Solid-State Accessory

The Bruker AV-III-400 Solid State Accessory is Not Yet Operational. The Probe was Sent Back to Bruker for Repair.

Solid-State NMR is Applicable to Polymers and Materials: Any Sample That Can Be Ground into a Powder.

- Sample is Packed into a 3.2 mm (OD) Rotor
- Rotor is Inserted into Top of Magnet Bore
- In the Probe, the Rotor is Tilted by an Angle of 54.74 Degrees (the “Magic Angle”)
- The Sample Spins at Speeds Up to 25,000 Hz (Compared to 20 Hz for Liquid Samples)
- $^1$H Decoupling is Applied with High Power (50 W)
- Observe $^{13}$C, $^{29}$Si, etc. (Not $^1$H)

The Technique is Called CP-MAS, for Cross-Polarization Magic Angle Spinning. Cross-Polarization is a Way of Exciting the $^{13}$C via the Protons, and Magic Angle Spinning Mimics the Rapid Motion of Molecules in Solution. Spectra of Similar Quality to Solution State NMR Can Be Obtained.