Structural transitions and flexibility during dehydration-rehydration process in the MOF-type aluminum pyromellitate Al$_2$(OH)$_2$[C$_{10}$O$_8$H$_2$] (MIL-118).

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SUPPLEMENTARY MATERIALS

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Figure S1: IR spectrum of the as-synthesized aluminum pyromellitate MIL-118A. It was recorded on a Nicolet 550 FTIR spectrometer at room temperature in the range 400-4000 cm\(^{-1}\), using a potassium bromide pellet.
Figure 6: Thermodiffractogram of the aluminum pyromellitate MIL-118A (top) showing the phase transition into the dehydrated form MIL-118B occurring at 170-180°C and the phase transition (bottom) of the hydrated solid MIL-118C into the dehydrated form MIL-118B. The red patterns correspond to MIL-118B, blue patterns of the top diffractogram correspond to MIL-118A and those of the bottom one correspond to MIL-118C (under air atmosphere, copper radiation).
Figure S2: $^1$H{$^{27}$Al} TRAPDOR difference NMR spectrum of MIL-118A, acquired at room temperature without and with on-resonance $^{27}$Al irradiation during $\tau$ ($\tau = 33$ $\mu$s, spinning speed $= 30$ kHz).
Figure S4: Contour plot of $^{27}$Al 3QMAS NMR spectrum of MIL-118C collected at 11.7 T showing the two signals, Al1 and Al2, of the framework aluminum sites. Simulations of 2D slices, F1 and F2 projections as well as selected rows are presented.