

111 kHz MAS Probe

● ^1H , ^{13}C , ^{15}N Probe

Gain new insights from your NMR analysis with the 111 kHz MAS probe for ultra-fast magic angle spinning, an ideal tool for studying the structure and dynamics of challenging biological samples and materials.

With a sample volume of 0.5 μl and unsurpassed sensitivity, this probe provides researchers with greater flexibility in sample volume and spinning requirements, depending on the sample of interest. A newly developed MAS control unit, the MAS III controller, ensures the most stable MAS regulation at low and very high rotation rates. The 111 kHz MAS probe is available for all Bruker standard and wide bore NMR systems and comes with various tools for easy handling of the small diameter rotors and caps, including a microscope for rotor inspection.

- Fastest available MAS frequency
- Stable regulation
- Unique possibilities in both biological and material science solid-state NMR
- Available for standard and wide bore
- Tools provided for easy filling and handling of the small diameter rotor and caps
- High sensitivity despite small sample volume through improved coil efficiency
- High RF field strength for wide bandwidth excitation and efficient recoupling

Revealing side chain connectivity using proton detection at 111kHz MAS

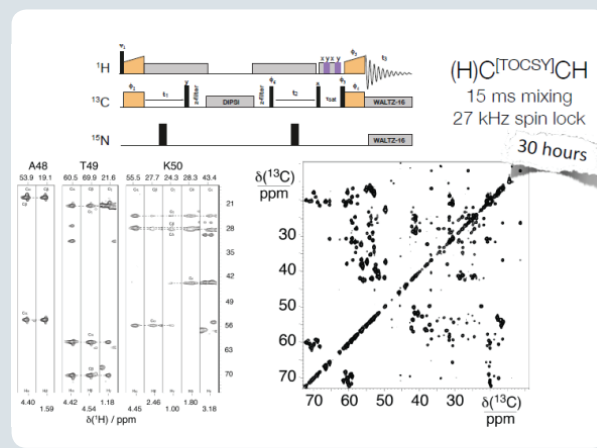
With the 111 kHz probe, side chain resonance assignment in fully protonated microcrystalline samples and the investigation of paramagnetic compounds are now feasible. Regulated by the MAS III unit, the probe provides short rotation periods (as low as 9 μ s, 0.025% rotation stability), high B¹-fields (500 kHz and higher) and unparalleled sensitivity.



The high speed MAS efficiently quenches the homonuclear proton dipolar interactions to enhance the coherence lifetimes and significantly improve the resolution. This enables detection of the side chain connectivity in a fully protonated sample within a few hours' time.

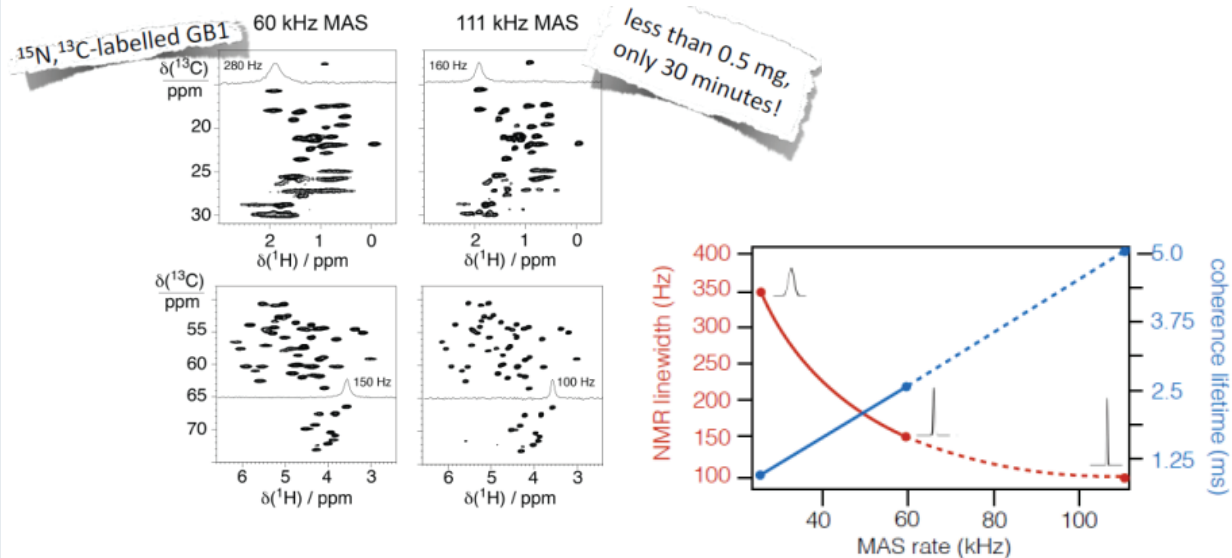
In materials with very large anisotropies the new 111 kHz MAS regime can help elucidate structural motifs, which have been inaccessible before.

GB1 side chain connectivity



Side chain connectivity in a microcrystalline GB1 detected by use of TOCSY based solid-state sequences.

Resolution and lifetime enhancement



Increasing the MAS speed from 40 kHz to 111 kHz coherence lifetimes are increased significantly by up to a factor of 5 at the same time, e.g. for microcrystalline protein samples a proton resolution enhancement of nearly a factor of 4 can be achieved. Data courtesy of Guido Pintacuda, Centre de RMN à Très Haut Champs, ENS Lyon, France.