



MAS-Probes

- With Full Automation Capabilities

Different Flavors of Automation in NMR

Depending on the laboratory's needs or goals, automation may have several meanings:

- High-throughput screening or overnight automation several samples being measured with high sensitivity and without interruption
- Multi-user open and easy access, when the same instrument is shared among multiple users, with different levels of NMR knowledge
- Higher reproducibility, due to less user interaction

For these and other reasons automation is an appealing tool not only for traditional solution-state NMR, but also for HRMAS and CPMAS. Metabolomics studies by HRMAS can be recorded under full automation more efficiently and reliably. Advanced CPMAS solid-state experiments can be automatically optimized making them accessible to non-experts.

- Automatic rotor exchange with dedicated sample changers
- Automatic tuning and matching with enhanced 2nd generation automatic tuning and matching (2G ATMA)
- Automated Magic Angle Setting
- Uncompromised performances
- 400-600 MHz standard bore magnets
- iProbe HRMAS RF configurations: HCND, HCD
- Work in Progress: iProbe CPMAS in HX RF configuration

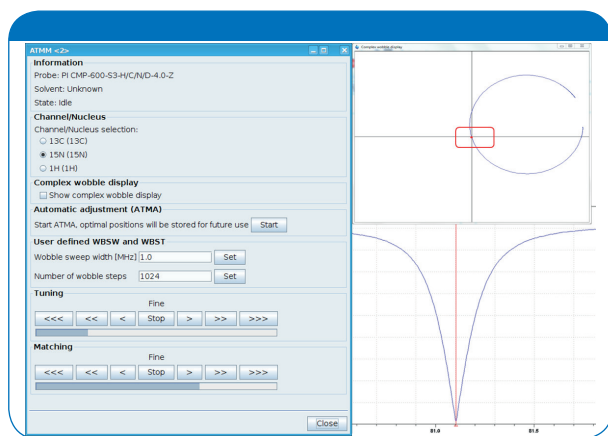
iProbes Overview

CPMAS and HRMAS iProbes are built on the new iProbe platform and they share the same innovations in terms of automation.

Tuning and Matching Using Cartesian Coordinates

Automatic tuning and matching with the CPMAS and HRMAS iProbes makes use of the novel algorithms introduced with the Avance NEO. Tuning and matching is now performed using complex wobble data.

- More reliable
- Nucleus-specific starting positions
- Self-optimization
- Functionality similar to a Network Analyzer

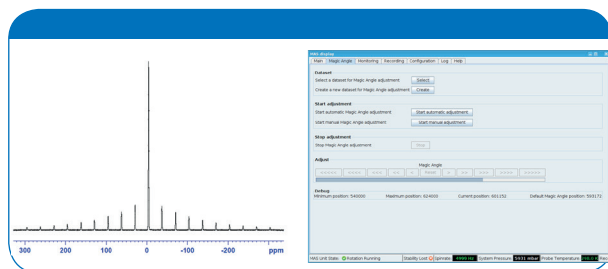


Tuning and Matching

Automatic Magic Angle Settings

A dedicated motor is controlling the movement of the stator axis, and assures a smooth sample exchange. The magic angle is determined in full automation with a KBr sample, and stored for the future experiments.

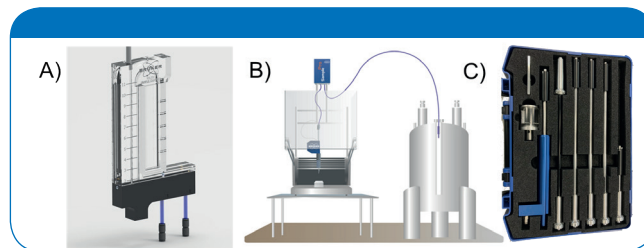
Furthermore, the quality of the settings can be automatically determined by TopSolids and stored for reporting. After a rotor exchange, the motor is re-setting the angle automatically.



KBr Spectrum after automated setup routine was performed. on the right side you can see the new MASDISPLAY tab for the automated and manual angle adjustment

Automated Sample Exchange

The sample exchange is also fully automatic thanks to the Bruker sample changers for 4 mm rotors. The MAS Sample Changer can load up to 20 rotors consecutively. If advanced automation is required, SamplePro hr-MAS is able to select and transport rotors in a random order from a 48-holder plate. In addition, the plate can be cooled down to -16 C assuring the best storage conditions for delicate samples such as tissues. Alternatively, the user can change the samples manually with a re-designed transfer tube which offers a quick switch from automatic- to manual-mode.



Bruker sample changers for MAS rotors: A) MAS Sample Changer and B) SamplePro HRMAS. C) The new transfer tube for iProbe .

Software for Full Automation Routines

With our software tools, the full workflow from system verification and probe setup to experiment optimization and sample measurement is automated.

TopSolids™ guides the user towards the probe setup and experiment optimization for CPMAS applications. HRMAS users will prefer IconNMR to select and setup experiments from a large catalogue of Bruker' parameter sets. Creation of user specific experiments is possible in both environments.

Automation with Uncompromised Performance

Using automation does not sacrifice any performance: both the CPMAS and HRMAS probes deliver spectra of equal but mostly better quality than the previous generation of probes.