

Supporting Information for

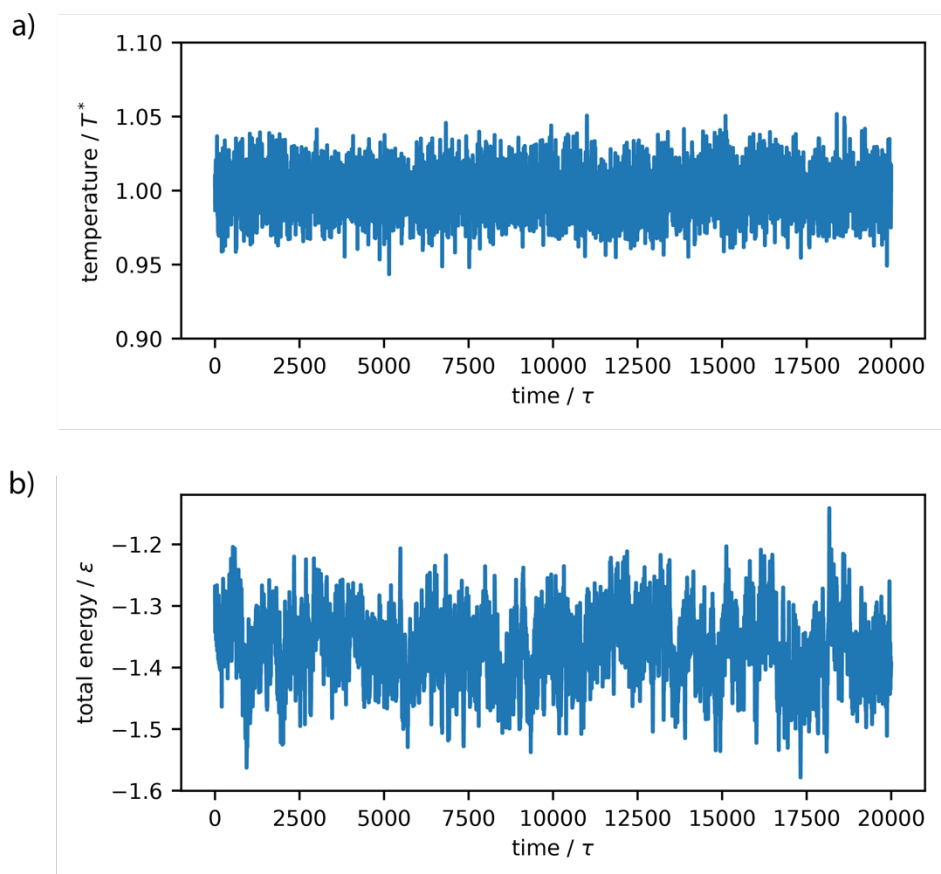
**Cooperative and synchronized rotation in motorized porous frameworks: Impact on local and global transport properties of confined fluids**

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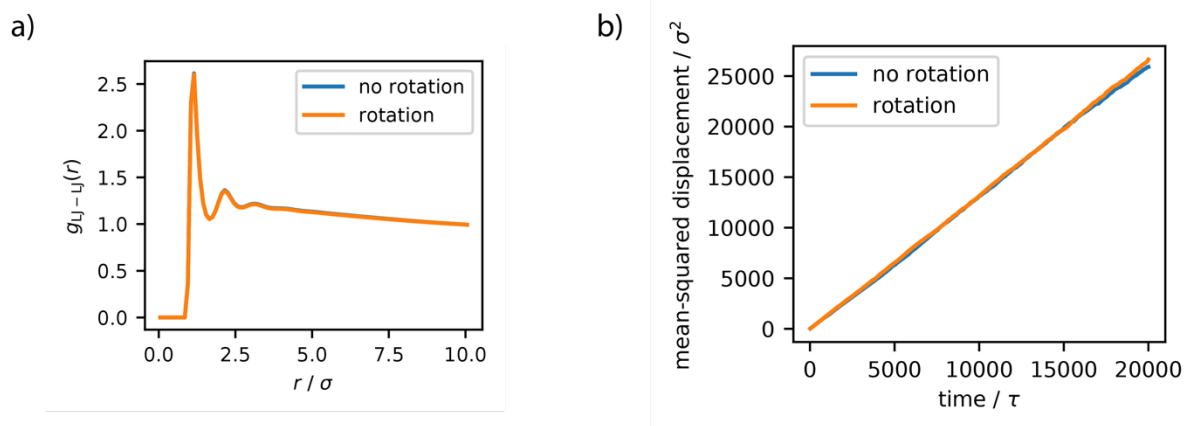
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**Figure S1.** Temperature and total energy for a trajectory of a rotating molecular motor system surrounded by an LJ liquid.



**Figure S2.** Radial distribution function of the LJ particles (a) and mean-squared displacement (b) for the molecular rotor model, either fixed or rotating, surrounded by an LJ fluid.

**Table S1.** Diffusion coefficients for all the systems considered in this study.

<b>System</b>	<b>Self-diffusivity / <math>\sigma^2\tau^{-1}</math></b>
fixed in LJ liquid	0.216
rotation in LJ-liquid	0.223
azimuthal fixed, 20 $\sigma$ pore	0.165
azimuthal rotation (++), 20 $\sigma$ pore	0.171
azimuthal fixed, 10 $\sigma$ pore	0.140
azimuthal rotation (++), 10 $\sigma$ pore	0.149
altitudinal fixed, 20 $\sigma$ pore	0.170
altitudinal rotation (++), 20 $\sigma$ pore	0.165
altitudinal fixed, 10 $\sigma$ pore	0.139
altitudinal rotation (++), 10 $\sigma$ pore	0.136
azimuthal rotation (nondirect.), 10 $\sigma$ pore	0.148
altitudinal rotation (nondirect.), 10 $\sigma$ pore	0.148