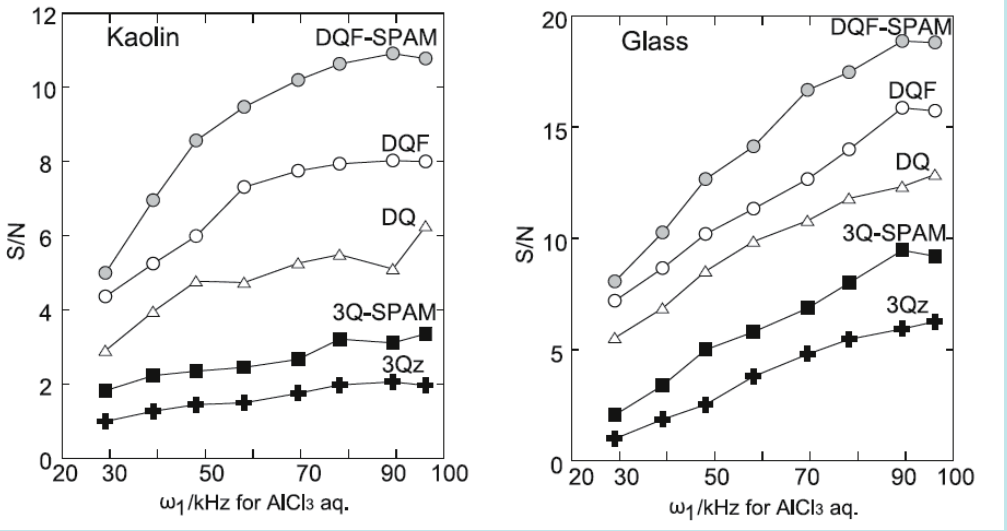
STMAS probe

to analyze low-sensitivity half-integer spin nuclei in solid-state high-resolution NMR spectroscopy

JEOL developed a special probe for realizing STMAS (Satellite Transition Magic Angle Spinning) measurements which give high-resolution NMR spectra for half-integer spin nuclei in solids. STMAS may give much higher spectral sensitivity in comparison with MQMAS (Multiple Quantum Magic Angle Spinning).



Comparison of sensitivity in STMAS and MQMAS
Spectrometer: JNM-ECA700, Probe: 3.2mm STMAS
Sample: Kaolin (Cq = 3.5±0.4 MHz) and glass (Cq = 6.8±0.6 MHz)

Spectral sensitivity is compared for various RF field strengths and pulse sequences: Z-filter 3QMAS (+), 3QMAS-SPAM (■), DQ-STMAS (△), DQF-STMAS (○), and DQF-STMAS-SPAM (●).

Reference: T. Takahashi, K. Kanehashi, Y. Shimoikeda, T. Nemoto, and K. Saito, J. Magn. Reson., 198, 228 (2009).

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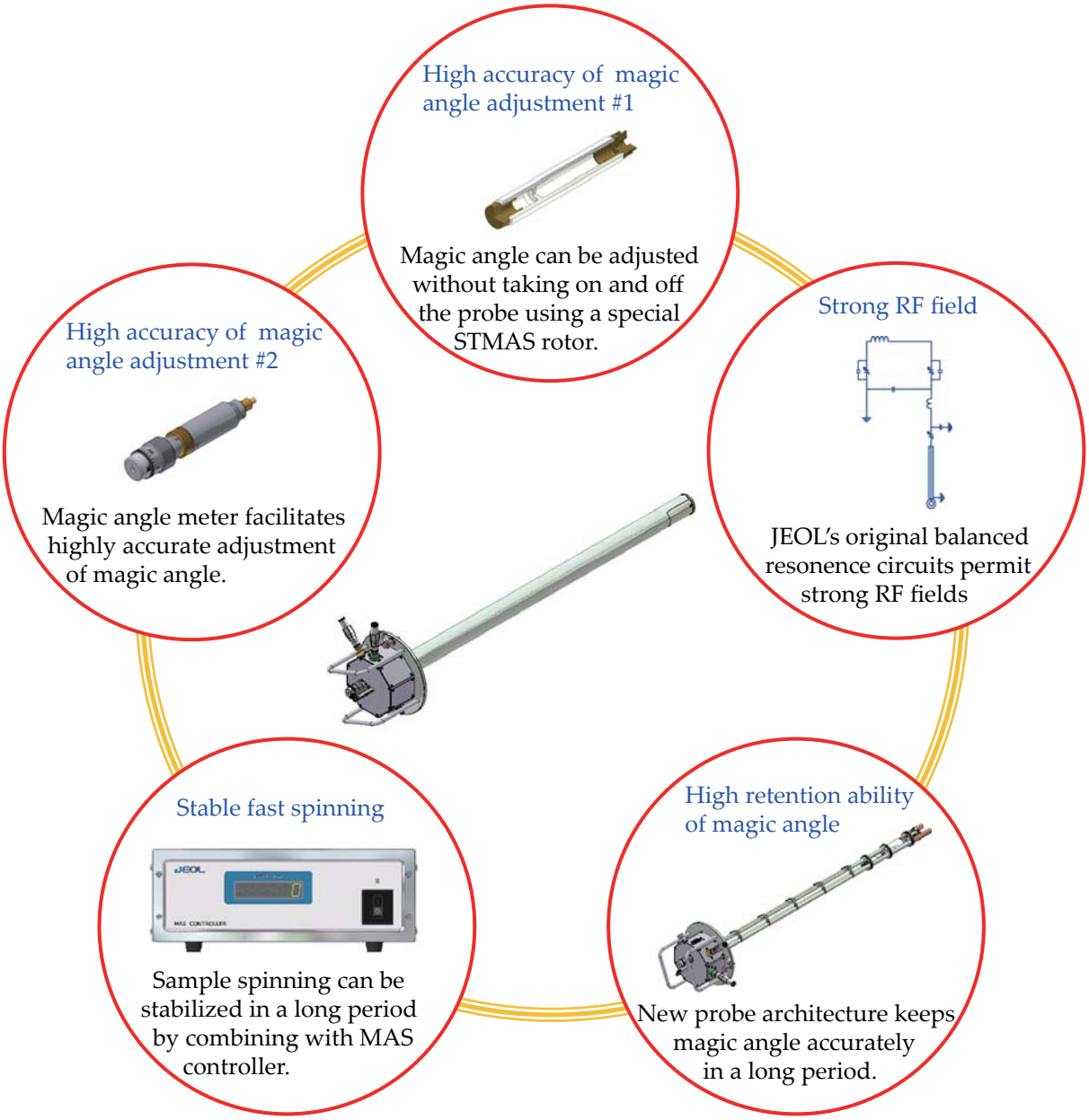
Five distinct features of STMAS probe



JEOL STMAS has special mechanism for accurate magic angle adjustment within 0.001 degree and its long-term retention, required in STMAS measurements. STMAS probe, by combining with MAS Controller, allows measurements for low-sensitivity samples and great reduction of measurement time.

JEOL STMAS probe was developed in collaboration with Dr. K. Kanehashi and Dr. T. Takahashi of Nippon Steel Corporation.

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