Supplementary Material (ESI) for Journal of Materials Chemistry

Application of metal-organic frameworks with coordinatively unsaturated metal sites in storage and separation of methane and carbon dioxide

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Figure S1. Experimental data of adsorption and desorption of CO_2 in Ni_2(dhtp) (top) and Mg_2(dhtp) (bottom) at 278, 343, and 473 K, as determined by the volumetric method.

Figure S2. Experimental data of adsorption and desorption of CH_4 in Ni_2(dhtp) (top) and Mg_2(dhtp) (bottom) at 179, 283, 298, 313, and 343 K, as determined by the volumetric method.

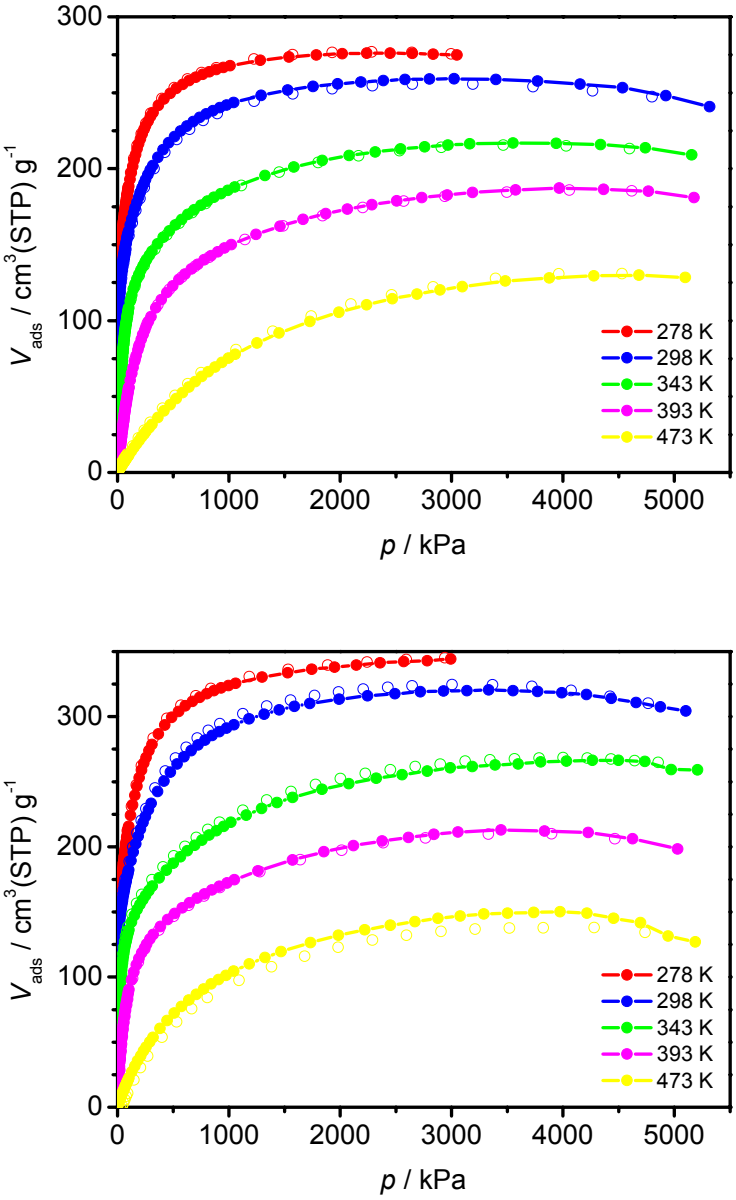
Figure S3. CO_2 adsorption in Ni_2(dhtp) (red) and Mg_2(dhtp) (blue) at 278, 343, and 473 K. Top: as mass uptake; center: in molar amounts with linear pressure axis; bottom: in molar amounts with logarithmic scale of the pressure axis.

Figure S4. CH_4 adsorption in Ni_2(dhtp) (red) and Mg_2(dhtp) (blue) at 179, 283, and 343 K. Top: as mass uptake; center: in molar amounts with linear pressure axis; bottom: in molar amounts with logarithmic scale of the pressure axis.

Figure S5. Isosteric heat of adsorption of CH_4 in Ni_2(dhtp) (red) and Mg_2(dhtp) (blue) as a function of loading, calculated from the isotherms at 179 and 283 K.

Figure S6. Adsorption isotherms of N_2 in Ni_2(dhtp) at 298, 313, 343, 393, and 473 K.

Figure S7. Comparison of the amounts adsorbed of CO_2 (blue), CH_4 (green), and N_2 (red) in Ni_2(dhtp) at a) 298 K, b) 343 K, c) 393 K, and d) 473 K with enlarged ranges where it aids the analysis.



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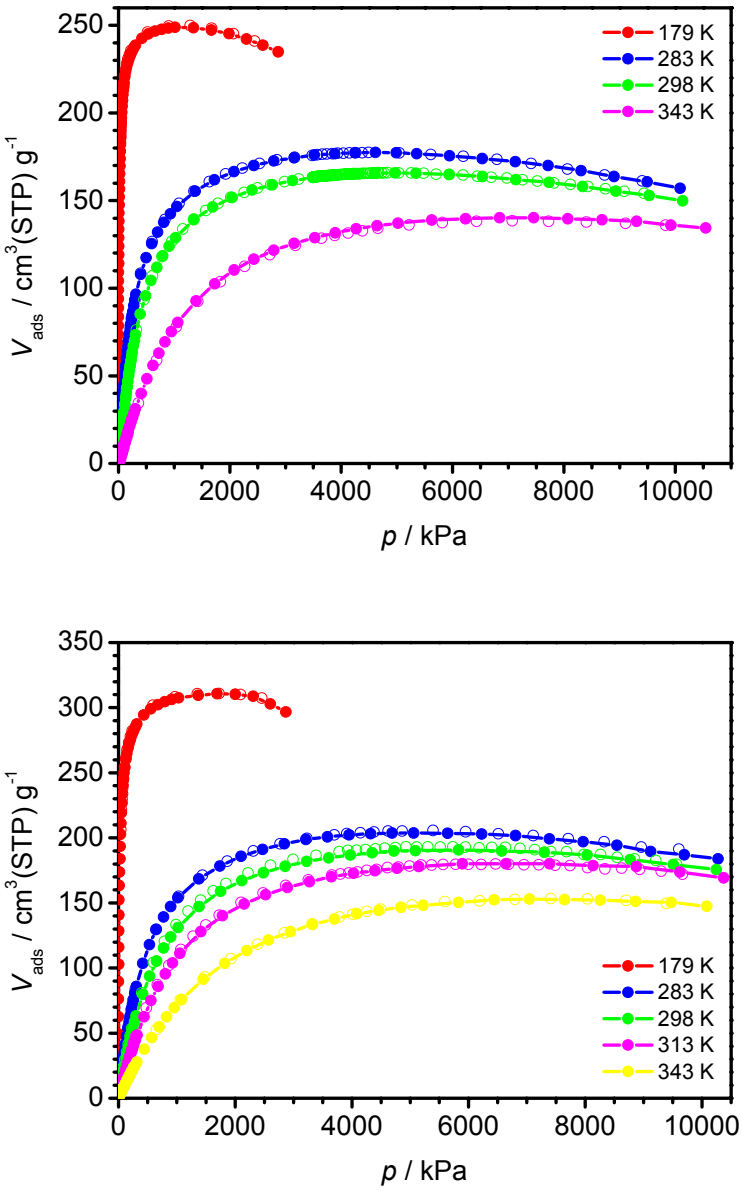
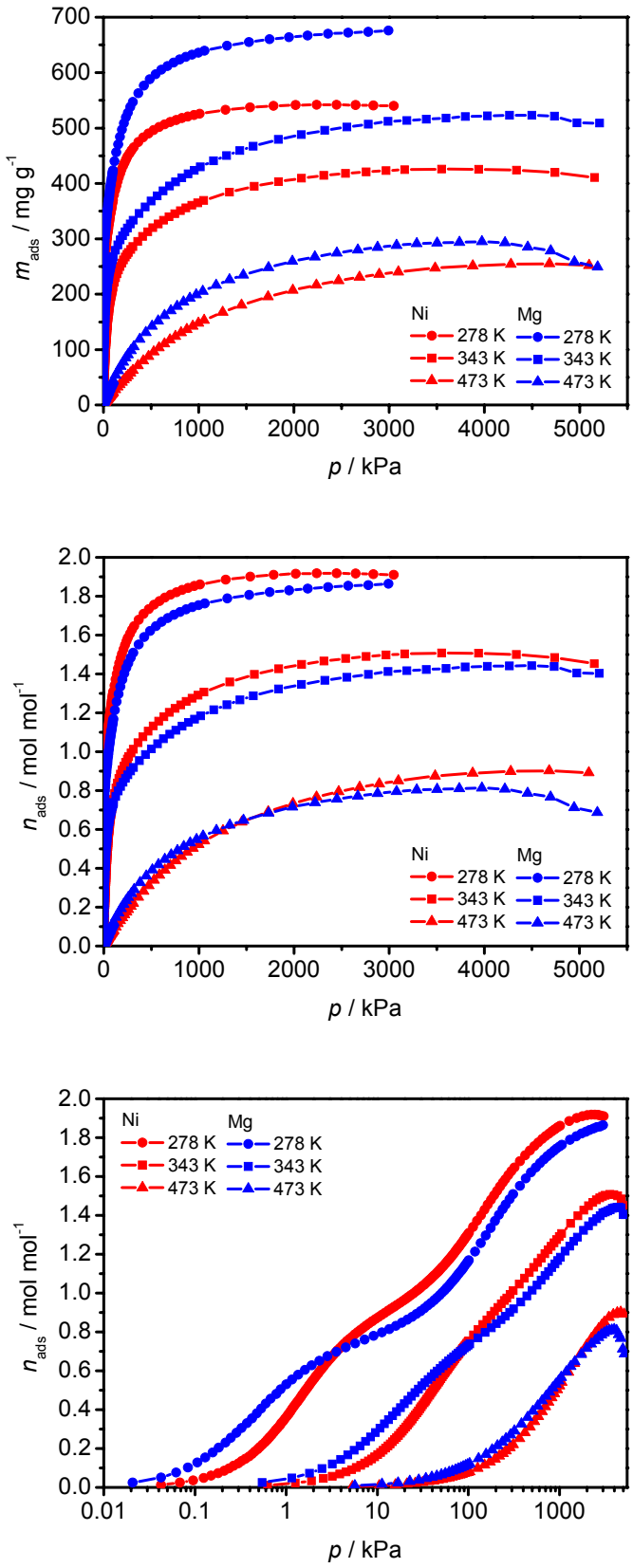


Figure S2. Experimental data of adsorption and desorption of CH_4 in Ni_2(dhtp) (top) and Mg_2(dhtp) (bottom) at 179, 283, 298, 313, and 343 K, as determined by the volumetric method.



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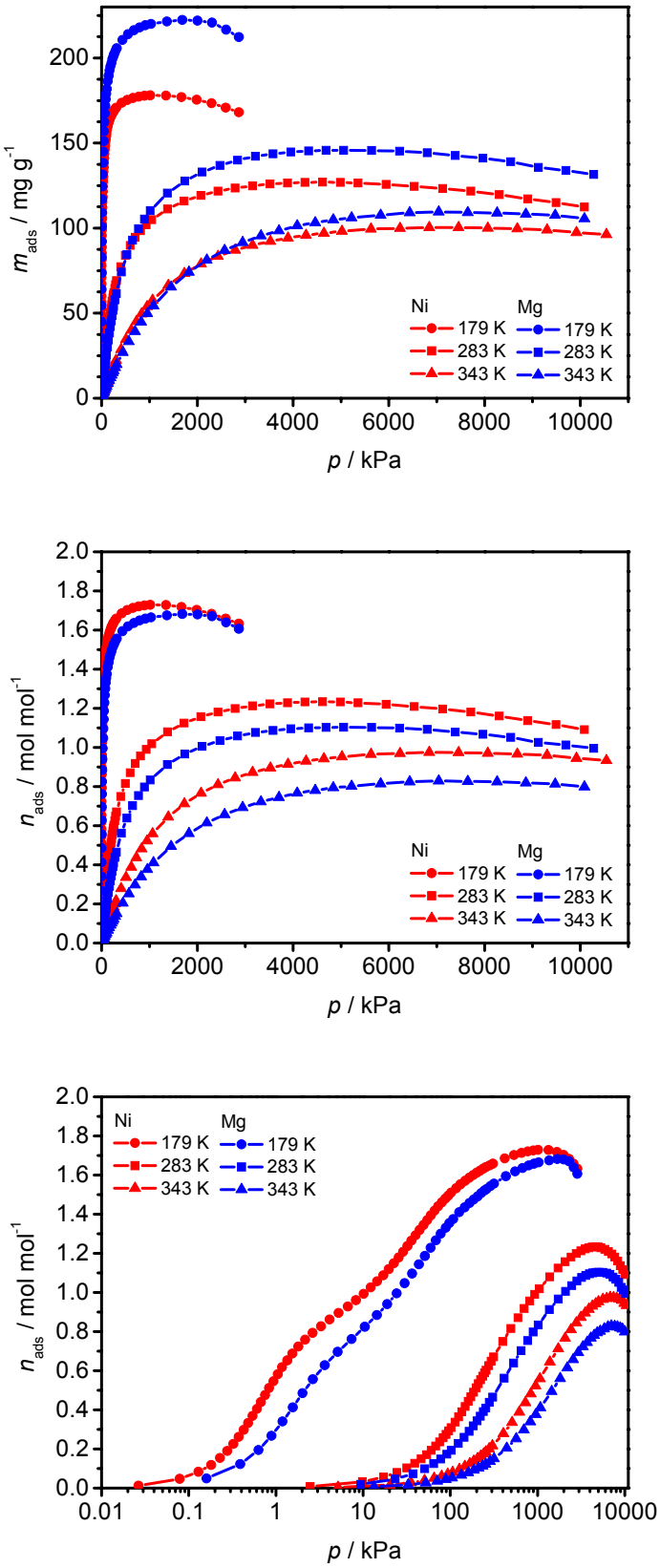

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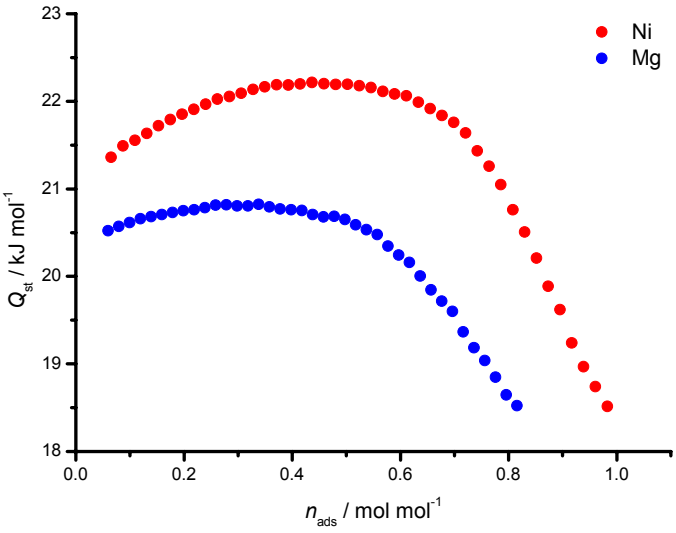

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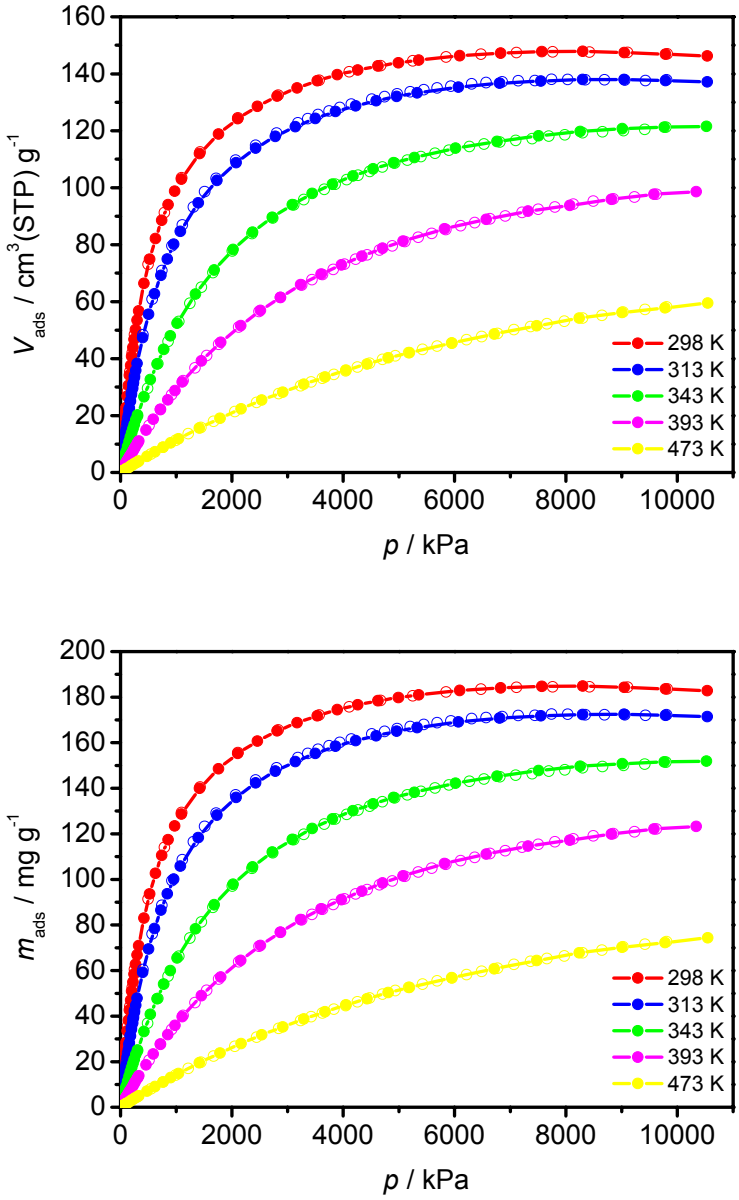

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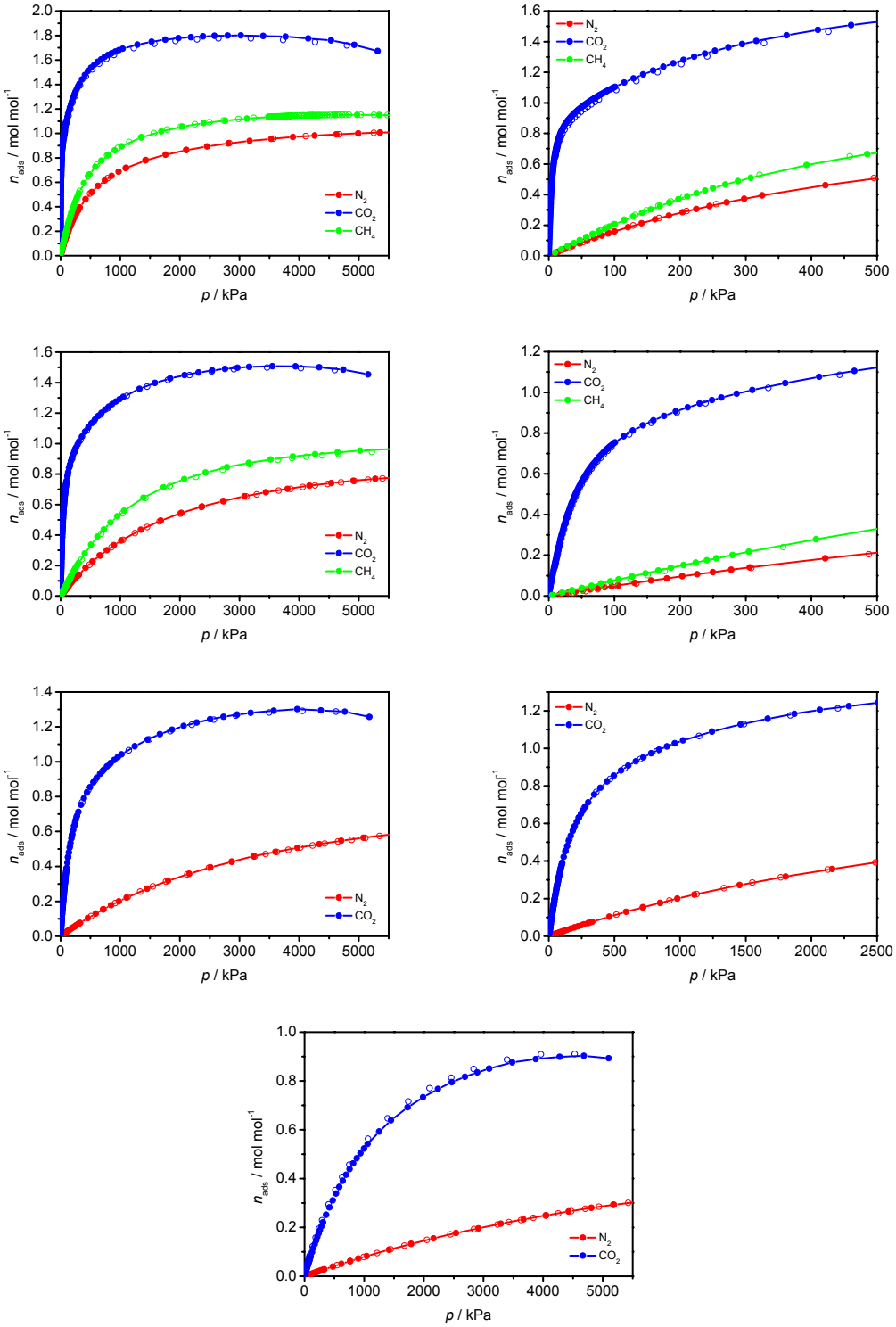

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