

Supporting Information

High Field 1D and 2D ^{27}Al MAS NMR Study of θ -, δ -, and γ - Al_2O_3 Dominated Aluminum Oxides: Toward Understanding the Al Sites in γ - Al_2O_3

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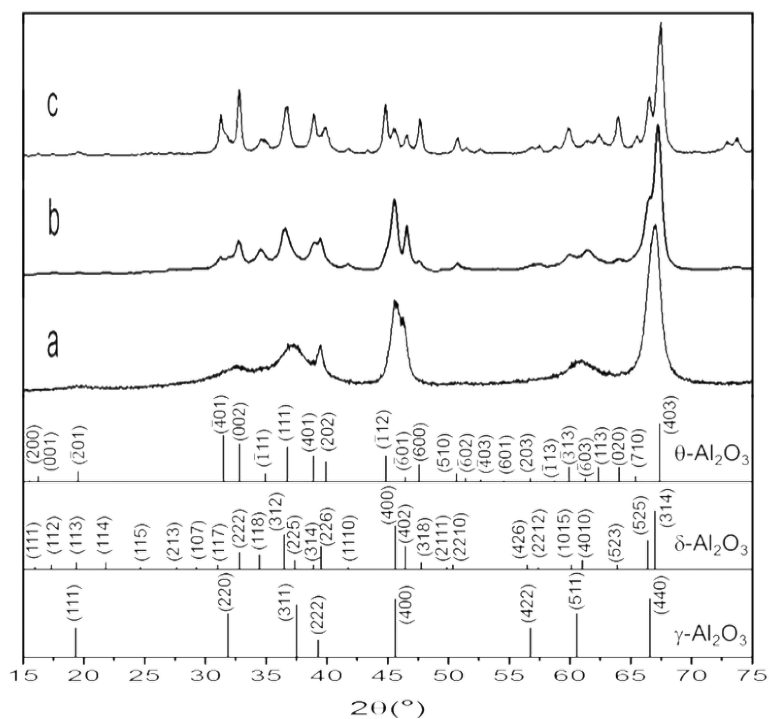


Figure S1. XRD patterns of the as-prepared alumina samples, (a) γ - Al_2O_3 , (b) δ - Al_2O_3 , (c) θ - Al_2O_3 , the vertical lines correspond to the peak positions and intensities of γ - Al_2O_3 (PDF file no.50-0741), δ - Al_2O_3 (PDF file no.16-394), θ - Al_2O_3 (PDF file no.23-1009), respectively. In trace C, there is a group of four features just above 45° . The outside 2 are indicative of theta while the inside 2 suggest delta. The small feature just to left $\sim 43^{\circ}$ is alpha at 0.6%.

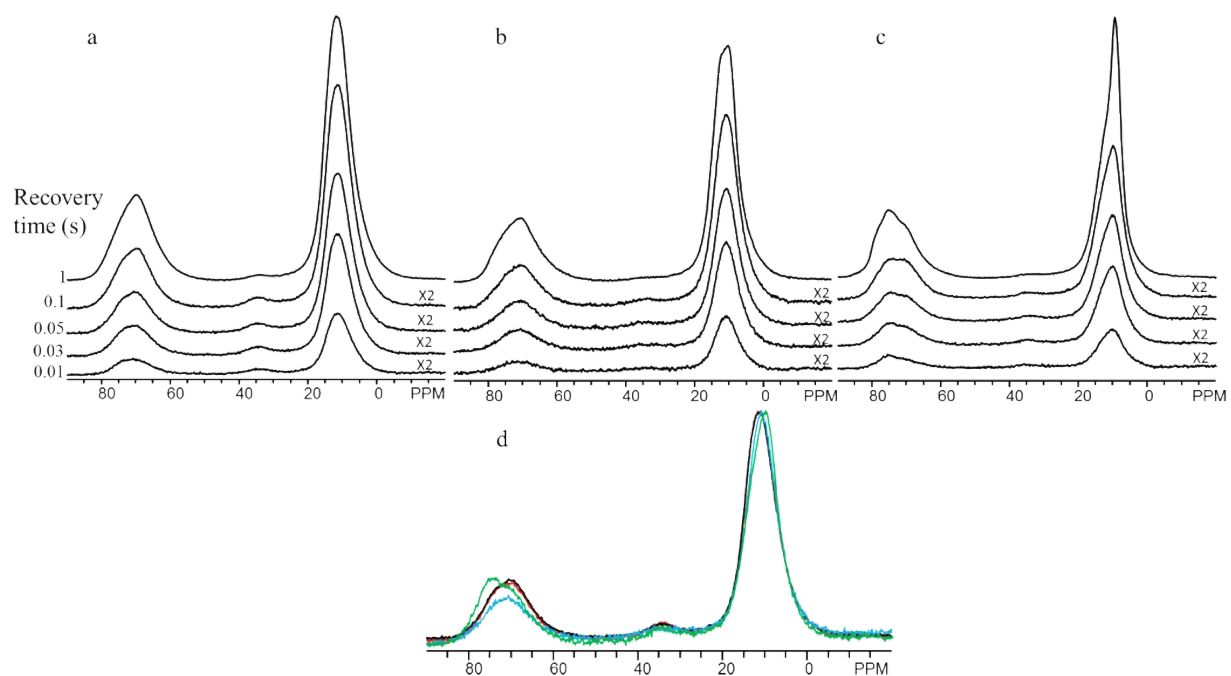


Figure S2. Spin-lattice relaxation NMR spectra. (a-c) ^{27}Al MAS NMR spectra of the prepared alumina samples as a function of several selected recovery times. (a) sample A, (b) sample B, (c) sample C, (d) overlaid spectra of the three samples, the black and red lines are sample A acquired with recovery time 0.05 and 0.03 s, respectively. The blue and green lines are sample B and C acquired with recovery time 0.03 s.