

Department of Chemistry
NMR Facilities
Director: Dr. Carlos A. Steren



The Chemistry Department is equipped with **five** NMR spectrometers used in research and teaching.

Liquid State **600MHz**, **400MHz**, **300MHz** and **250MHz** and Solid State **400MHz** spectrometers.

Liquid State Varian VNMRS 600 MHz

Narrow-bore magnet. The system has four broadband channels and pulsed field gradients (PFG) on the z-axis. Three 5mm probes are available for this instrument; a triple resonance (H/N/C) probe with gradients, a double resonance (H/X) probe and a triple resonance (H/N/C) **cold probe** with z-axis gradients. The **cold probe** is salt tolerant and has ^1H and ^{13}C detection enhancement. The system is used for multinuclear, multidimensional high-resolution NMR studies on chemical and biological samples.



Solid State Varian INOVA 400 MHz

Wide-bore magnet. The spectrometer has a proton and a broadband channel. The system is equipped with a Chemagnetic 5mm MAS probe with Variable Temperature (VT) capability. It also has an automatic MAS controller. The system is used for multinuclear, multidimensional solid state NMR studies.

Liquid State and micro imaging Bruker Avance 400 MHz

Wide-bore magnet. The liquid state system includes a proton and a broad band channel. There are three 5mm probes available; a Broad Band Inverse probe (BBI), a QNP probe (H/ ^{13}C , ^{11}B or ^{31}P) and a dedicated ^1H probe. Also, 10mm probes are available. The spectrometer has a micro-imaging unit and imaging probes. The instrument is dedicated to multinuclear, multidimensional and variable temperature high-resolution NMR experiments.

Liquid State Varian Mercury Plus 300 MHz

Narrow bore magnet. It consists of a two channels system equipped with a Four Nucleus 5mm probe (^1H , ^{19}F , ^{13}C and ^{31}P). This instrument is used in undergraduate and graduate courses as well as research. Standard 1D, 2D and ^1H detected 2D experiments are routinely run on the spectrometer.

Liquid State Bruker AC 250 MHz

Narrow bore magnet. It has been upgraded to a **Tecmag DSpect**. The system has two channels ^1H and ^{13}C and a dedicated H/C 5mm probe. Routine ^1H and ^{13}C NMR are carried out on this spectrometer, as well as APT, DEPT and 2D-COSY and HETCOR experiments.

For more information, visit our website: <http://www.chem.utk.edu/nmr/>