

Supplementary Information

A series of nano/micro-sized metal-organic frameworks with tunable photoluminescence properties

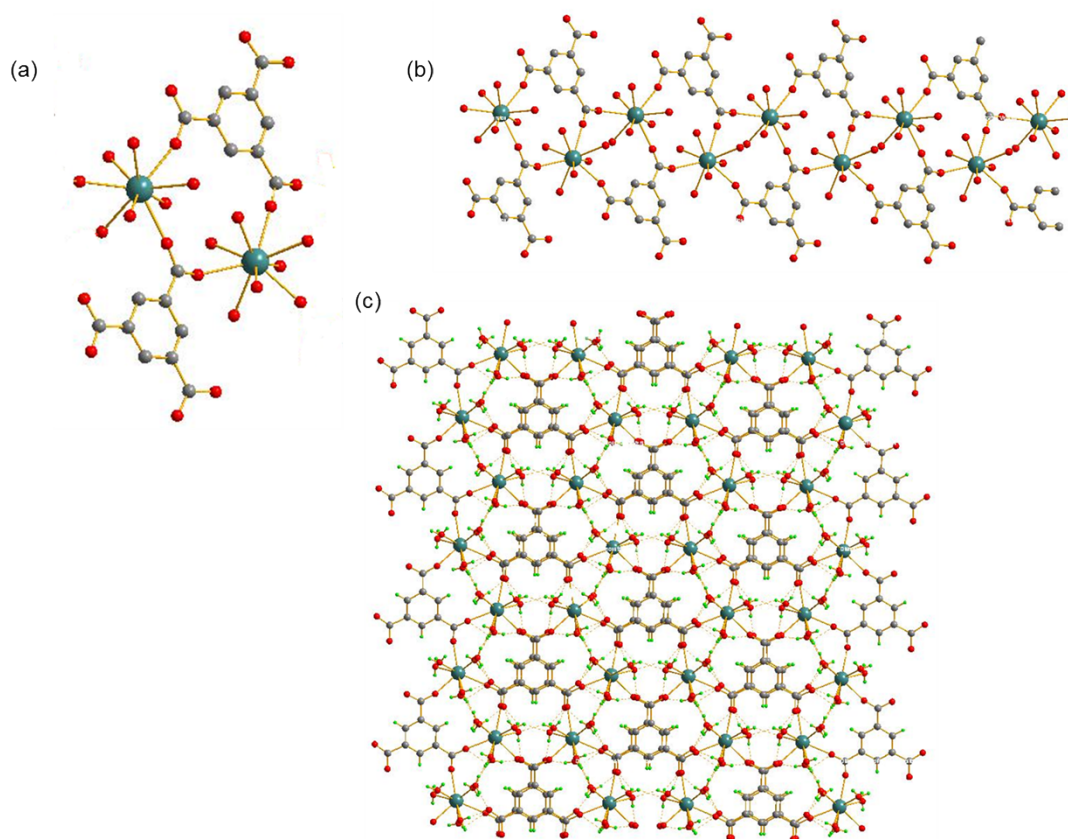


Figure S1. The structure details of Ln-BTC. (a) Structure unit, where the center Ln atom is nine-coordinated by three oxygen atoms from three carboxylate groups of BTC ligands as well as six oxygen atoms from water molecules to form a tricapped trigonal prismatic geometry. (b) The structure consists of parallel ribbonlike molecular motifs extending along one direction. These one-dimensional (1D) molecular motifs are further stacked in such a way that phenyl groups of the BTC ligands superimpose each other. (c) The combination of noncovalent interactions (hydrogen-bonding and π - π stacking) leads to the formation of a three-dimensional (3D) network structure 1D ribbonlike structure. Ln dark green, O red, C gray, H green.

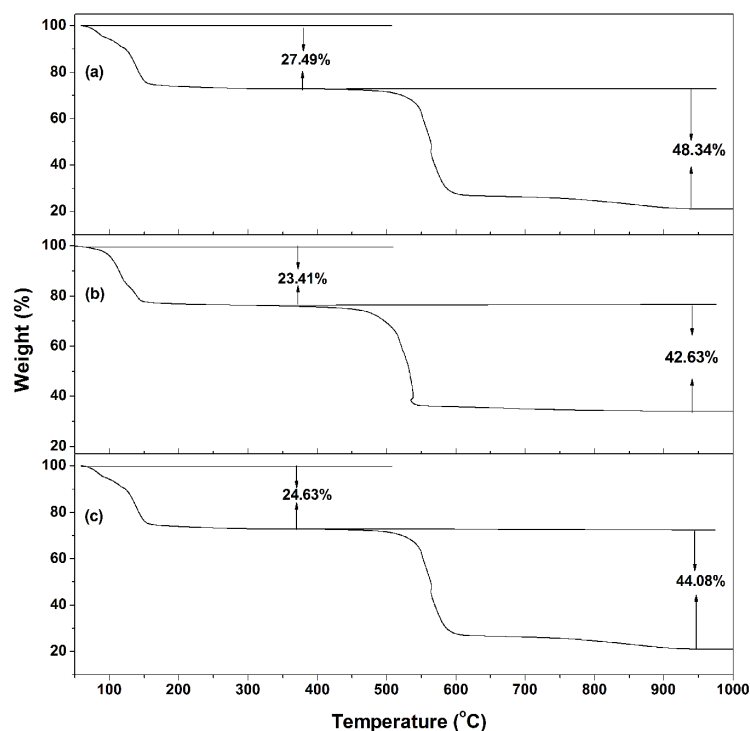


Figure S2. Thermogravimetric analysis (TGA) curves of the as-obtained (a) Y_{0.95}Eu_{0.05}-BTC, (b) Gd_{0.95}Eu_{0.05}-BTC, (c) Sm-BTC samples. They exhibited two major stages of rapid weight loss in the temperature range from 80 to 1000°C. The weight loss for the two stages was measured to be ~25% and ~45%, respectively, which is basically in agreement with the theoretical weight loss of the six water molecules (23.68%) and the organic ligand (38.96%) of assumed structure Ln(BTC)(H₂O)₆.

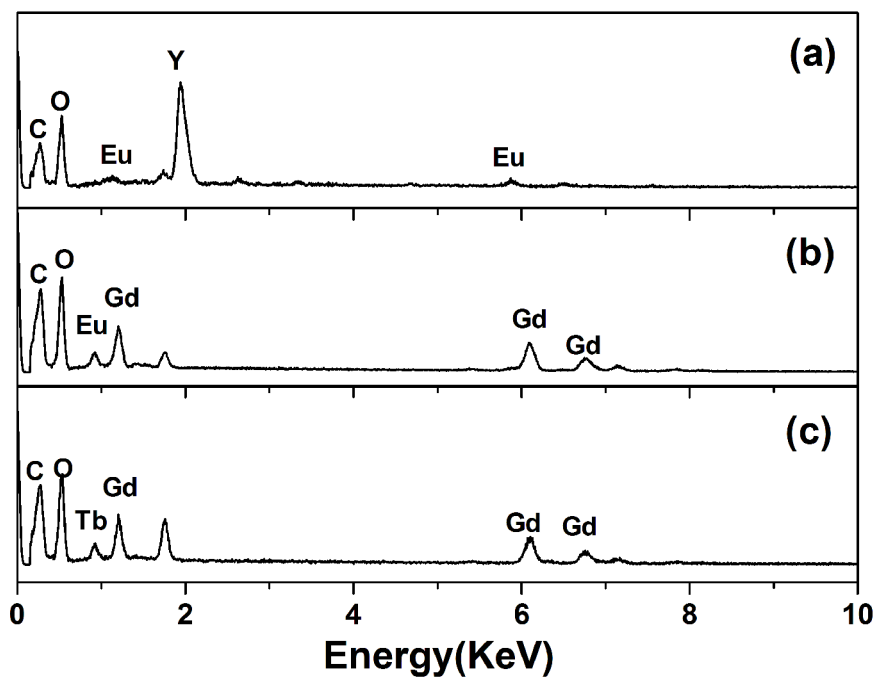


Figure S3. Energy dispersive X-ray (EDX) spectrum of the obtained $Y_{0.95}Eu_{0.05}$ -BTC, $Gd_{0.95}Eu_{0.05}$ -BTC, and $Gd_{0.95}Tb_{0.05}$ -BTC samples. They show several peaks corresponding to Y, Gd, Eu, Tb, C, and O elements in the range of 0–10 keV, indicating that these samples are formed from the corresponding lanthanide elements and benzenetricarboxylate, and the molar ratios of metal ions matched well with the assumed compound formula.

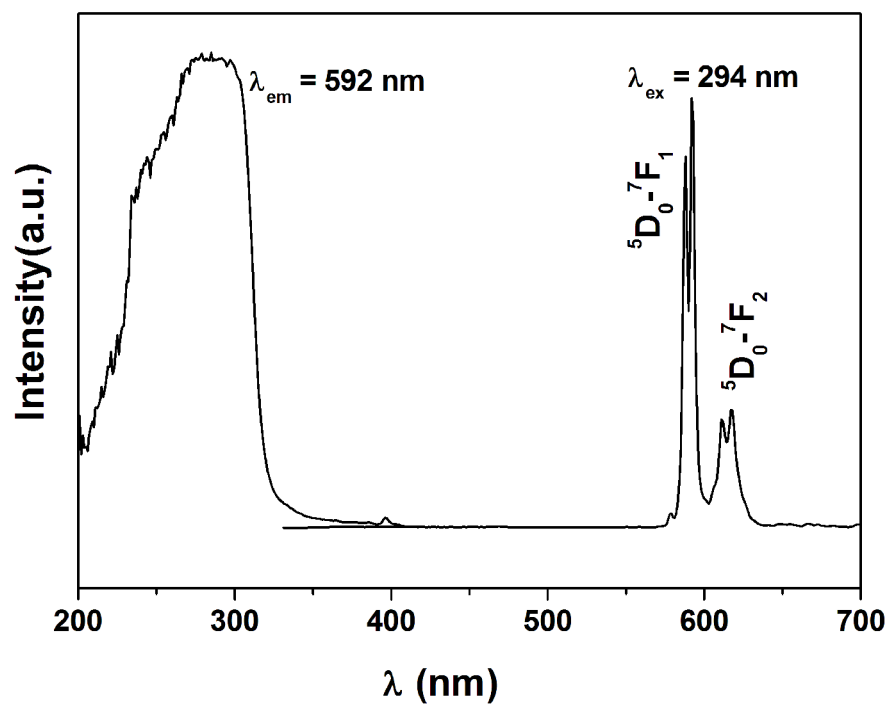


Figure S4. Photoluminescence properties of the as-prepared Y_{0.95}Eu_{0.05}-BTC nanocrystals. Excitation and emission spectra of the sample show characteristic emissions of the Eu³⁺ ions.