Ultrafast MAS of heavy 1/2-spin nuclei: Ultra-wideline 119Sn solid-state NMR at 75 kHz MAS

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Ultrawide-line ^{119}Sn solid-state NMR spectra of tin(II) oxide (SnO) were collected at low and ultrafast Magic Angle Spinning (MAS) (Fig. 1) [1].
The ultrafast MAS approach offers following benefits over the low MAS approach: simple setup, straightforward data acquisition and processing, efficient excitation, reduced number of spinning sidebands (SSB) resulting in significant spectral simplification, and increased mass sensitivity allowing the fast study of small amounts of material. In addition, the ultrafast MAS experiments provide optimal conditions for the extraction of the chemical shift anisotropy tensor parameters, anisotropy, and asymmetry for heavy 1/2-spin nuclei [1].

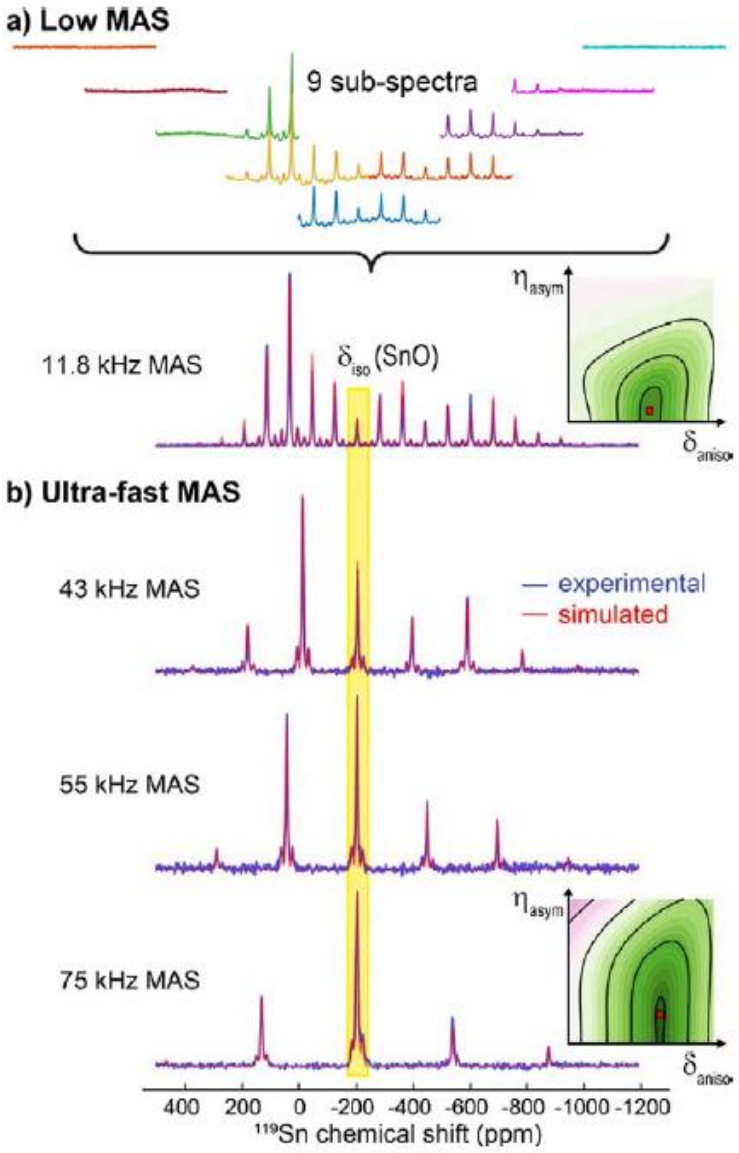

Fig.1 Comparison of experimental (blue) and simulated (red) ^{119}Sn NMR spectra of SnO. a) Nine subspectra were collected and added to give a full spectrum in the case of slow MAS (11.8 kHz, 4mm o.d. rotor). b) At ultrafast MAS (43–75 kHz, 1mm o.d. rotor), a single-pulse experiment was sufficient to excite and record the full pattern.

Reference

[1] A.-C. Pöppler, J.-P. Demers, M. Malon, A.P. Singh, H.W. Roesky, Y. Nishiyama, A. Lange, *ChemPhysChem* 17 (2016) 812-816.