Supporting Information for

A Multifunctional Lanthanide Metal-Organic Framework with high thermal stability and available Lewis acid metal sites

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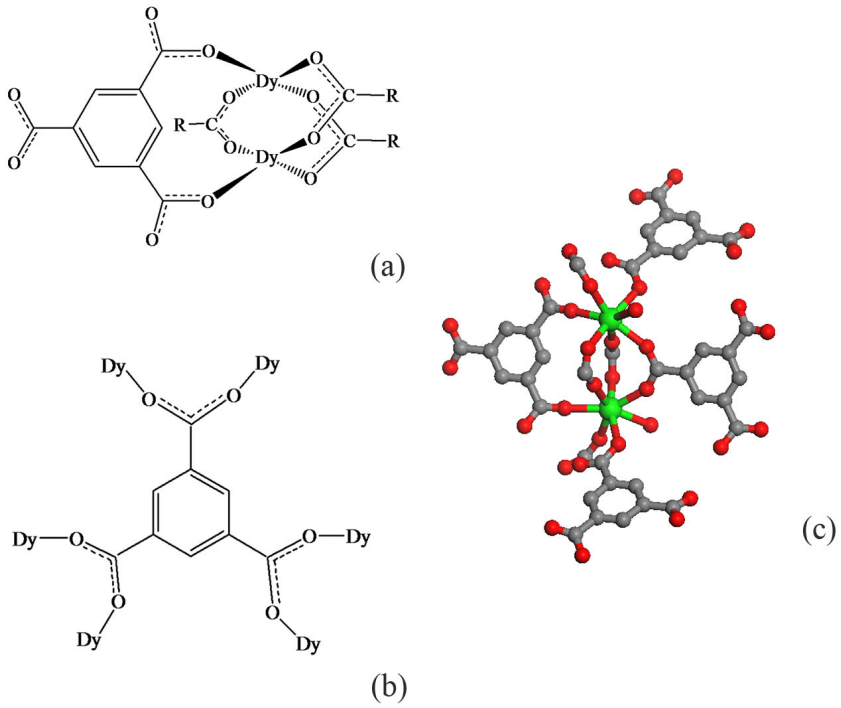

Figure S1. (a) and (c) Two crystallographically equivalent Dy ions connected by three (b) dimonodentate carboxylate groups from three different BTC ligands and two adjacent carboxylate groups of one BTC ligand (R = BTC ligand; Dy, green; O, red; C, grey).

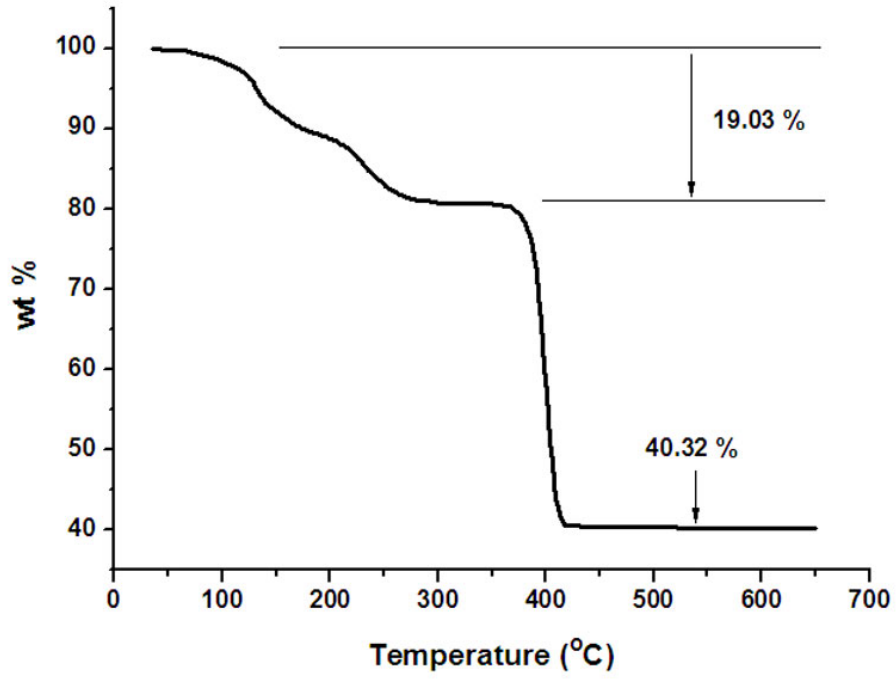

Figure S2. TG curve of Dy(BTC)(H_2O)·(DMF).

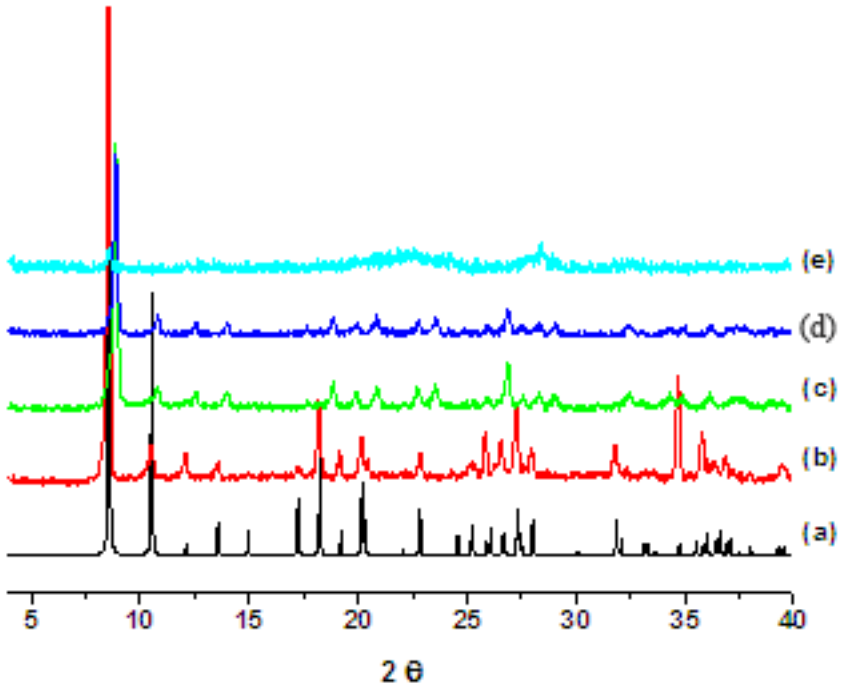

Figure S3. PXRD patterns for Dy(BTC)(H_2O)·(DMF): (a) the simulated PXRD pattern calculated from single-crystal structure (black); (b) as-synthesized sample (red); (c) after heated at 300 °C for 2 hours (green); (d) heated at 350 °C (blue) and (e) heated at 400 °C (light blue).

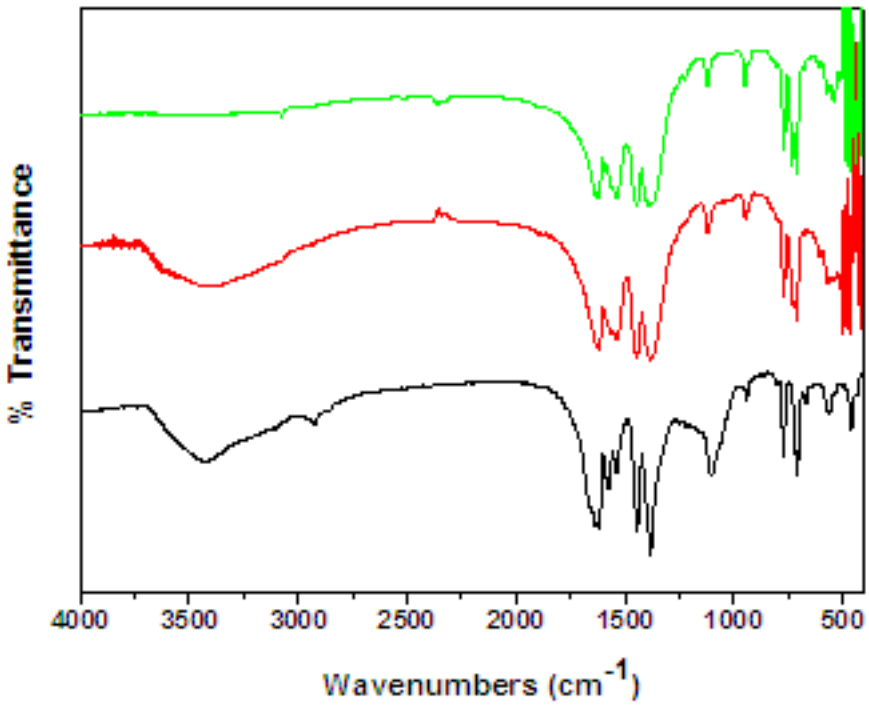

Figure S4. IR spectra for Dy(BTC)(H_2O)·(DMF) of the as-synthesized sample (black), the sample **1A** (the as-synthesized sample heated at 300 °C) (red) and *in situ* IR spectrum of the sample **1A** heated at 120°C (green).

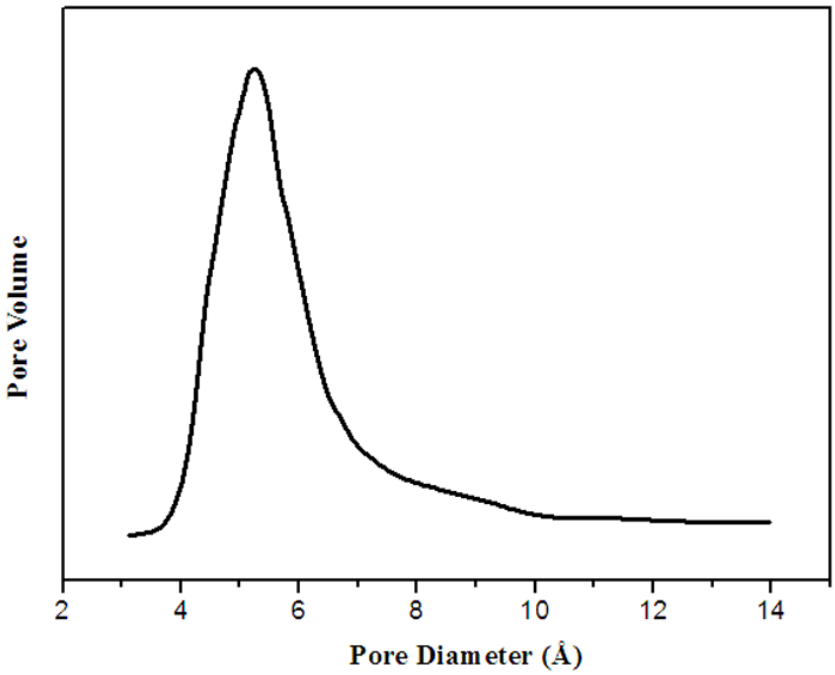

Figure S5. Micropore size distribution of sample **1A**.