Supporting Information

Improved NMR transfer of magnetization from protons to half-integer spin quadrupolar nuclei at moderate and high MAS frequencies

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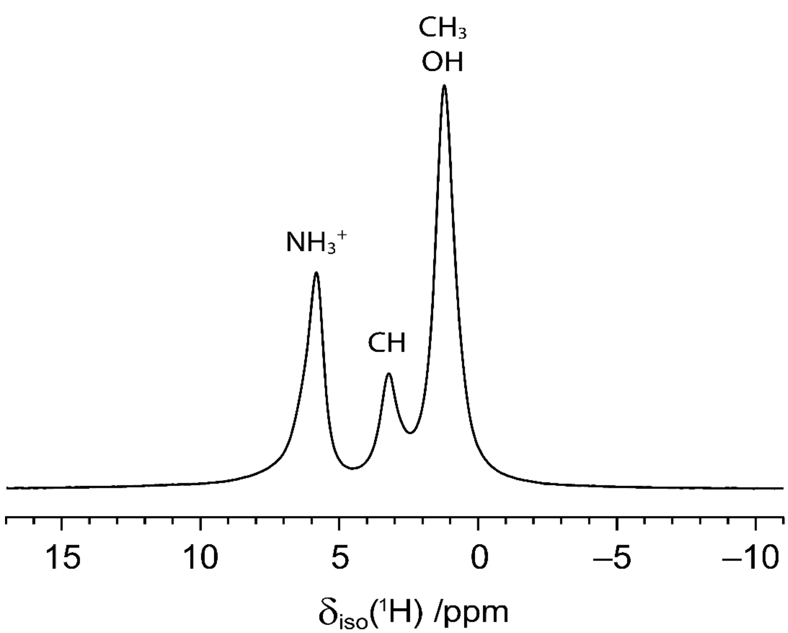

Figure S1: ^{1}H MAS spectrum of $AlPO_4$-14. The spectrum was acquired at B_0 = 18.8 T and ν_R = 20 kHz by averaging 16 transients separated by a recycle interval of 1 s, using the DEPTH pulse sequence for probe background suppression, with $\nu_1 \approx$ 208 kHz.

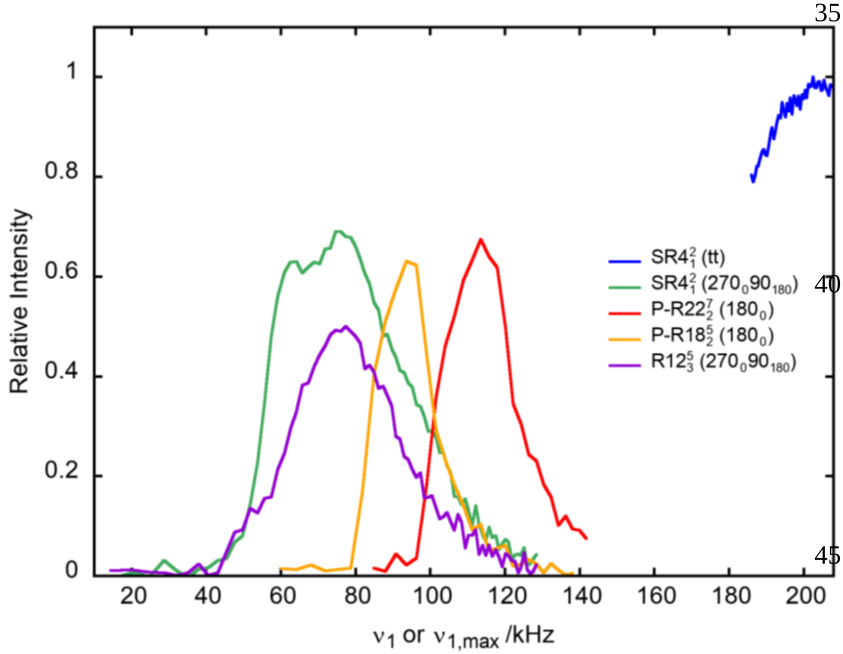

Figure S2: Variation at ν_R = 20 kHz of $^{27}AlO_4$ signal of $AlPO_4$-14 as function of ν_1 or $\nu_{1,max}$ of the recoupling for PRESTO-$R22_2^7(180_0)$ and -$R18_2^5(180_0)$ as well as RINEPT-$SR4_1^2$ (tt), -$SR4_1^2$ ($270_0 90_{180}$) and -$R12_3^5$ ($270_0 90_{180}$). For each curve τ was fixed to its optimum value given in Table 6.

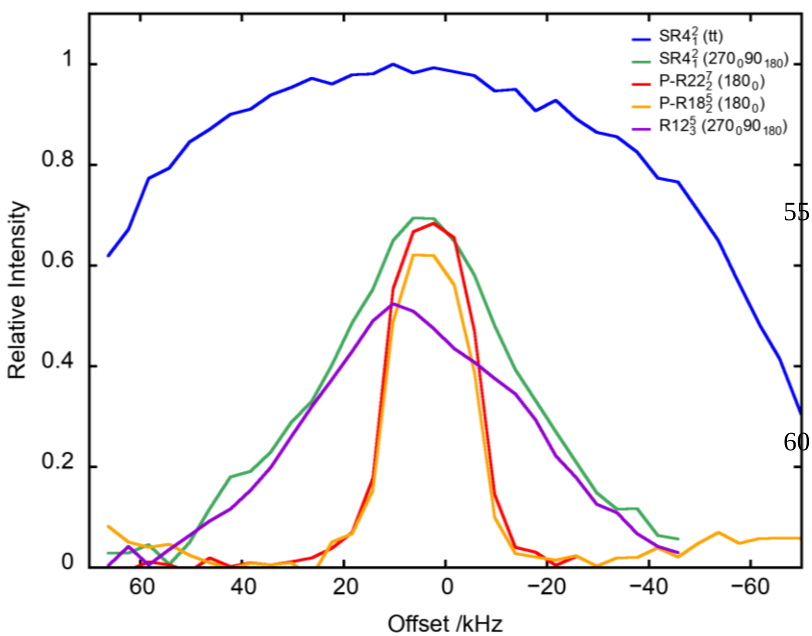

Figure S3: Variation at ν_R = 20 kHz of $^{27}AlO_4$ signal of $AlPO_4$-14 as function of offset of the recoupling for PRESTO-$R22_2^7(180_0)$ and -$R18_2^5(180_0)$ as well as RINEPT-$SR4_1^2$ (tt), -$SR4_1^2$ ($270_0 90_{180}$) and -$R12_3^5$ ($270_0 90_{180}$). For each curve τ and ν_1 or $\nu_{1,max}$ were fixed to their optimum values given in Table 5.

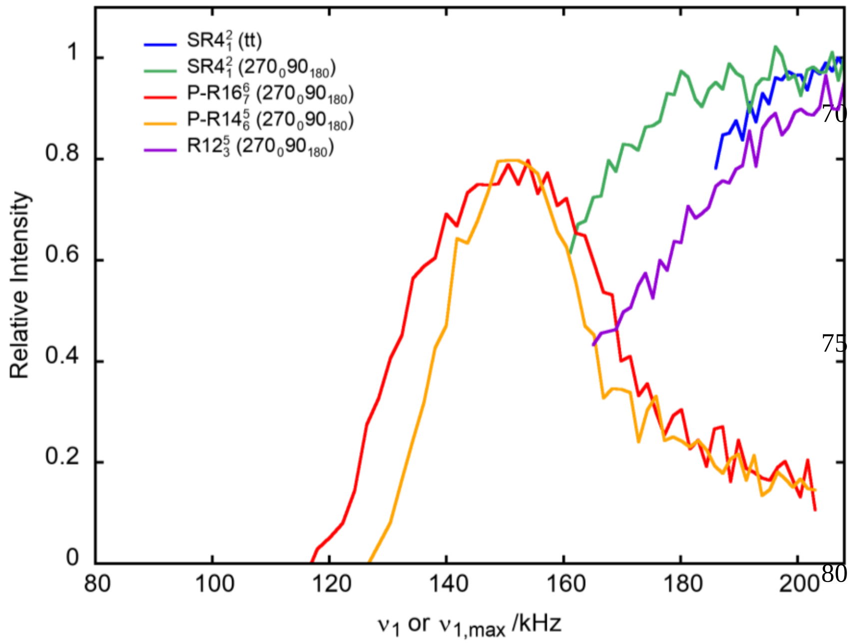

Figure S4: Variation at ν_R = 62.5 kHz of [27]AlO_4 signal of $AlPO_4$-14 as function of ν_1 or $\nu_{1,max}$ of the recoupling for PRESTO-$R16_7^6(270_0 90_{180})$ and -$R14_6^5(270_0 90_{180})$ as well as RINEPT-$SR4_1^2$ (tt), -$SR4_1^2$ ($270_0 90_{180}$) and -$R12_3^5$ ($270_0 90_{180}$). For each curve τ was fixed to its optimum value given in Table 8.

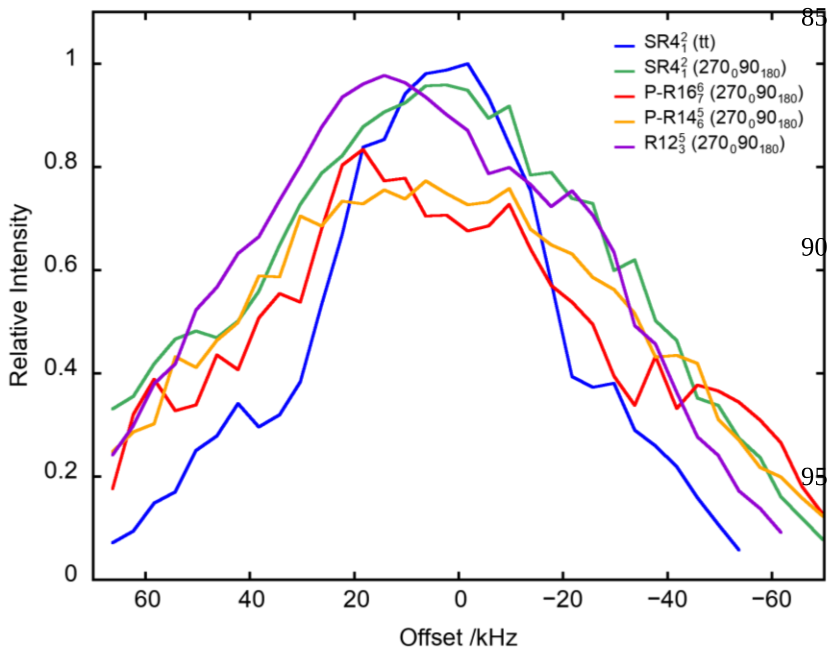

Figure S5: Variation at ν_R = 62.5 kHz of [27]AlO_4 signal of $AlPO_4$-14 as function of offset of the recoupling for PRESTO-$R16_7^6(270_0 90_{180})$ and -$R14_6^5(270_0 90_{180})$ as well as RINEPT-$SR4_1^2$ (tt), -$SR4_1^2$ ($270_0 90_{180}$) and -$R12_3^5$ ($270_0 90_{180}$). For each curve τ and ν_1 or $\nu_{1,max}$ were fixed to their optimum values given in Table 8.

Table S1. Distances between the different hydrogen atoms and their closest Al neighbours in the structure of isopropylamine templated $AlPO_4$-14 determined from X-ray diffraction. (Broach et al., 2003) The H and Al atoms are numbered according to the cif file.

H	Al	r_{HAl} /Å
H1 (OH)	$Al4O_6$	2.496
	$Al4O_6$	2.499
	$Al1O_5$	2.503
	$Al2O_4$	4.299
H2 (NH_3)	$Al4O_6$	3.069
	$Al2O_4$	3.779
H3 (NH_3)	$Al3O_4$	3.778
	$Al4O_6$	3.960
H4 (NH_3)	$Al2O_4$	3.479
	$Al1O_5$	3.801
H5 (CH)	$Al2O_4$	3.737
	$Al1O_5$	4.850
H6 $(CH_3)_1$	$Al1O_5$	3.655
	$Al3O_4$	4.594
H7 $(CH_3)_1$	$Al3O_4$	4.082
	$Al1O_5$	4.320
H8 $(CH_3)_1$	$Al2O_4$	3.772
	$Al3O_4$	4.651
H9 $(CH_3)_2$	$Al4O_6$	3.888
	$Al3O_4$	4.124
H10 $(CH_3)_2$	$Al4O_6$	3.509
	$Al3O_4$	4.502
H11 $(CH_3)_2$	$Al4O_6$	3.970
	$Al3O_4$	4.048

Broach, R. W., Wilson, S. T. and Kirchner, R. M.: Corrected crystallographic tables and figure for as-synthesized $AlPO_4$-14, Microporous and Mesoporous Materials, 57(2), 211–214, https://doi.org/10.1016/S1387-1811(02)00563-2, 2003.