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 $^1$H 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 broadband 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 $^1$H 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 ($^1$H, $^{19}$F, $^{13}$C and $^{31}$P). This instrument is used in undergraduate and graduate courses as well as research. Standard 1D, 2D and $^1$H detected 2D experiments are routinely run on the spectrometer.

**Liquid State Bruker AC 250 MHz**
Narrow bore magnet. It has been upgraded to a **Teemag DSPect**. The system has two channels $^1$H and $^{13}$C and a dedicated H/C 5mm probe. Routine $^1$H 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/](http://www.chem.utk.edu/nmr/)