

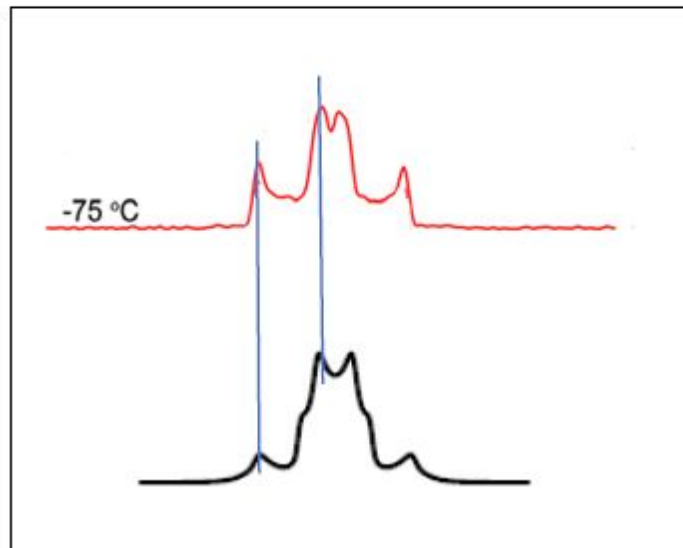
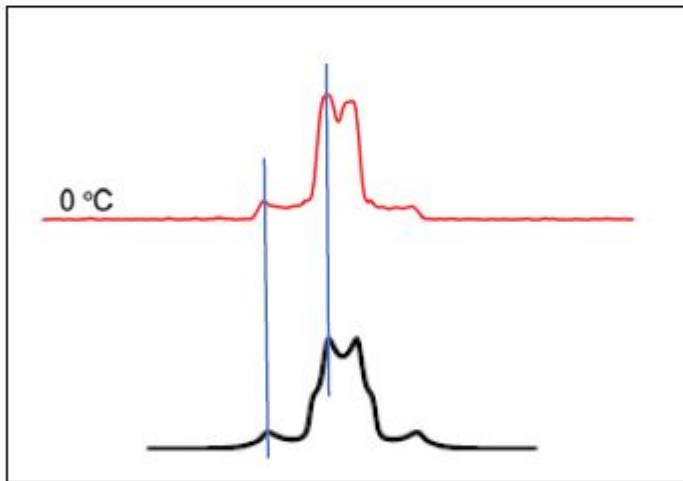
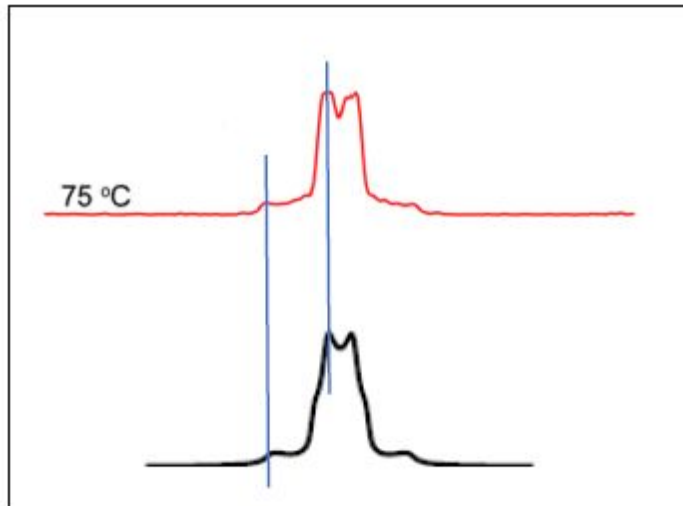
Supporting Information

Structural Dynamics by NMR in the Solid-State: II. The MOMD Perspective of the Dynamic Structure of Metal-Organic Frameworks Comprising Several Mobile Components

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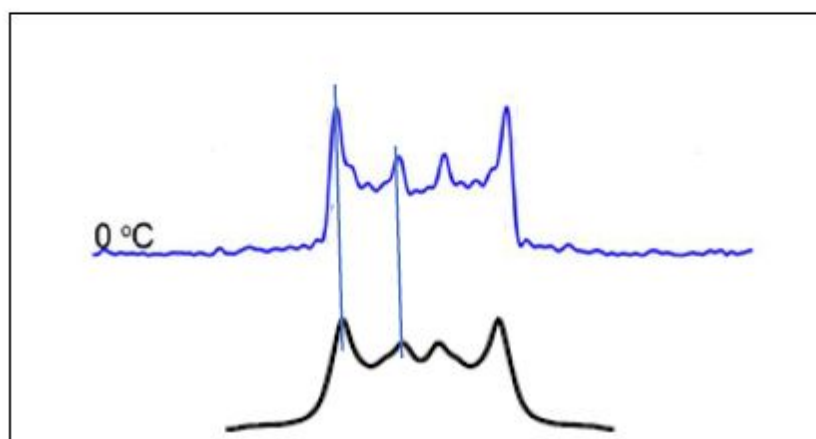
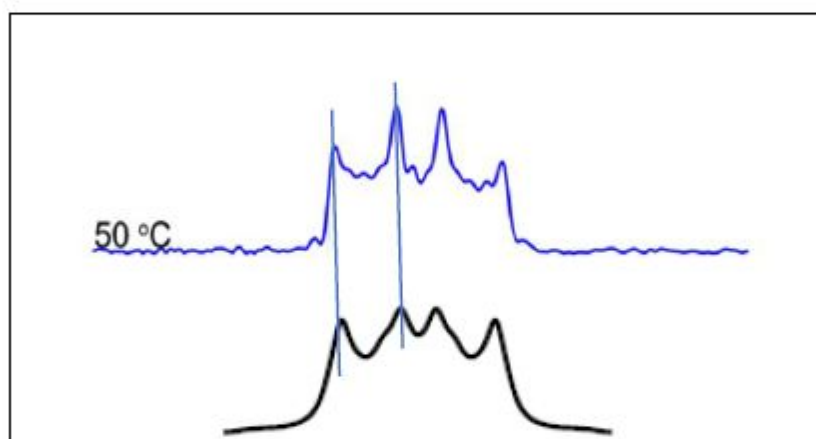
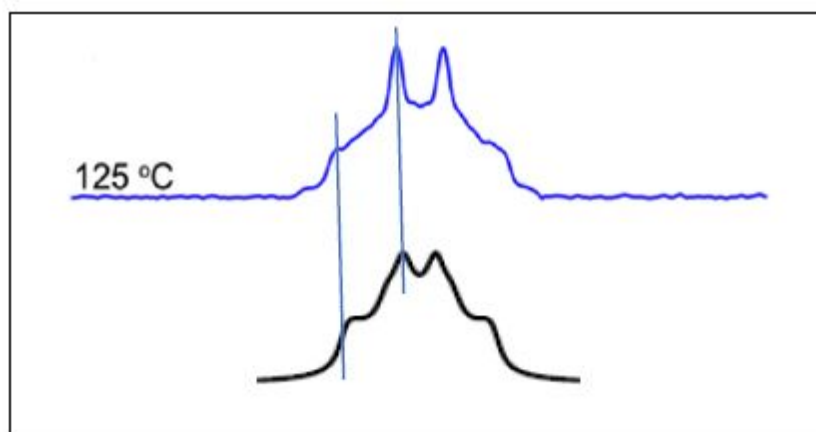
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200 100 0 -100 [kHz]

Figure S1. Experimental and calculated MOMD spectra of UiO-68- d_4 from Figure 9, aligned vertically with the inner and outer divergences marked. The experimental spectra (red) have been reproduced with permission from Wilson, B. H.; Vojvodin, C. S.; Gholami, G.; Abdulla, L. M.; O’Keefe, C. A.; Schurko, R. W.; Loeb, S. J. Precise Spatial Arrangement and Interaction between Two Different Mobile Components in a Metal-Organic Framework. *Chem* **2021**, 7, 1-10, Copyright 2021 of Cell Press.



200 100 0 -100 [kHz]

Figure S2. Experimental and calculated MOMD spectra of UWDM-9- d_4 from Figure 11, aligned vertically with the inner and outer divergences marked. The experimental spectra (blue) have been reproduced with permission from Wilson, B. H.; Vojvodin, C. S.; Gholami, G.; Abdulla, L. M.; O’Keefe, C. A.; Schurko, R. W.; Loeb, S. J. Precise Spatial Arrangement and Interaction between Two Different Mobile Components in a Metal-Organic Framework. *Chem* **2021**, 7, 1-10, Copyright 2021 of Cell Press

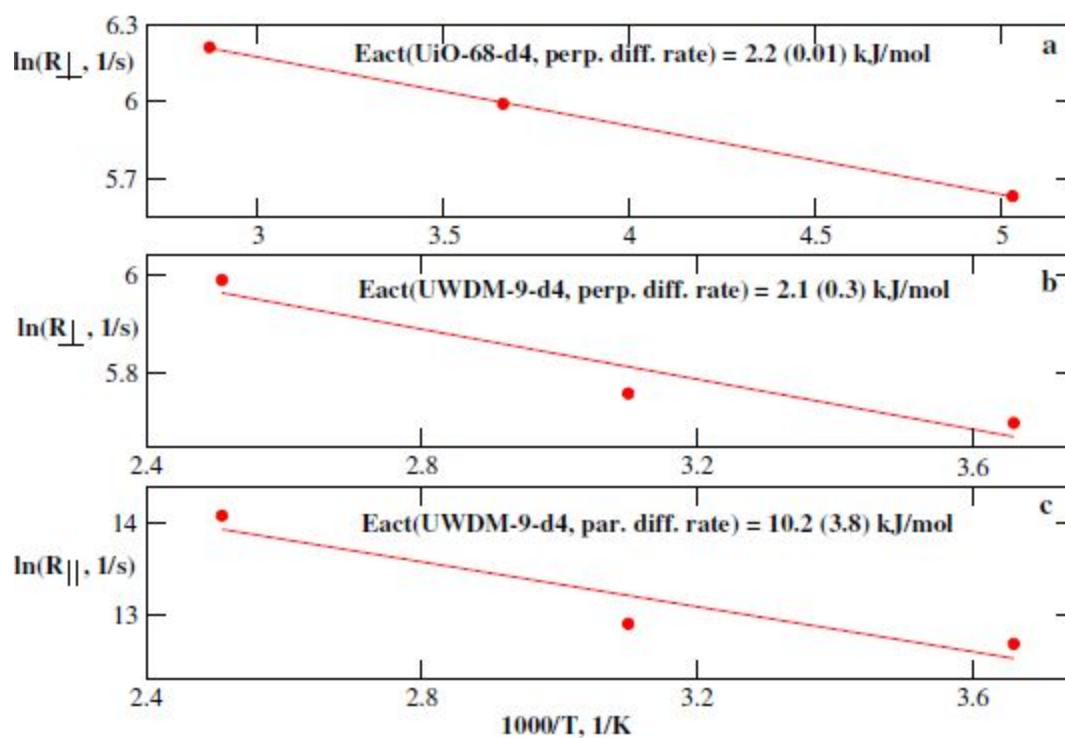


Figure S3. Arrhenius plots for the parallel and perpendicular local diffusion rate constants of UWDM-9- d_4 , and the perpendicular local diffusion rate constant of UiO-68- d_4 .