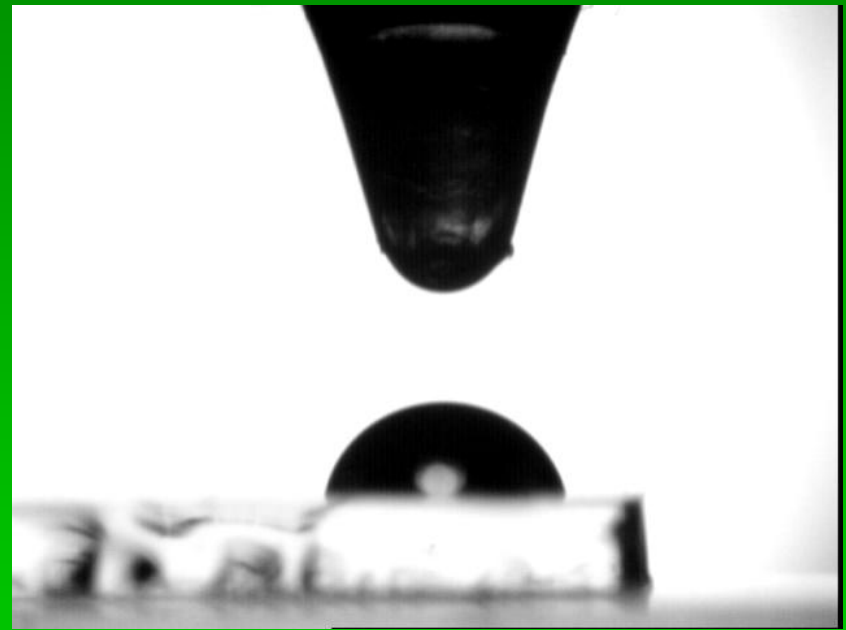
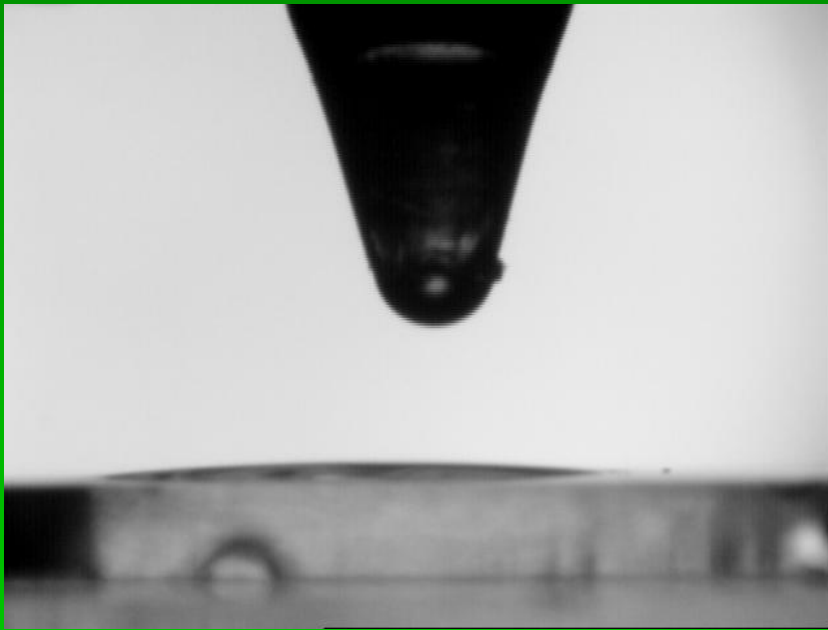


Any Questions?

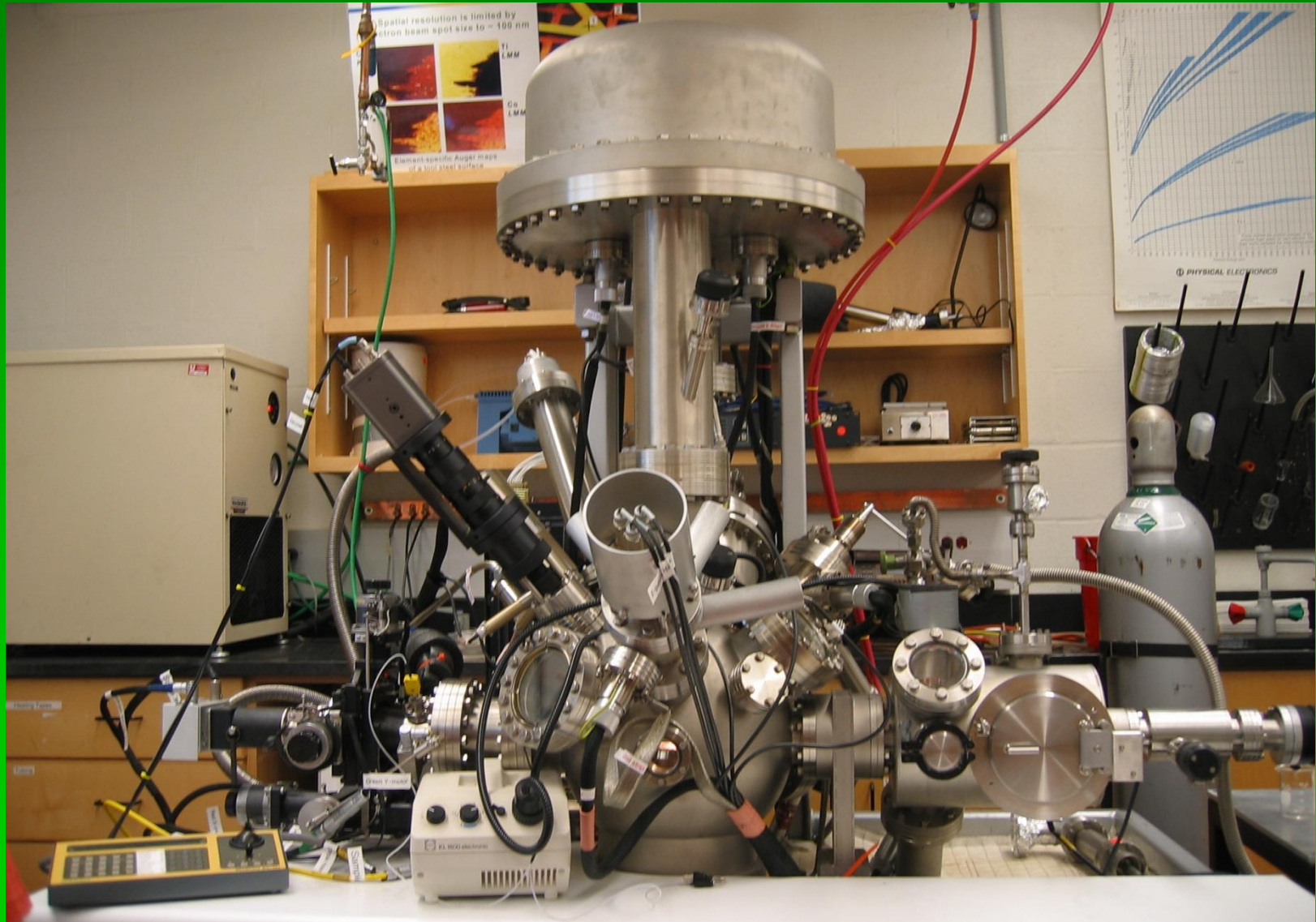


Additional information

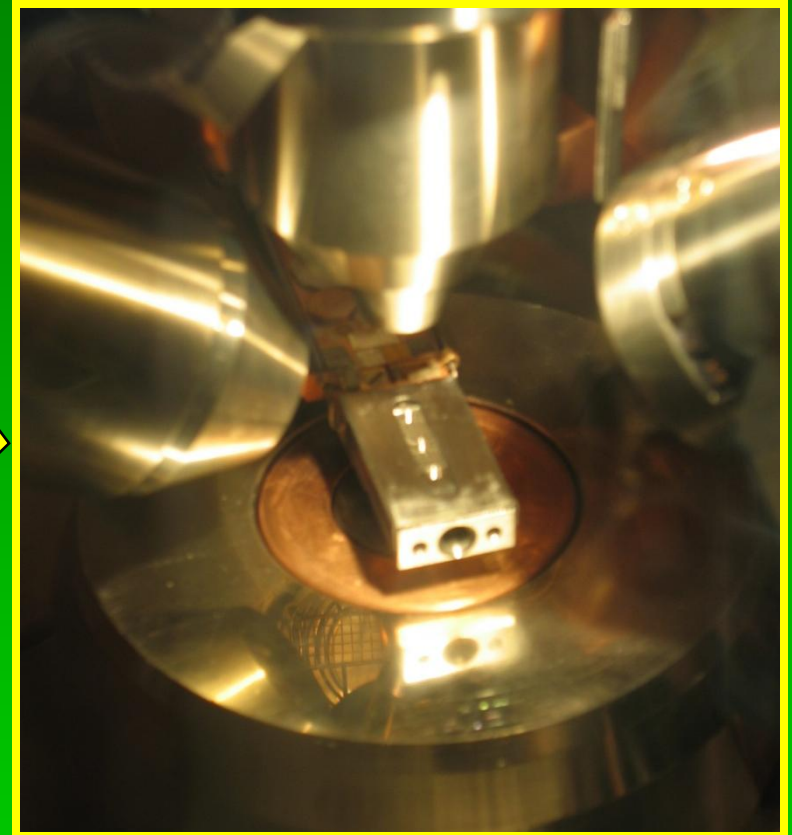
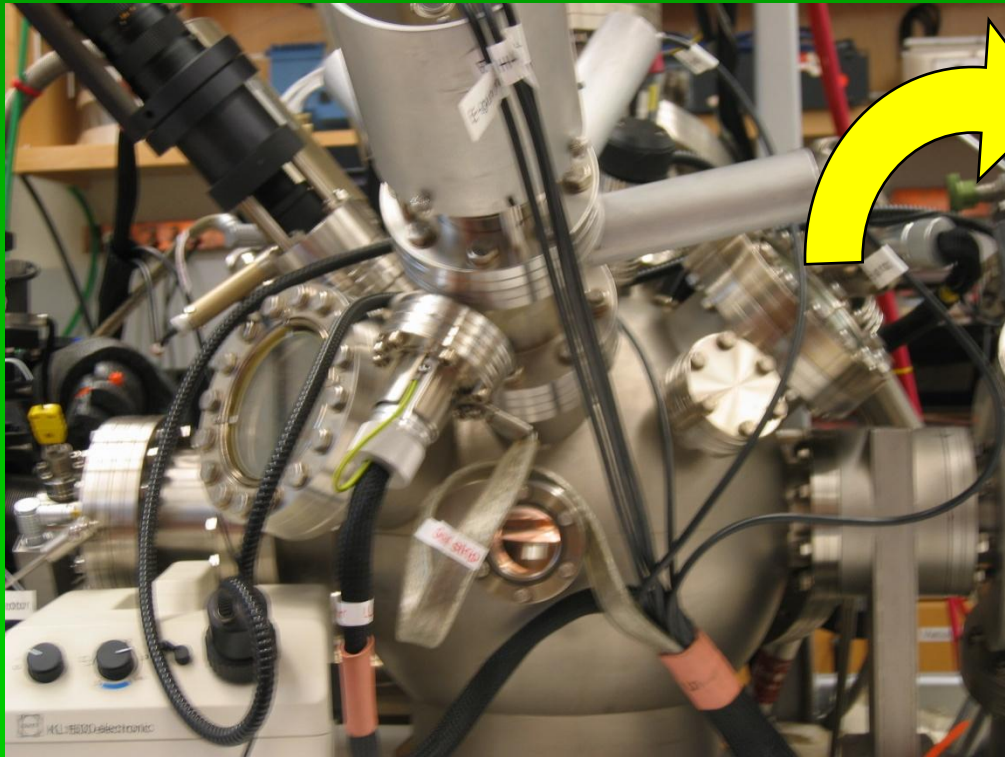
Contact Angle Goniometry



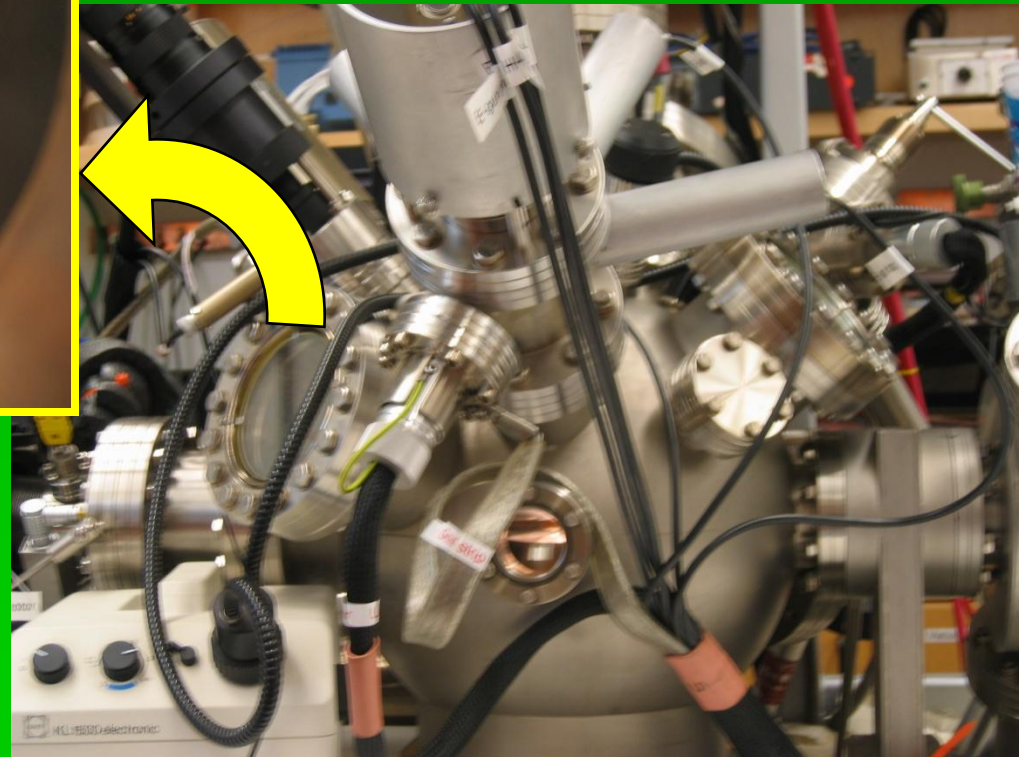
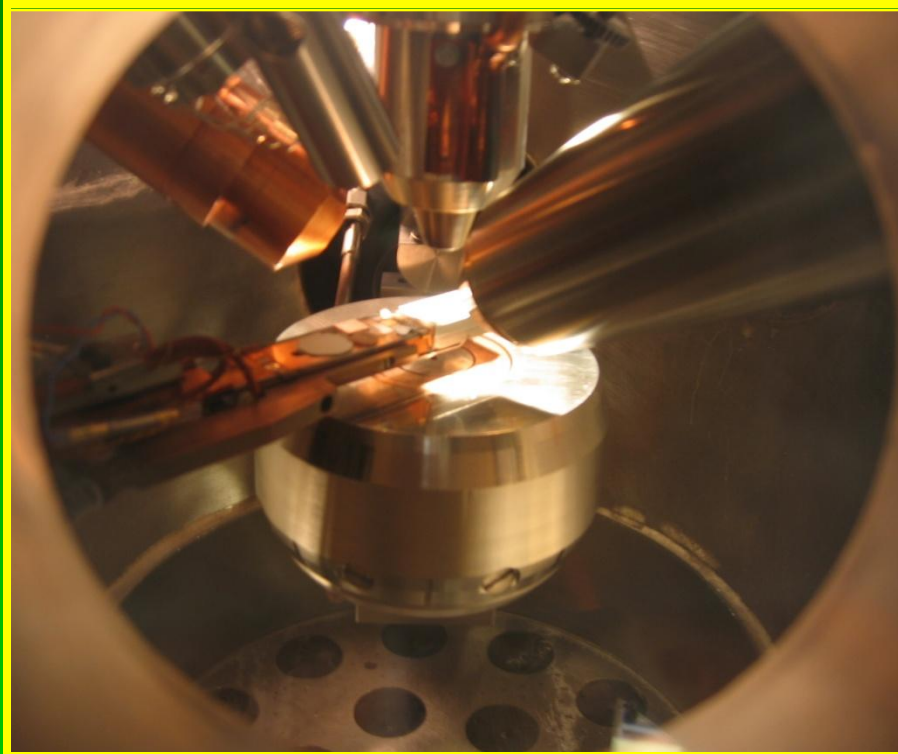
X-ray photoelectron Spectroscopy



X-ray photoelectron Spectroscopy



X-ray photoelectron Spectroscopy



TOF-SIMS

