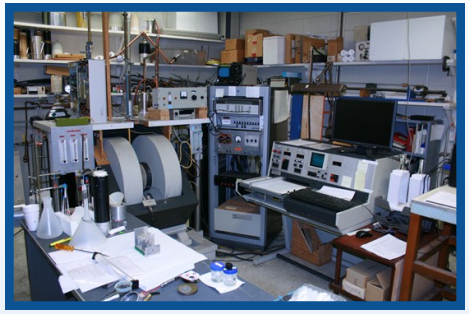
Bruker ER 200D-SRC EPR Spectrometer System



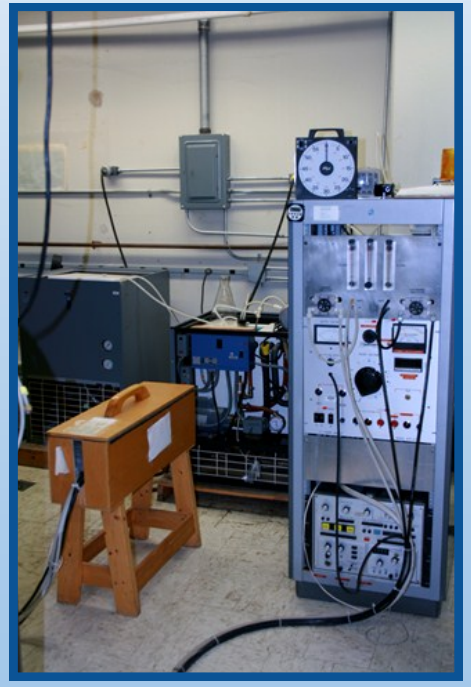
System description:

- The electro-magnet is 10-inches in diameter with a 3.75-inch gap, capable of 6 kilogauss.
- The magnet is cooled by a NESLAB HX-100 recirculator closed system.
- The microwave bridge is a Bruker klystron source with the operating frequencies between 9.0 – 10.0 GHz with a maximum microwave output power of 200 mW.
- The microwave cavities are Varian cavities. The Bruker system has been modified to use various cavities including homebuilt types.
- The system includes a Janis 10DT *"Supervaritemp"* cryostat with Beryllium windows for x-ray doses and measurements at 4K. There is an optical window in the rear for viewing or for Uv-vis-IR sample irradiation.
- There is a Varian Variable Temperature System attached for creating temperatures above RT to near 77K.

75-kilovolt X-Ray Generator X-Ray Tube/Power Supply

The system contains the following items:

- An OEG-76H/W axial tungsten target, water-cooled, 1400-watt tube and one spare tube.
- A modified *Hipotronics* 75-kV positive source power-supply.
- Two *Haskris* recirculation water coolers.
- A shielded radiation box (32" x 10" x 11") for samples.
- Dose/minute @ one-cm distance is 10 kGy.
- A dose/distance calibrated sample holding fixture.



Varian E-12 EPR Spectrometer

System description:

- The electro-magnet is a 12-inch, dia. with a 3-inch, gap capable of fields above 13 kilogauss.
- The magnet is cooled by a NESLAB HX-500 recirculator closed system.
- There are two RF microwave bridges an X-band and a Q-band.
- The system has several RF cavities a Varian X-band dual-cavity, a Varian X-band rotating cavity, a Varian X-band flat-cell cavity and a Q-band cylindrical cavity.
- The system is capable, in the Q-band configuration, of operation from RT to 4K with the ability to receive X-ray doses at these temperatures using a Janis *"Supervaritemp,"* optical window, cryostat.
- There is a Beryllium window for X-irradiation of samples at the range of temperatures listed. The sample is then raised into the epr cavity for measurement at this same temperature.
- The radiation dose from the 75 kV x-ray source at the sample inside the cryostat at 4K is O.75 kGy/minute.

Facility also includes access to:

CVC Helium Leak Detector

- The unit is a Consolidated Electrodynamics Corporation model 24-120A, Helium mass spectrometer.
- The vacuum system contains an air-cooled oil diffusion pump backed by a WELCH Duo-seal model 1400 pump.
- The system can be used as a "sniffer" or as a "probe."
- There is a complete manual included and a number of spare parts.
- This DETECTOR is used to service the cryostats by locating leaks in the window seals, welds or connection seals.

Varian - Cary Spectrophotometer

- Uv/vis spectrophotometer, model 100 BIO.
- Powered by Cary-Win software.
- Temperature controlled peltier thermostatted cell holders.
- Cary scan package: Math module, simple reads, Instrument Validation software and GLP program for file security.

Waters 2690 Separations Module & Waters 996 Photodiode Array Detector

- For high performance liquid chromatography (HPLC) for all separation functions.

Bio-Rad Fluor-S MultiImager MAX2

- Detects all HRP-activated substrates.
- Detects all AP-activated substrates.
- Performs high-sensitivity detection of chemifluorescent substrates.
- Compatible with extensive range of fluorescent dyes and labels.
- Performs true multicolor fluorescence imaging with a choice of eight (8) emission filter positions.
- Perform high-quality imaging and analysis of 1- and 2-D gels, blots and autoradiograms.
- Detects numerous colorimetric stains.

Department of Biochemistry & Biophysics

The William A. Bernhard Memorial Lab contains several very unique pieces of equipment, now available to the scientific community for use at cost within the Cost Center. The costs include the activity of the lab's Associate of the Department of Biochemistry and Biophysics, Kermit Mercer, who will oversee use of the instruments.

The laboratory is named for Professor William A. Bernhard, Ph.D., who passed away suddenly May 9, 2012. Dr. Bernhard was a biophysicist of the highest order, working at the forefront of understanding how radiation damages our genetic material. His unique command of both the biological and physical aspects of radiation damage earned him the respect and recognition of colleagues worldwide. The longevity of his research program, funded by the National Cancer Institute for 37 consecutive years, and the successful careers of his many trainees are testaments to the consistent high quality of his work, the high regard of his peers, and his commitment to training future scientists. Bill also was a wonderful person and colleague. His kindness to his colleagues and passion for his work made him a trusted friend and ideal colleague.

UNIVERSITY of ROCHESTER

William A. Bernhard Memorial Lab

Electron Paramagnetic Resonance (EPR)

And X-Ray Irradiator Facility

- Full Temperature Range (RT—4°K)
- X-Band and Q-Band Instruments
- 70 KV X-Ray Irradiator
- Access to Wet Lab
- On-site Technical Support

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