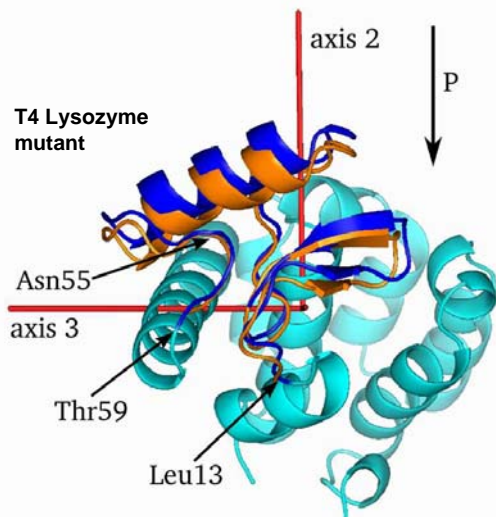
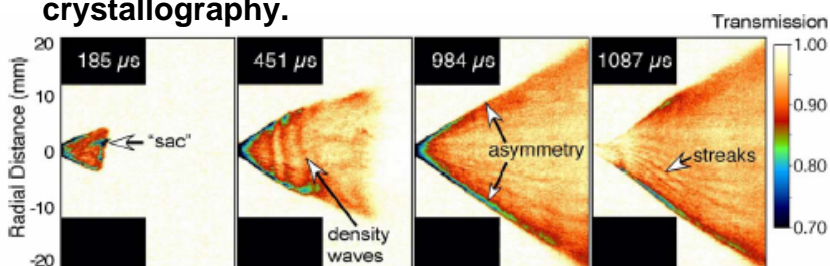
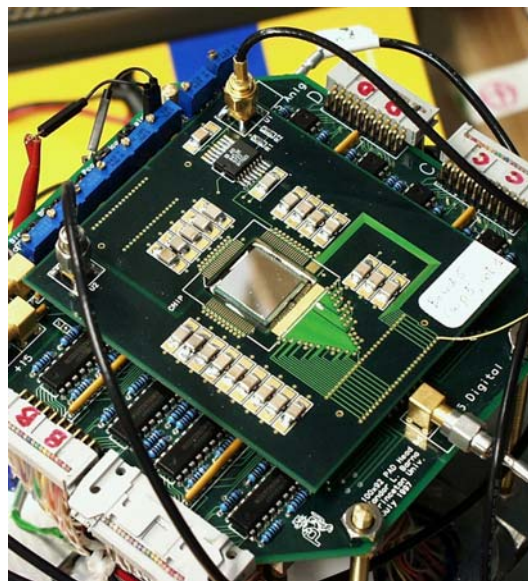
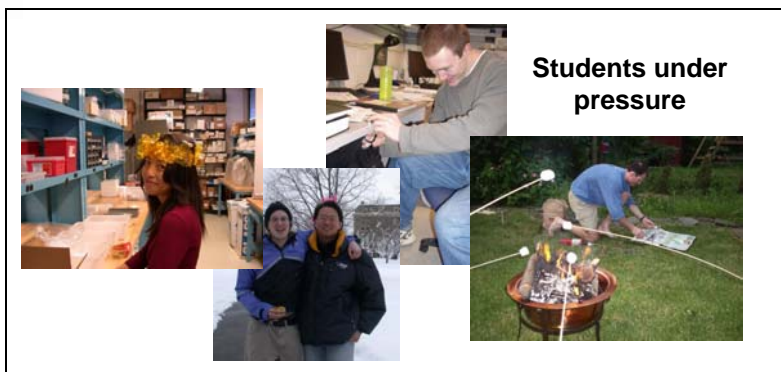
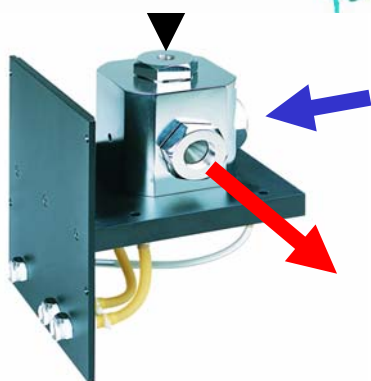


Pixel Array Detector – We're using cutting-edge CMOS microchip fabrication to develop a new generation of ultra-fast and flexible Pixel Array X-ray Detectors. The detectors are used for time-resolved biological and condensed matter experiments. The images below are microsecond imaging of fuel injector dynamics. Detectors are being built for x-ray free electron laser experiments on proteins and macromolecular crystallography.



Proteins under Pressure - We study the response of proteins to pressure using the CHESS synchrotron facility to obtain atomic scale structural information. Pressure studies give new information about protein folding, protein function, and the role of water in protein dynamics and function. These studies involve x-ray crystallography of pressurized proteins, small-angle x-ray scattering of macromolecular solutions, and optical fluorescence studies of solutions and crystals.



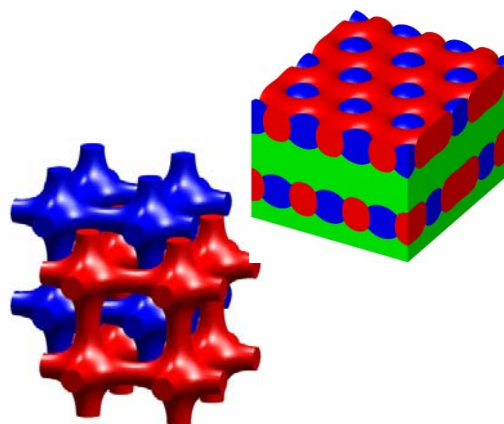
Students under pressure

Visit <http://bigbro.biophys.cornell.edu> or email Professor Gruner at smg26@cornell.edu to find out more.

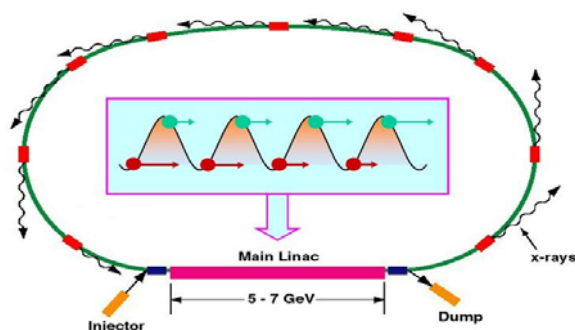
(More Projects on the Other Side)

Nanocomposite Self-Assembling Materials

Hybrid materials combining polymers and silica can be designed to form complex structures that have applications ranging from catalysis to photonic crystals. We make these nanocomposite structures using block copolymers and study their properties with X-ray scattering and electron microscopy.

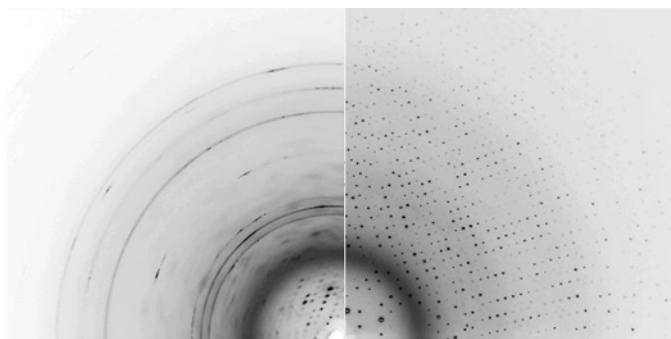


CHESS Professor Sol Gruner is director of the Cornell High Energy Synchrotron Source, a world class X-ray facility located on campus in Ithaca. Group members regularly perform experiments at CHESS and projects are available in Instrumentation, Materials Science, X-ray Physics and Accelerator Physics.



In addition, development is underway for the Energy Recovery Linac, a revolutionary new type of X-ray light source.

Protein Crystallography We've developed a high-pressure cryofreezing method that enables novel x-ray crystallography studies. We are exploring the physics of the high-pressure cryofreezing process. It is complex because of the behavior of water under pressure in the nanopores of the crystal.



Visit <http://bigbro.biophys.cornell.edu> or email Professor Gruner at smg26@cornell.edu to find out more.

(More Projects on the Other Side)