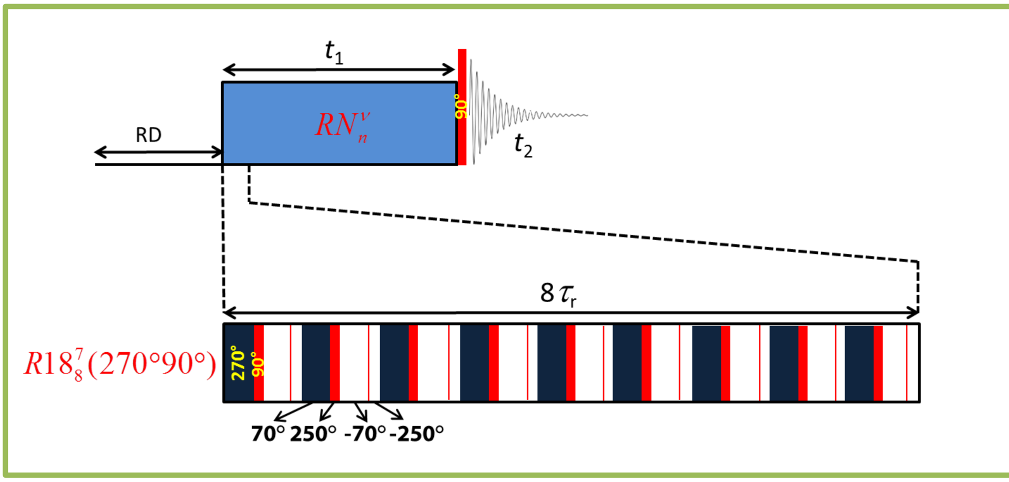
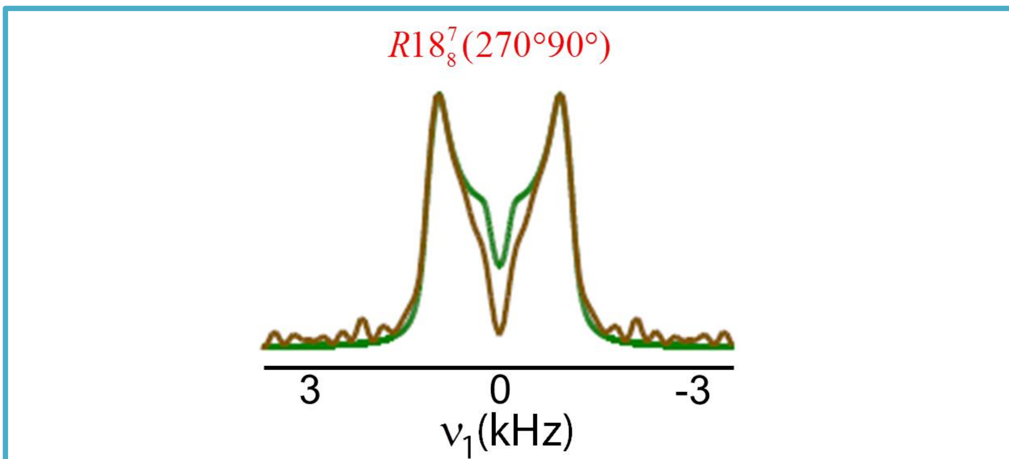
Measurements of ^{1}H chemical shift anisotropy

Anisotropy of spin interactions gives fruitful information on molecular structure as well as dynamics. Although 1H is ubiquitous and abundant nuclei, there is only a few reports on 1H chemical shift anisotropy (CSA). This is because of small 1H CSA and strong 1H-1H dipolar interactions. Fortunately, thank to the hardware improvement, the combination of high magnetic field and fast MAS solve this problem; the higher B0 field amplify the 1H CSA and fast MAS kill 1H-1H dipolar interactions. Here we introduce a new symmetry based sequence which recouples 1H CSA in a γ-encoded manner keeping 1H-1H dipolar interactions decoupled. The use of 270^o-90^o cmposite pulse improves the robustness toward rf-field inhomogeneities.

Pulse scheme for ^{1}H CSA recoupling



^{1}H CSA of citric acid measured at 70 kHz MAS and 700 MHz B_0.



M.K. Pandey, M. Malon, A. Ramamoorthy, Y. Nishiyama, J. Magn. Reson. 250 (2015) 45-54.