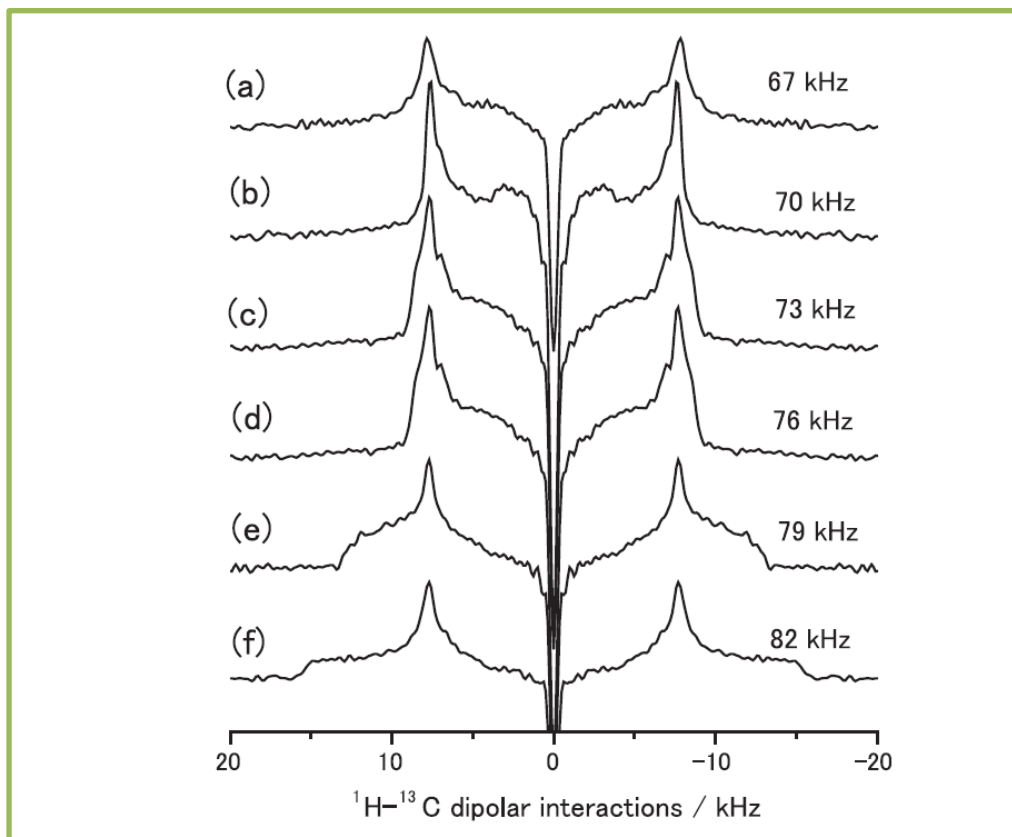


Short distance determination by CP-VC - how does it work?

Short distance measurements between ^1H -X can be successfully demonstrated by the simple and robust method of cross-polarization with variable contact time (CP-VC) at fast MAS (> 60 kHz). The robustness ironically comes from sensitivity to rf field strength. Even a small mismatch of CP condition gives significant change of peak positions. Fortunately, the signal intensity is also greatly reduced because of the severe CP matching at fast MAS. There is always rf-inhomogeneity in the sample coil, thus a part of sample always satisfied perfect CP condition, giving a very strong signal at a proper position. The overall peaks always gives singularities at $d/2^{1/2}$ even if rf-field strength doesn't satisfy precise CP conditions. In this sense, rf-inhomogeneity helps us to measure accurate CP-VC signal because of its sensitivity to rf field mismatch.

CP-VC spectra measured at intentionally deviated B_1 fields.



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