Supplementary Material (ESI) for CrystEngComm

Supporting Information
$(C_2H_8N)_9[Eu_5(SO_4)_{12}]\cdot 2H_2O$: The First Europium Sulfate Open-framework Containing Two Kinds of Intersecting Extra-large 20-Membered Ring Channels

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General remarks:
All chemicals purchased were of reagent grade and used without further purification. The crystalline products were characterized by thermal analyses, single crystal X-ray diffraction and IR spectroscopy. C, H, and N analyses were performed with a Perkin-Elemer 2400 elemental analyzer. IR spectra were recorded with a Nicolet Impact 410 FTIR spectrometer using KBr pellets. Thermogravimetric analyses were carried out in nitrogen atmosphere with a Diamond thermogravimetric analyzer from 50 to 750 ˚C at a heating rate of 10 ˚C /min.

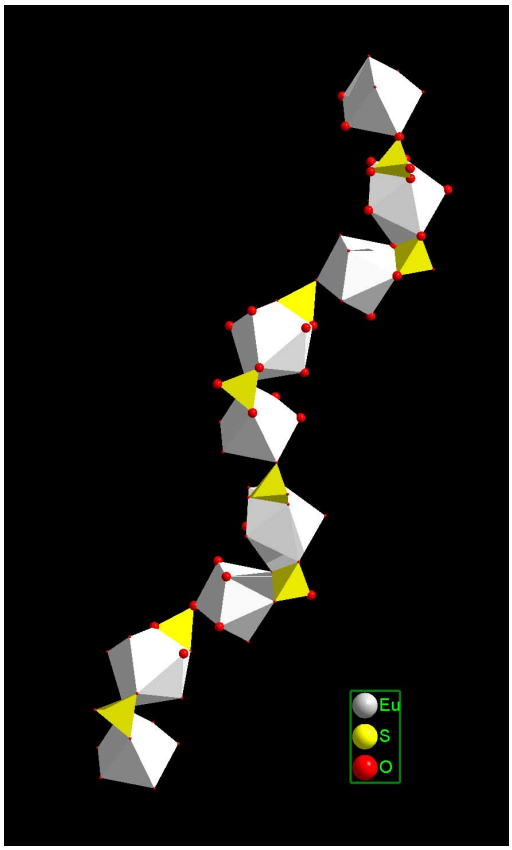

Figure S1 the structure of helical Eu-S-O chain.

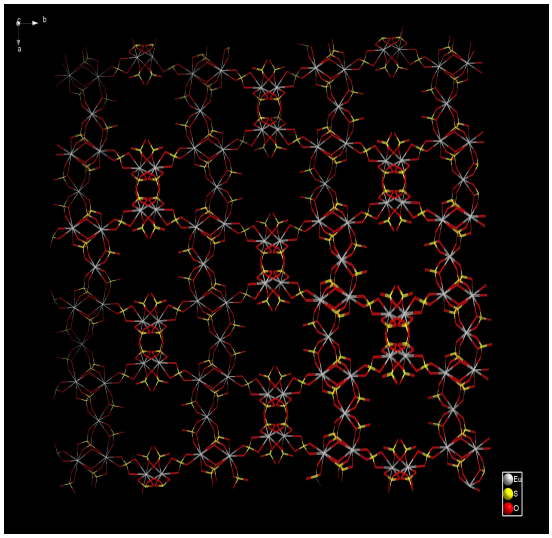

Figure S2 the structure of open framework including 10MR and 20MR channels of **1** along *c* axis.

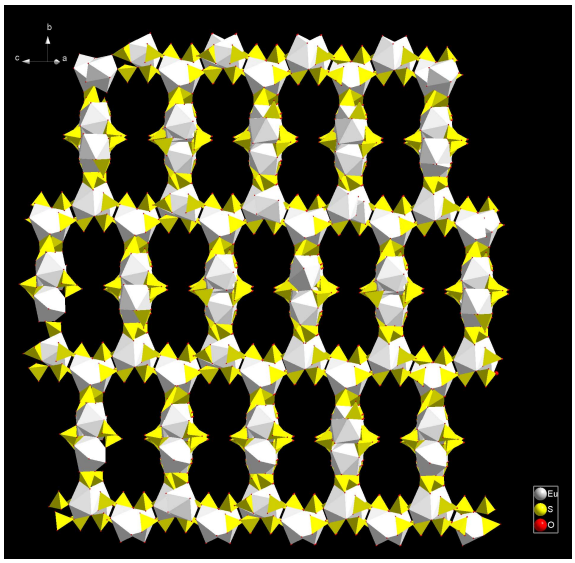

Figure S3 the polyhedral representation of open framework of **1** with rectangle 20MR-2 channels along the crystallographic 1 0 1 direction.

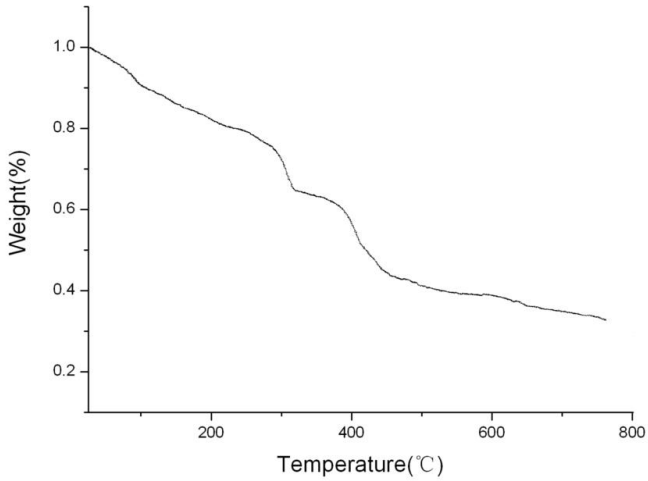

Figure S4 the TG curve of **1.**

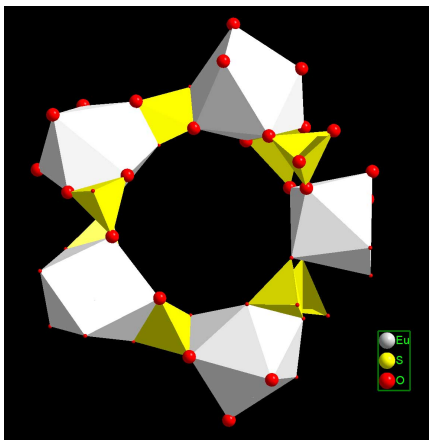

Figure S5. The structure of 10-membered ring in **1** (SBU-2).

Table S1 - Hydrogen Bonds (Å, ˚) for: **1**

D-H···A	d(D-H)	d(H···A)	d(D···A)	<(DHA)
N1 -- H1D ... O19a	0.9005	2.3298	2.805(12)	112.8
N1 -- H1D ... O14b	0.9005	2.1654	2.973(8)	148.9
N2 -- H2D ... O2	0.8987	2.0482	2.942(12)	172.9
N2 -- H2E ... O11	0.9013	2.5580	2.974(11)	108.8
N2 -- H2E ... O12	0.9013	2.0158	2.869(12)	157.4
N3 -- H3D ... O9	0.8981	2.4923	3.32(2)	152.8
N3 -- H3D ... O20	0.8981	2.2207	3.00(2)	144.6
N3 -- H3E ... O16	0.9005	2.2315	2.83(2)	123.5
N3 -- H3E ... O21b	0.9005	2.3679	3.07(3)	134.9
N4 -- H4D ... O8c	0.9010	2.4725	3.18(2)	136.0
N4 -- H4D ... O12c	0.9010	2.0868	2.94(2)	156.5
N4 -- H4E ... O6	0.8999	2.4478	3.21(2)	142.3
N4 -- H4E ... O11	0.8999	2.1042	2.89(3)	145.9
N5 -- H5D ... O15	0.8972	2.1891	2.85(3)	130.1
N5 -- H5E ... O24	0.8993	2.1251	2.81(2)	132.5
N6 -- H6B ... O5	0.8989	2.4570	3.126(15)	131.5
N6 -- H6B ... O18	0.8989	2.4508	3.277(9)	152.9

a: 1-x,y,3/2-z; b: x,-y,-1/2+z, c: -x,y,1/2-z