

## A series of new lanthanide fumarates displaying three types of 3-D frameworks

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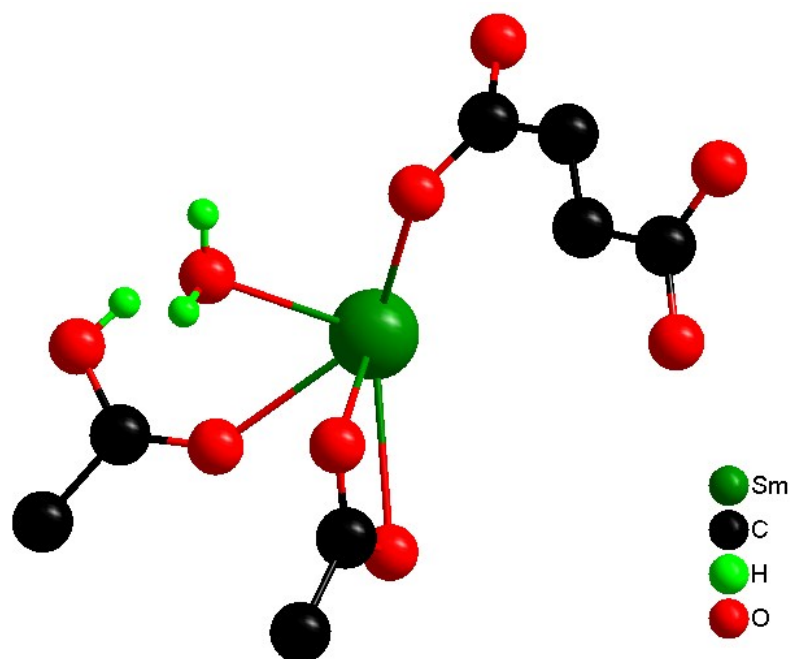
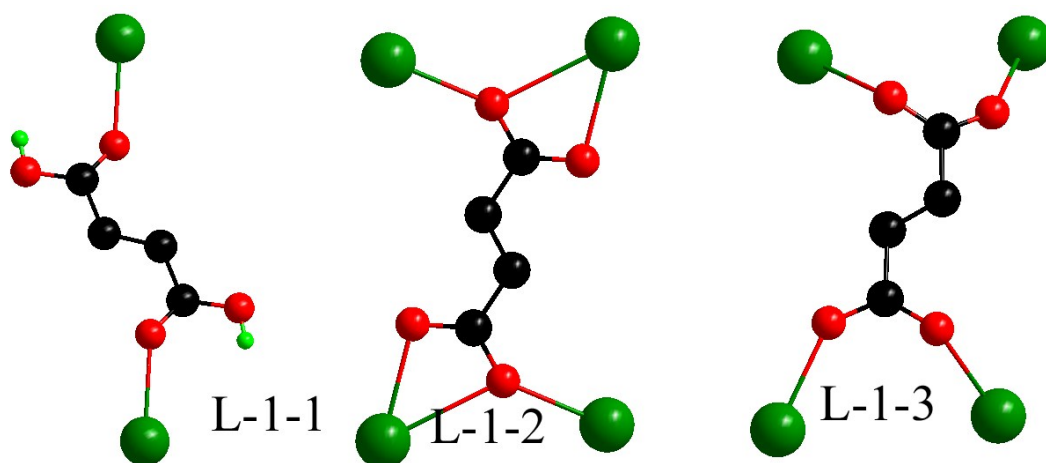


Fig. S1 The asymmetric unit of **1** (H atoms bonded to C atoms have been omitted for clarity).



Scheme S1 Three distinct ligand conformations observed in **1**.

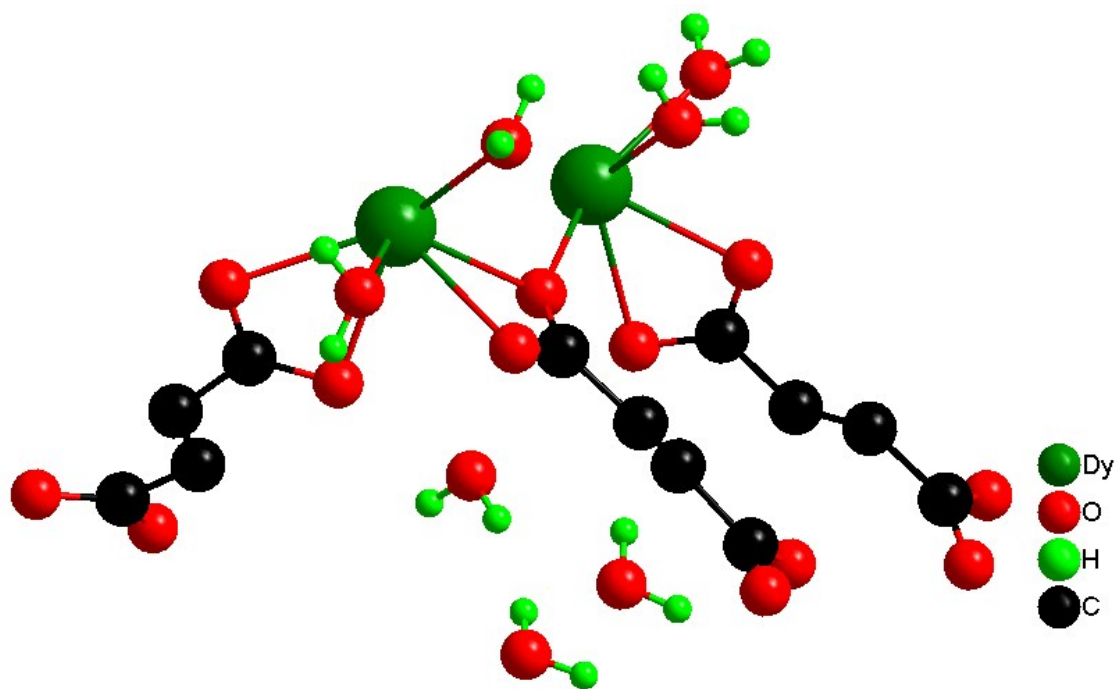
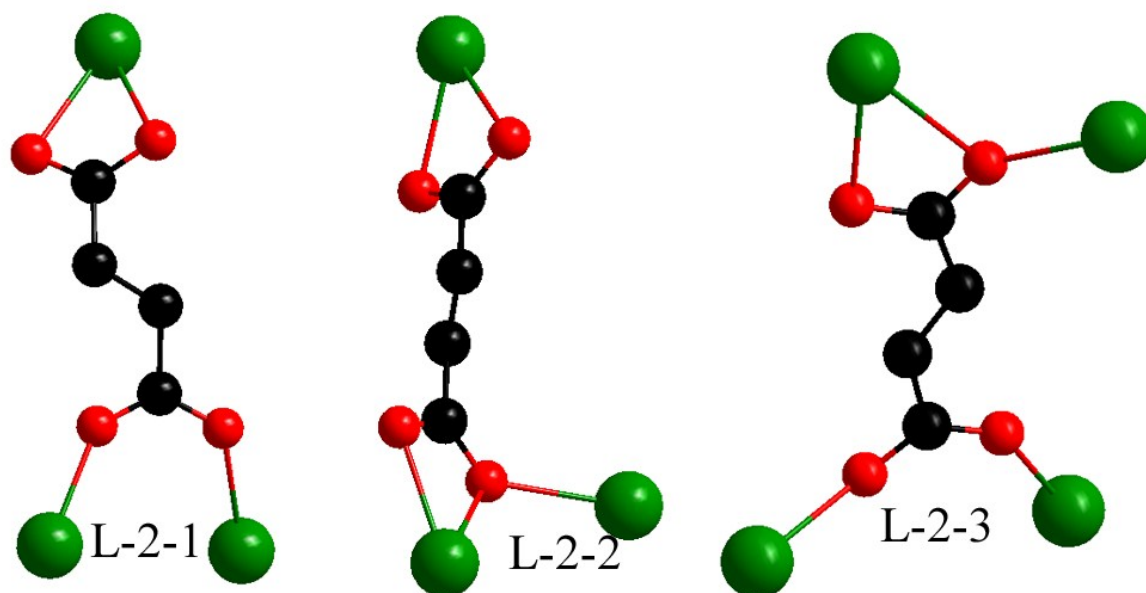


Fig. S2 The asymmetric unit of **2b** (H atoms bonded to C atoms have been omitted for clarity).



Scheme S2 Three distinct ligand conformations observed in **2b**.

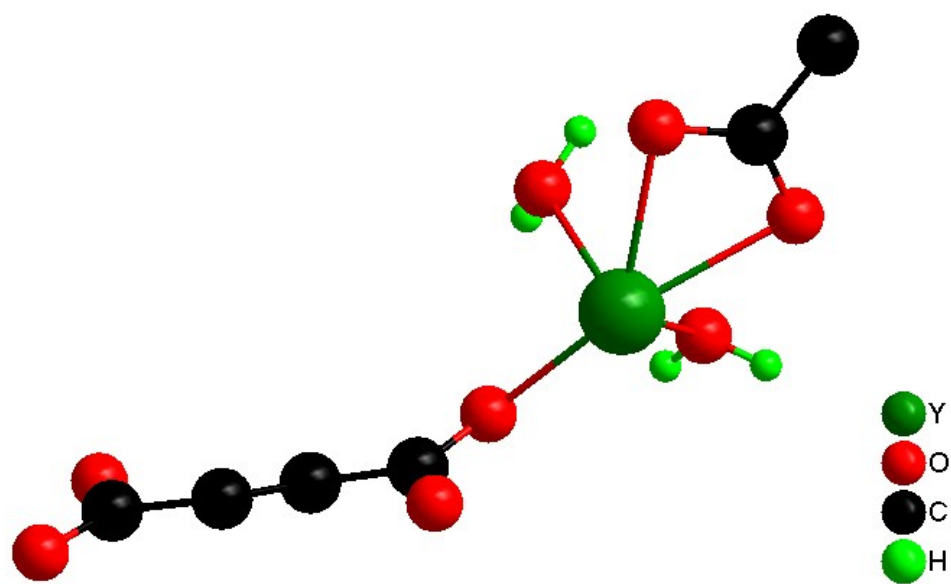
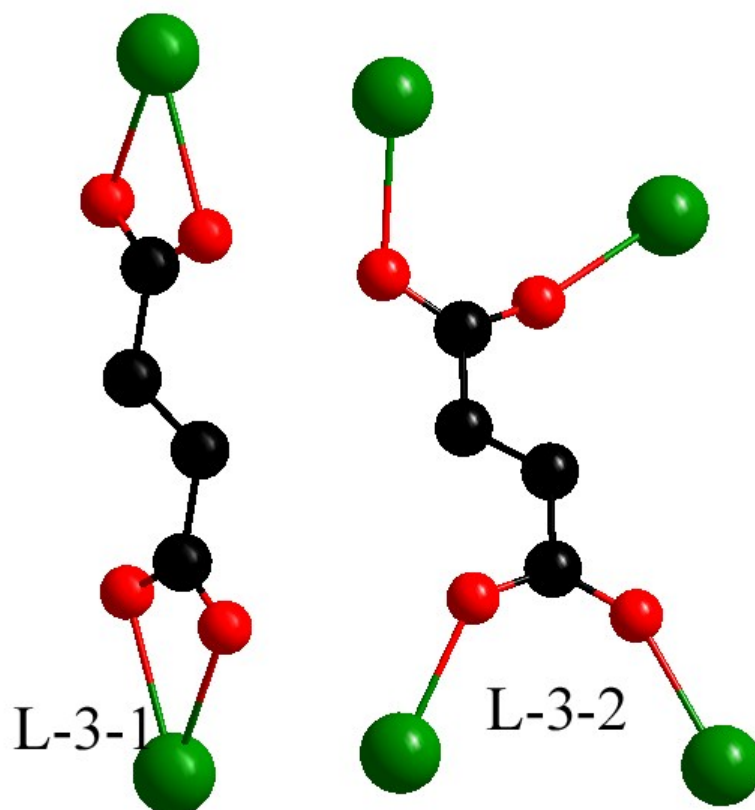
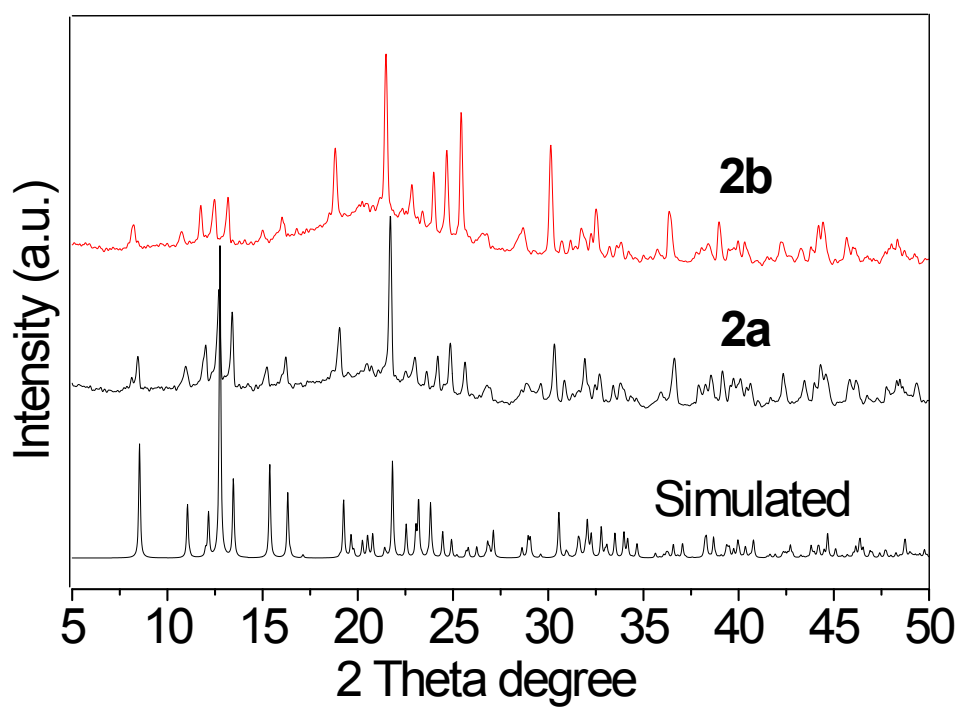
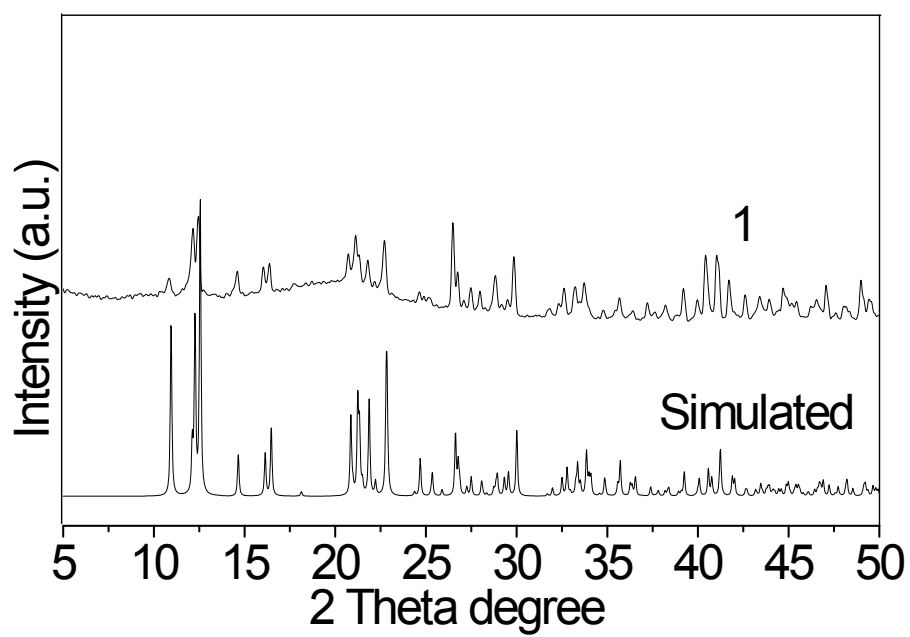


Fig. S3 The asymmetric unit of **3a** (H atoms bonded to C atoms have been omitted for clarity).



Scheme S3 Two distinct ligand conformations observed in **3a**.



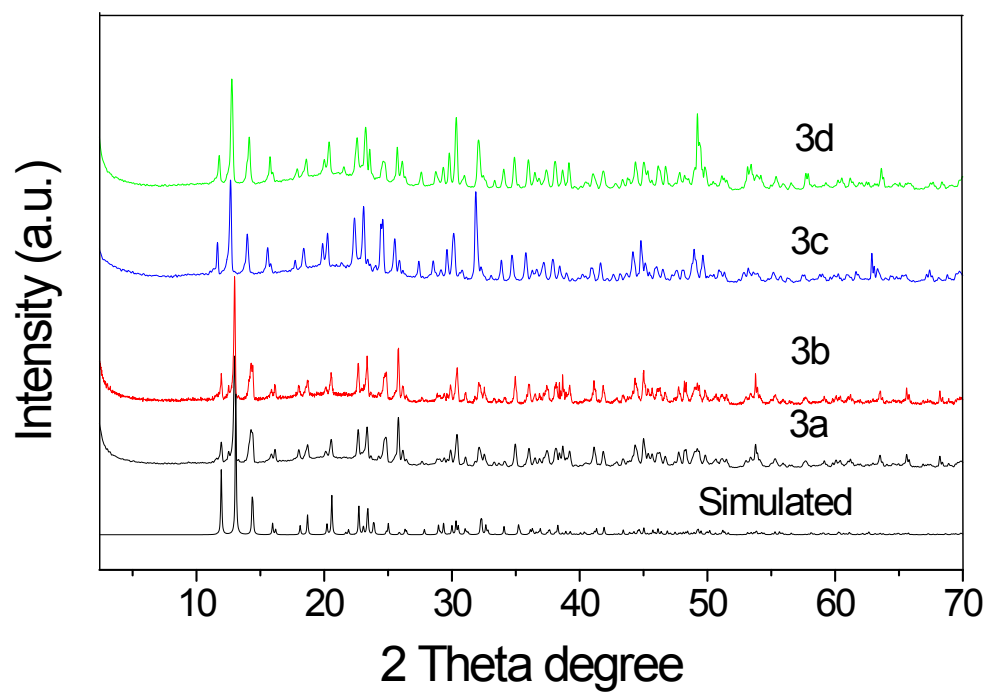


Fig. S4 Simulated and experimental powder XRD patterns of all compounds.

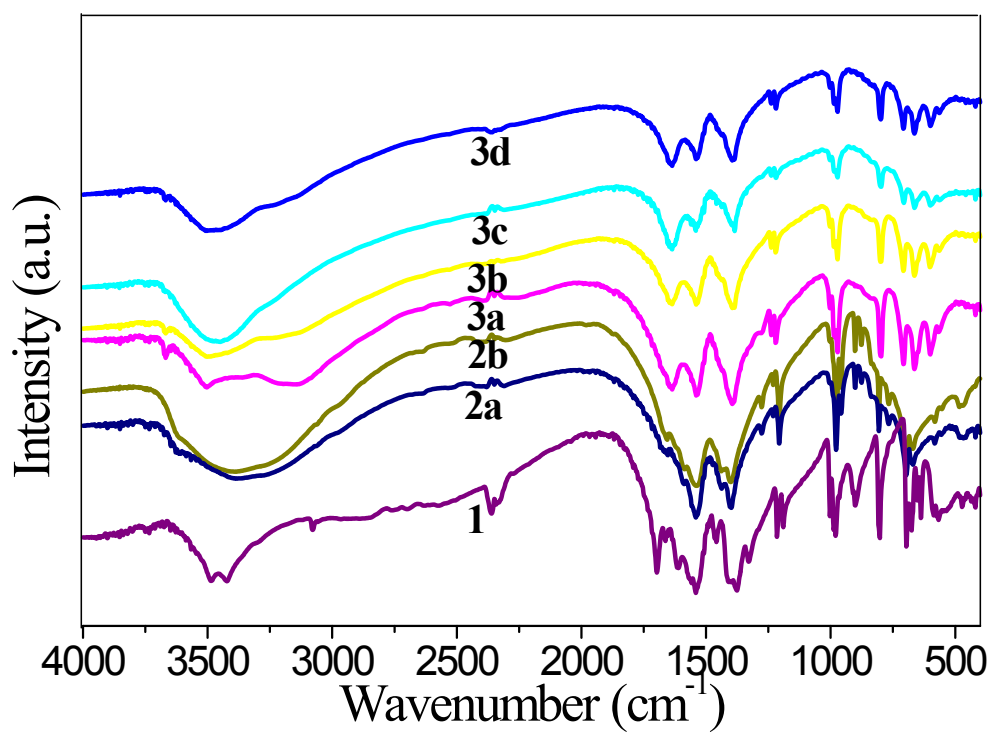
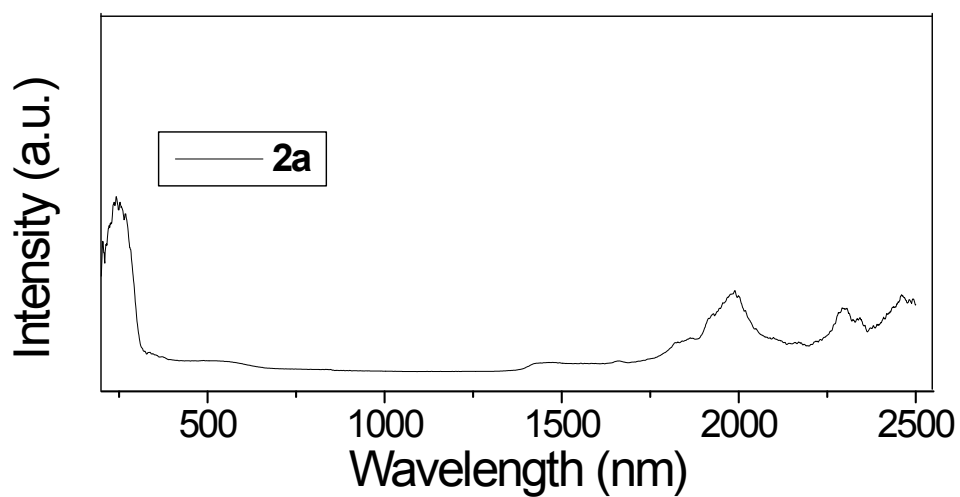


Fig. S5 IR spectra of all compounds.



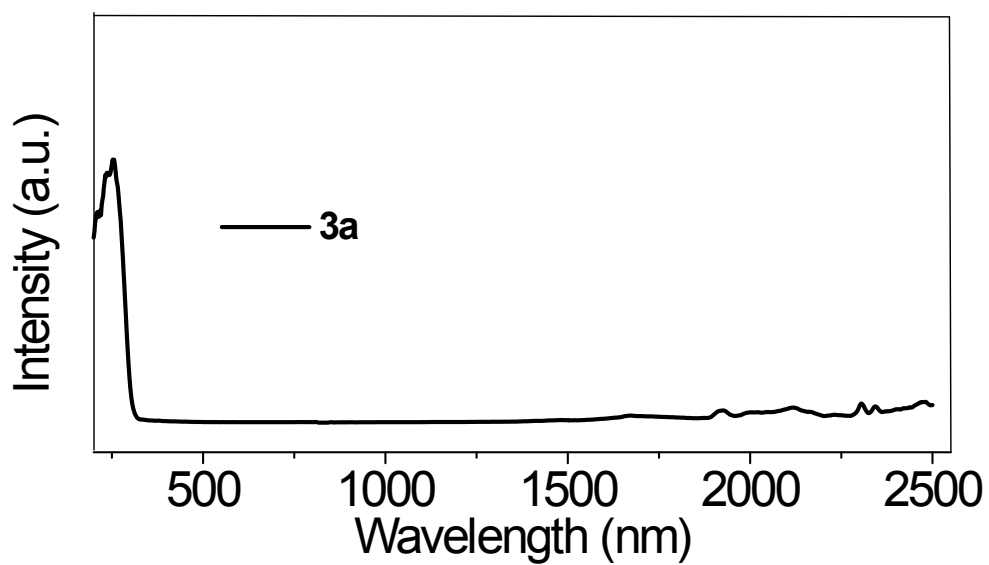


Fig. S6 UV/Vis absorption spectra of compounds **2a** and **3a** at room temperature.

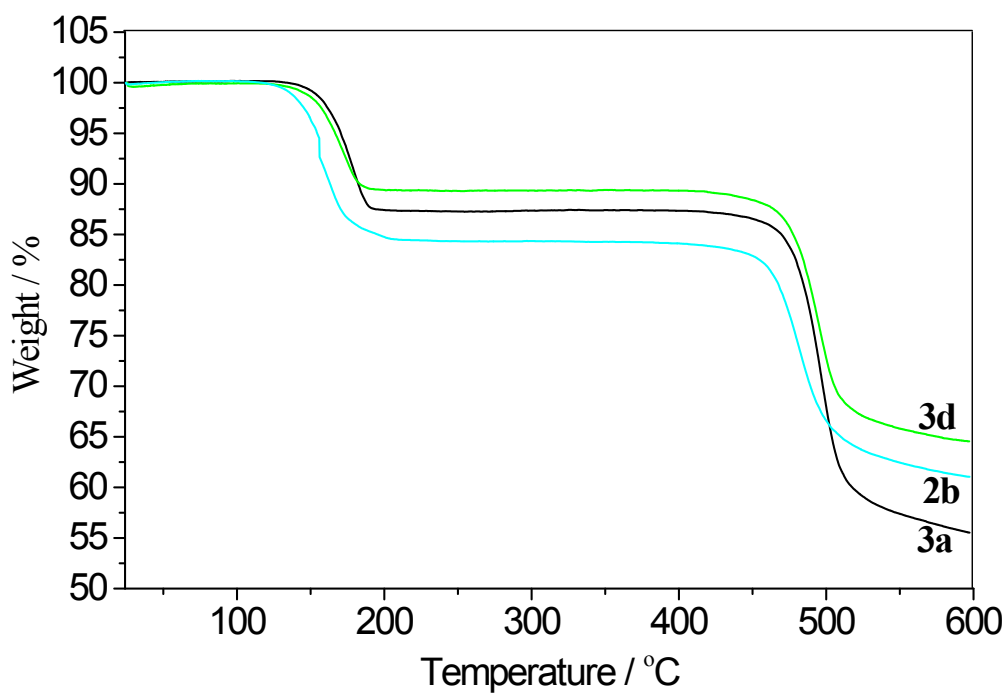


Fig. S7 Thermogravimetric analyses curves of compounds **2b**, **3a** and **3d**.