

Electronic Supplementary Information (ESI)

**A series of three-dimensional lanthanide metal-organic frameworks
with biphenylethene-4,4'-dicarboxylic acid: Hydrothermal
syntheses and structures†**

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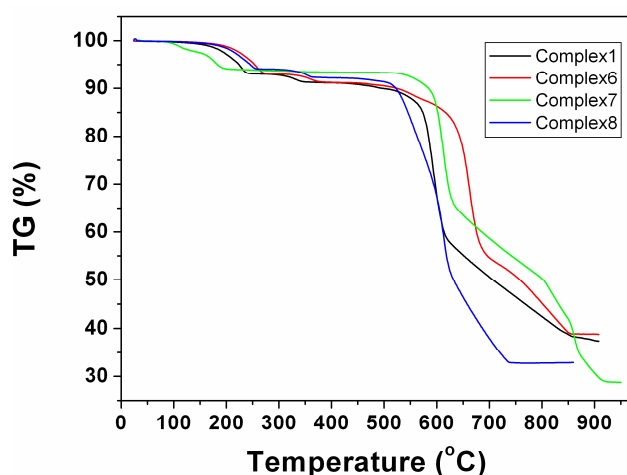


Fig. S1 TG curves for complexes **1**, **6**, **7**, **8** under N₂ atmospheric pressure

Thermal Analyses and PXRD Results

The thermogravimetric analysis (TGA) of all complexes has been performed under N₂ protection to examine their thermal stability. As complexes **1-5** display the similar thermal behaviors owing to their isomorphous structures, complex **1** is used as an example. As shown in Figure S1, all the five TGA traces exhibit two main steps of weight loss, which correspond to the release of coordinate formate groups and decomposition of organic groups. The first weight loss of coordinate formate groups is observed from 140 to 445 °C (obsd 9.22%, calcd 9.75%). The loss of formate leads to subsequent

decomposition of the complexes as indicated by the release of organic component. Complex **6** has the same composition with complexes **1-5**, and also exhibits a similar TGA curves with two loss steps with the first from 158 to 494 °C (obsd 9.39%, calcd 9.72%) which corresponds to the release of formate groups. Above 494 °C, the weight loss is due to the loss of the organic component. The release of coordinate water molecules in complex **7** occurs from 112 to 227 °C. The observed weight loss of 6.18% is reasonably close to the calculated value (6.27%). The second step covers a temperature range of 542-930 °C, during which the organic groups are decomposed. The residue has a composition of La_2O_3 (obsd 28.73%, calcd 28.37%). Complex **8** also undergoes two steps of weight loss. The coordinated water molecules are gradually lost in the temperature range of 124-270 °C (obsd 5.97%, calcd 6.06%). Then, the organic ligands start to decompose above 509 °C, and the remaining weight of 31.76% corresponds to the percentage (calcd 31.45%) of the Tb and O components, Tb_4O_7 .

In order to check the bulk purity of the complexes, powder X-ray diffraction patterns have been measured at room temperature (Fig. S2-S5). The measured and simulated PXRD patterns for complexes **1-8** are quite similar, confirming the homogeneity of the bulk samples.

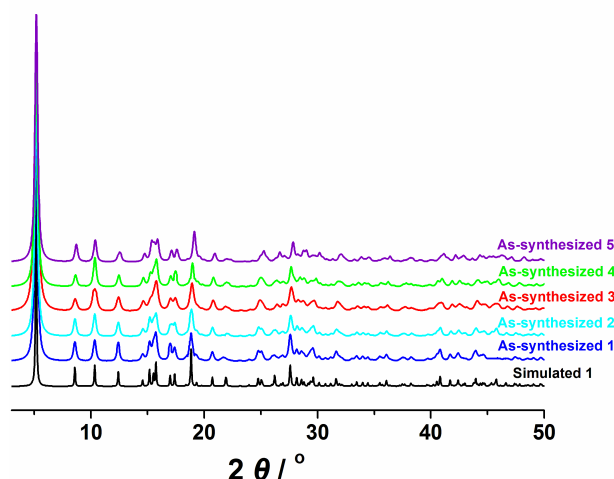


Fig. S2 PXRD patterns for complexes **1-5**.

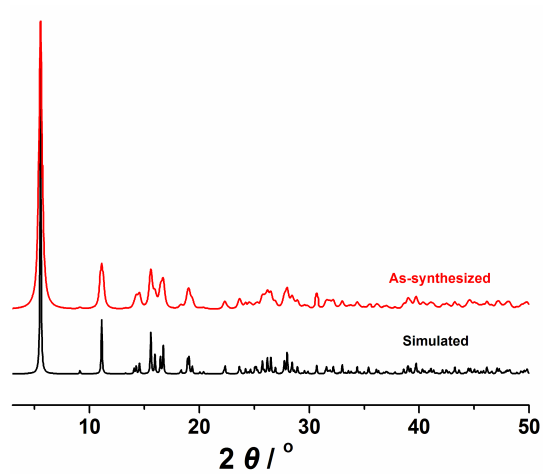


Fig. S3 PXRD patterns for complex 6.

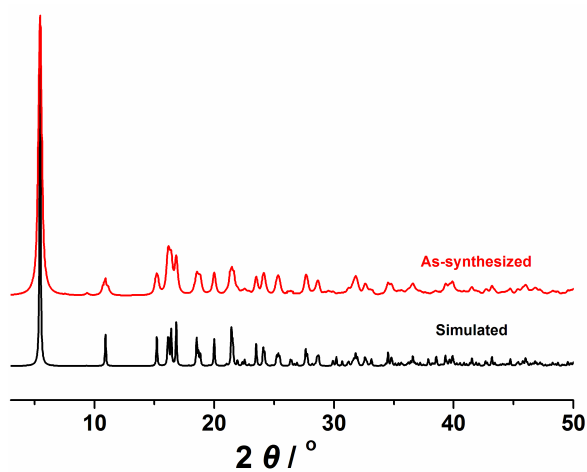


Fig. S4 PXRD patterns for complex 7.

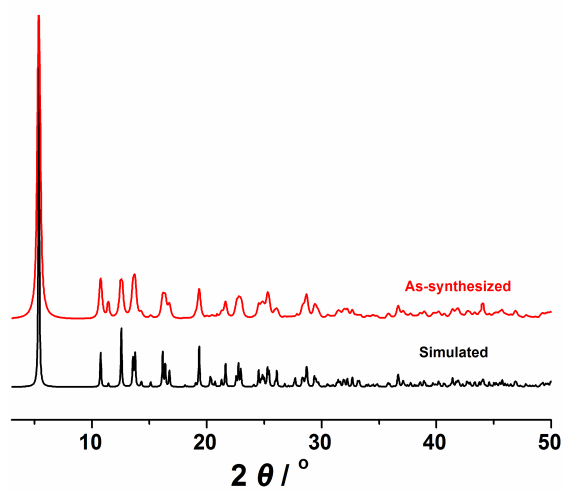


Fig. S5 PXRD patterns for complex 8.