

Supplemental Information

Four isostructural 3d-4f mixed metal organic frameworks and their magnetic properties.

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Lanthanide-Oxygen bond lengths

Table S1: The distances of each lanthanide-oxygen bonds for **1**, **2**, **3**, and **4**.

	Cu Gd ₂ (BDC) ₄	Cu Ho ₂ (BDC) ₄	Cu Eu ₂ (BDC) ₄	Cu Dy ₂ (BDC) ₄
Ln1-O1/Å	2.309	2.267	2.320	2.273
Ln1-O4/Å	2.312	2.279	2.321	2.285
Ln1-O5/Å	2.323	2.287	2.332	2.295
Ln1-O8/Å	2.329	2.291	2.342	2.305
Ln1-O3/Å	2.356	2.312	2.372	2.325
Ln1-O2/Å	2.361	2.323	2.372	2.330
Ln1-O9/Å	2.373	2.332	2.386	2.350

Single Crystal Structures

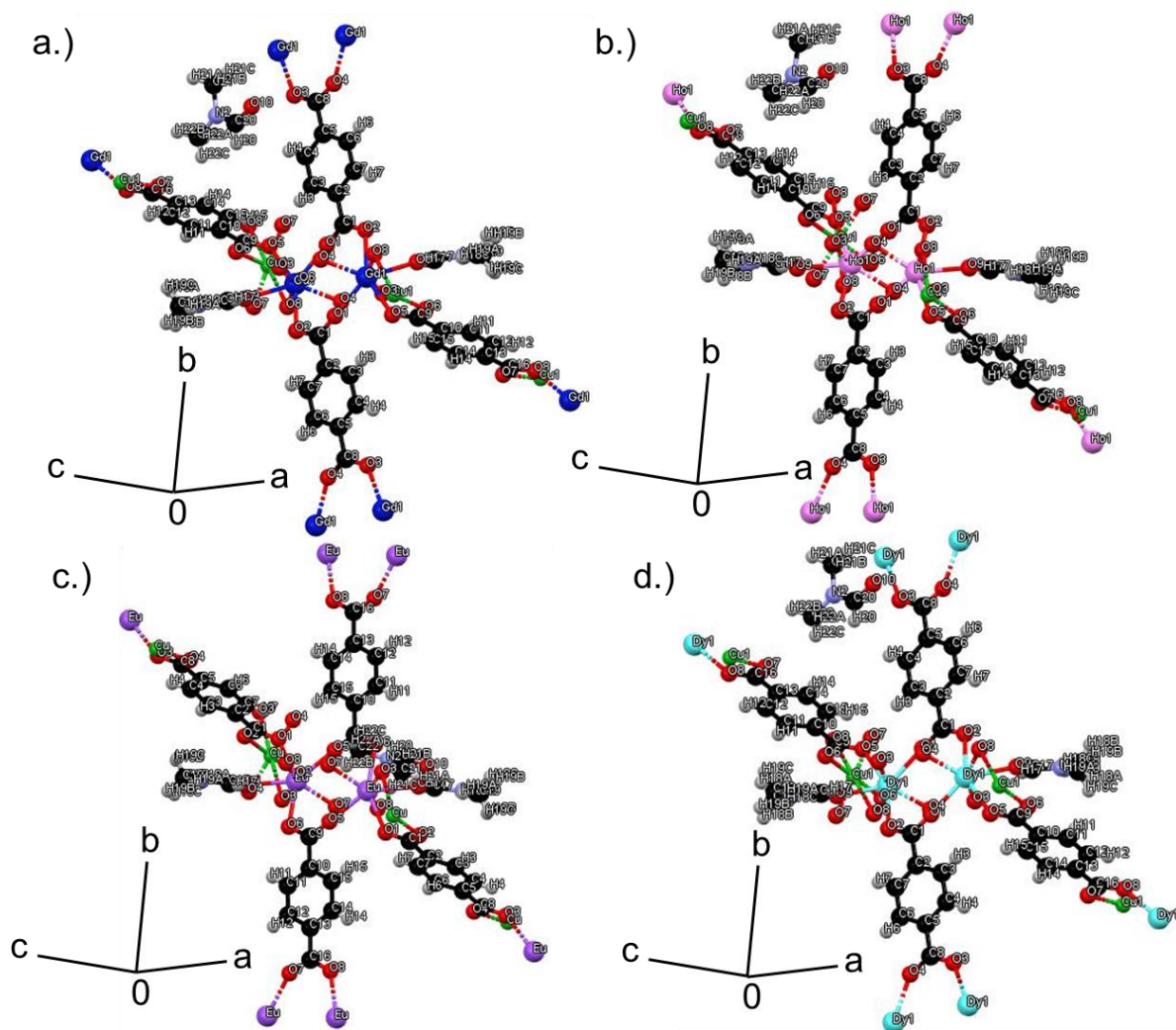


Figure S1: The asymmetric unit of each of the four complexes with the atoms labeled. (a.) The asymmetric unit of compound **1**. (b.) The asymmetric unit of compound **2**. (c.) The asymmetric unit of compound **3**. (d.) The asymmetric unit of compound **4**. The colors for elements are as follows: gadolinium (blue), holmium (pink), europium (purple), dysprosium (light blue), copper (green) oxygen (red), carbon (black), nitrogen (purple), hydrogen (white).

Powder X-Ray Diffraction (PXRD)

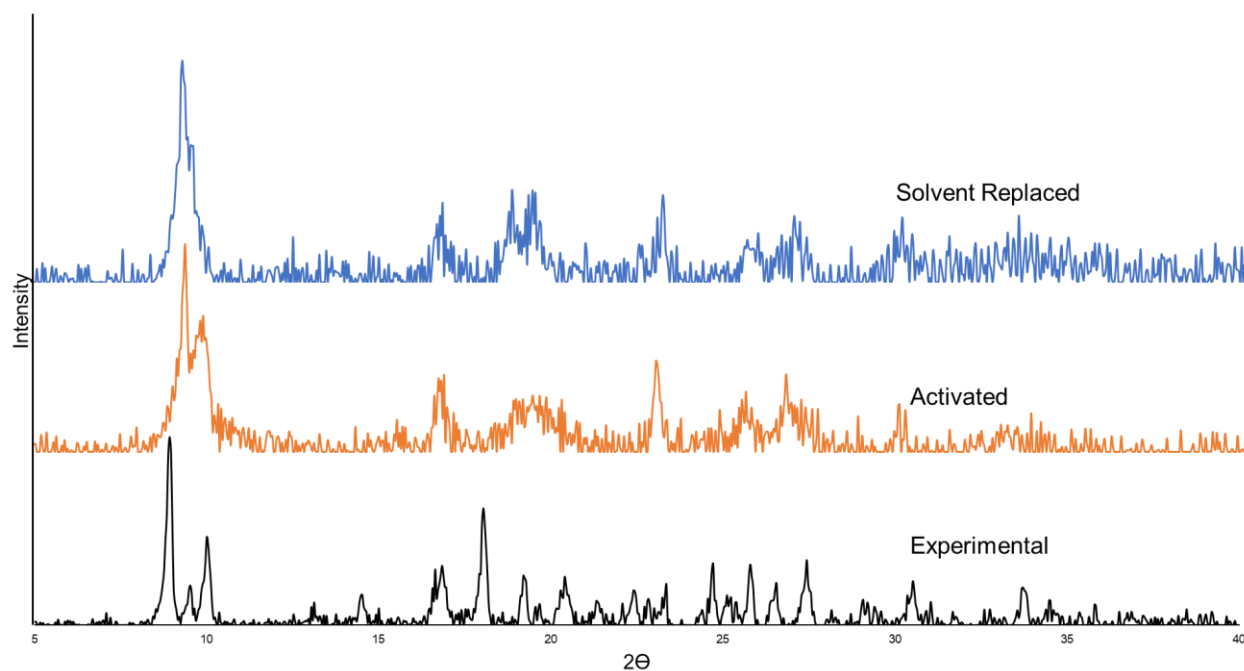


Figure S2: The comparison of the activated and solvent replaced PXRDs of compound **1** with the experimental (black), Activated (orange), and solvent replaced (blue).

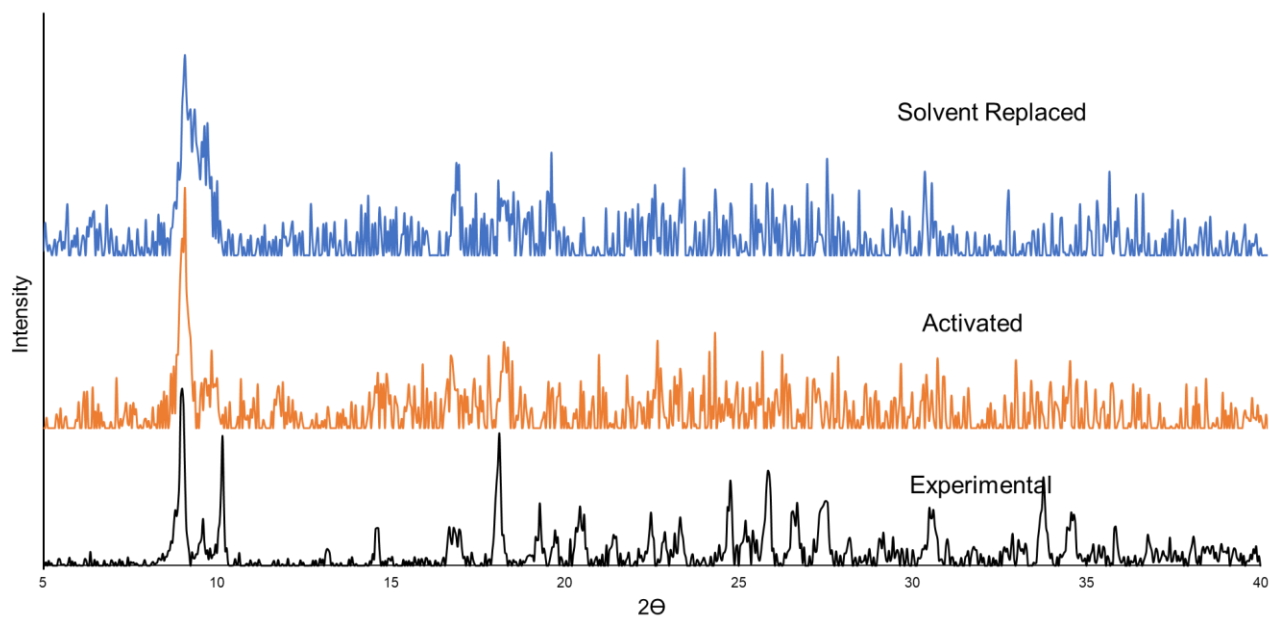


Figure S3: The comparison of the activated and solvent replaced PXRDs of compound **3** with the experimental (black), activated (orange), and solvent replaced (blue).

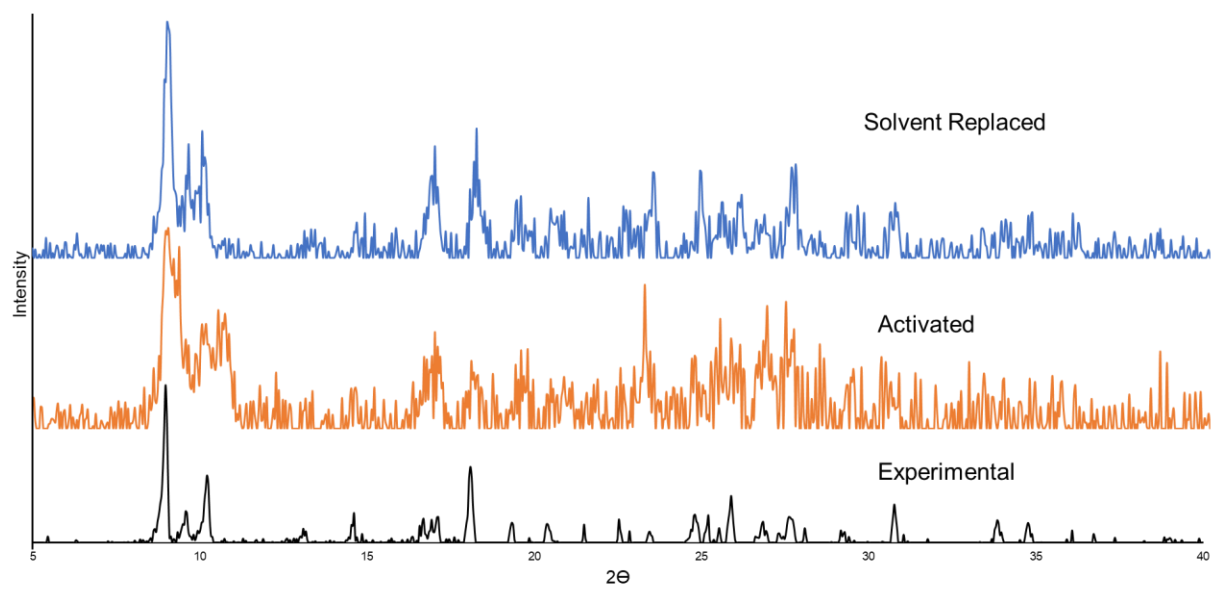


Figure S4: The comparison of the activated and solvent replaced PXRDs of compound **4** with the experimental (black), activated (orange), and solvent replaced (blue).

Thermogravimetric Analysis (TGA)

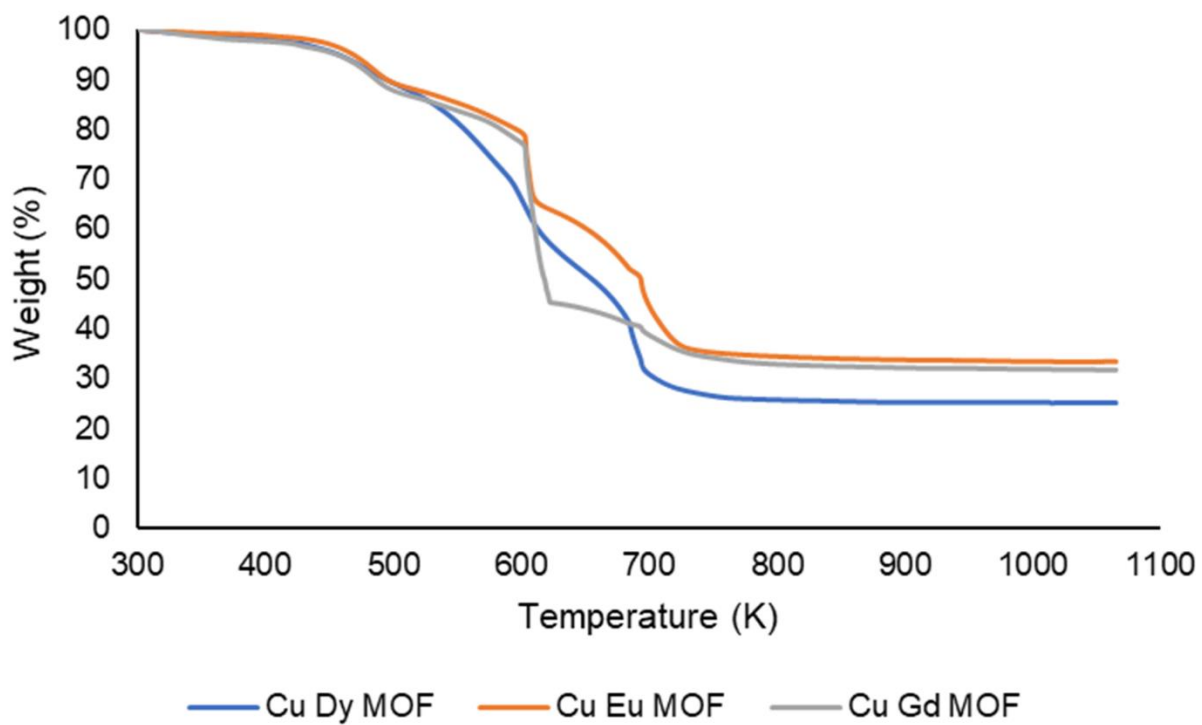


Figure S5: The TGA for compound **3**, **4**, and **1**.