AV500 provides the latest NMR capabilities at 500 MHz to tackle a wide variety of research problems. The instrument can generate a maximum Z-axis magnetic field gradient of 56 Gauss/cm to perform most of the experiments that rely on coherence selection using gradients and selective peak suppression using gradients. Shaped gradients can be generated with the aid of Bruker Shape Tool.

Normally this instrument has a probe optimized for best \(^1\)H detection sensitivity, ideal for low concentration samples and multidimensional proton experiments. DRX-499 will have the better probe for direct detection of carbon, phosphorous, or fluorine.

**Features**

- Bruker AV1 series instrument
- \(^1\)H Frequency: 499.956 MHz
- \(^2\)H field-frequency lock system
- MAGNET and Shim system
  - Oxford narrow bore Cryomagnet
  - 28 RT shim gradients
  - BSMS/2 keyboard
- Host Operating System: Red Hat Enterprise Linux 6.3
- VT range: −80°C to +70°C (up to 12 hrs. at max temperature)
- Ultra high VT operation (with special probehead): +200°C max
- RF Section
  - Three channels (SGU1, SGU2 and SGU3)
  - Dual (100 W 1H + 300W X) BLAXH100 amplifier
  - Dedicated 300WX amplifier for third channel
  - System is equipped with QNP switch accessory to perform \(^19\)F (\(^1\)H) double resonance experiments.
  - HPPR/2 2H-STOP preamplifier.
- Pulse shaping capability to design shaped and shifted RF pulses and gradient pulses.
- Digital
  - Digital quadrature detection
  - 5 MHz sampling rate ADC
  - Includes 56 Gauss/cm Z-axis magnetic field gradient.
  - Fully automated Gradient assisted shimming - TOPSHIM
- Software
  - Runs on TOPSPIN 2.1, includes ShapeTool and NMRSim
  - Bruker NMR encyclopedia is available with a substantial library of pulse sequences and standard parameter sets.

Currently installed Probehead

**Bruker triple resonance TXI - $^1$H($^{31}$P, $^{13}$C) with Z-gradient**

Other Probeheads available:

- **Bruker multinuclear inverse BBI - $^1$H (X) with Z-gradient** - X nuclei range from $^{107}$Ag to $^{31}$P. This probe is optimized for best sensitivity in 1H. Well suited for indirect detect experiments.
- **Bruker triple resonance TXI - $^1$H($^{13}$C,$^{15}$N) with Z-gradient**
- **Bruker double resonance S-EX : $^{13}$C ($^1$H) 10mm with Z-gradients - ultra high temperature probe - max 200 C operation**  
  Note: this probe requires dedicated 10 mm NMR sample tube and increased volume of sample compared to conventional 5 mm preparations.

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