

VIII-K The Effects of the 2D Spin-Echo NMR Pulse Sequence on Homonuclear Spin Systems

Dipolar interactions for homonuclear spin systems are averaged out by magic-angle sample spinning (MAS). The 2D spin-echo NMR pulse sequence can reintroduce the influence of the homonuclear dipolar interactions into MAS powder signals.

VIII-K-1 Novel Satellites in a Two-Dimensional Spin-Echo NMR Spectrum for a Homonuclear Spin-1/2 Pair in Rotating Solids

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We found additional resonance lines on both sides of the center line along the F1 axis, when the 2D spin-echo pulse sequence was applied to a solid-state ¹³C-¹³C spin system undergoing MAS. The lines are not attributed to well-known *J*-resolved doublets. To our surprise, the positions of the lines are determined by a quantity κ , which is a function of the sample spinning frequency and the difference of the isotropic chemical shifts. These lines were discovered for the first time as far as we know. The analysis based on a former publication was useful, but could not describe the general experimental scheme which employs an arbitrary value of t_1 increment. An arbitrarily chosen t_1 increment was applied for the experiments in the present study. The analytical representation for the 2D experiment is inevitable to explain the origin of the additional lines. We are now preparing such representation and the optimized simulation spectra.