Table S1. Atomic coordinates [$\times 10^4$] and equivalent isotropic displacement parameters [$Å^2 \times 10^3$] for **1**. Ueq is defined as one third of the trace of the orthogonalized U_{ij} tensor

	x	y	z	U(eq)
Tb(1)	9609(1)	692(1)	1175(1)	15(1)
P(1)	10257(1)	2004(1)	2888(1)	19(1)
P(2)	10680(1)	2650(1)	-105(1)	19(1)
P(3)	8144(1)	676(1)	-552(1)	19(1)
O(1)	10307(3)	1500(3)	2158(2)	28(1)
O(2)	10080(3)	1255(3)	3497(2)	24(1)
O(3)	11279(3)	2692(3)	3004(2)	29(1)
O(4)	7759(3)	5970(3)	2723(3)	37(1)
O(5)	9424(3)	5421(3)	2956(3)	35(1)
O(6)	10370(3)	2063(3)	558(2)	28(1)
O(7)	10956(3)	1963(3)	-738(2)	28(1)
O(8)	11627(3)	3420(3)	16(2)	29(1)
O(9)	8131(4)	6454(4)	-829(3)	42(1)
O(10)	9773(3)	5868(4)	-547(3)	38(1)
O(11)	8558(3)	549(3)	192(2)	32(1)
O(12)	8977(3)	837(3)	-1120(2)	28(1)
O(13)	7320(3)	1586(3)	-615(2)	32(1)
O(14)	4627(4)	-2139(3)	-1512(2)	41(1)
O(15)	5062(4)	-441(3)	-1279(3)	40(1)
O(1W)	5591(5)	5488(5)	2170(4)	73(2)
O(2W)	4410(5)	5323(7)	853(3)	83(2)
N(1)	8774(4)	3484(3)	3476(2)	21(1)
N(2)	9081(4)	4165(4)	207(2)	21(1)
N(3)	6623(3)	-966(4)	-344(2)	20(1)
C(1)	7950(4)	4341(4)	3331(3)	20(1)
C(2)	7442(6)	4546(5)	4049(4)	37(2)
C(3)	7606(6)	3553(6)	4482(4)	46(2)
C(4)	8242(5)	2773(5)	4030(3)	25(1)
C(5)	9145(4)	2954(4)	2813(3)	21(1)
C(6)	8445(5)	5316(5)	2972(3)	25(1)
C(7)	8261(5)	4972(4)	-59(3)	23(1)
C(8)	7741(5)	5369(5)	634(3)	31(1)
C(9)	7731(6)	4393(6)	1122(4)	53(2)
C(10)	8502(5)	3575(5)	803(3)	29(1)
C(11)	9531(5)	3460(4)	-362(3)	24(1)
C(12)	8780(5)	5849(5)	-513(3)	28(1)
C(13)	5976(5)	-1860(4)	-686(3)	23(1)
C(14)	5479(6)	-2470(6)	-47(4)	45(2)
C(15)	6045(6)	-2050(5)	612(3)	34(2)
C(16)	7021(5)	-1448(5)	342(3)	27(1)
C(17)	7487(4)	-559(5)	-821(3)	24(1)
C(18)	5157(4)	-1420(5)	-1201(3)	26(1)

Table S2. Atomic coordinates [$\times 10^4$] and equivalent isotropic displacement parameters [$Å^2 \times 10^3$] for **2**. Ueq is defined as one third of the trace of the orthogonalized U_{ij} tensor

	x	y	z	U(eq)
Dy(1)	4305(1)	4606(1)	6248(1)	15(1)
P(1)	4323(1)	2355(1)	7468(1)	20(1)
P(2)	6849(1)	4330(1)	7027(1)	19(1)
P(3)	5254(1)	6996(1)	5457(1)	18(1)
O(1)	4038(3)	3047(2)	6839(2)	29(1)
O(2)	4641(3)	2944(3)	8135(2)	30(1)
O(3)	3379(3)	1586(2)	7591(2)	28(1)
O(4)	6861(3)	-1459(3)	6745(2)	43(1)
O(5)	5229(3)	-866(3)	7028(2)	39(1)
O(6)	6014(2)	4166(2)	6465(2)	27(1)
O(7)	6439(3)	4456(3)	7772(2)	33(1)
O(8)	7672(3)	3418(3)	6960(2)	32(1)
O(9)	10380(3)	7138(3)	6062(2)	39(1)
O(10)	9933(3)	5438(2)	6295(2)	41(1)
O(11)	5075(2)	6240(2)	6065(1)	24(1)
O(12)	5310(2)	6497(3)	4730(2)	28(1)
O(13)	6283(2)	7674(3)	5574(2)	29(1)
O(14)	2759(3)	10970(3)	5299(2)	37(1)
O(15)	4430(3)	10422(3)	5531(2)	34(1)
O(1W)	10303(6)	586(5)	10924(3)	84(2)
O(2W)	9400(4)	-471(5)	9751(3)	73(1)
N(1)	5922(3)	832(3)	7778(2)	20(1)
N(2)	8371(3)	5973(3)	7236(2)	20(1)
N(3)	3775(3)	8481(3)	6048(2)	18(1)
C(1)	6740(3)	24(3)	7516(2)	23(1)
C(2)	7258(4)	-382(4)	8205(3)	35(1)
C(3)	7279(5)	606(5)	8697(3)	54(2)
C(4)	6501(4)	1427(4)	8369(2)	32(1)
C(5)	5469(4)	1535(3)	7212(2)	24(1)
C(6)	6230(4)	-854(3)	7058(2)	28(1)
C(7)	9022(3)	6855(3)	6901(2)	22(1)
C(8)	9526(5)	7467(4)	7530(3)	45(2)
C(9)	8958(4)	7053(4)	8191(2)	33(1)
C(10)	7979(4)	6455(4)	7921(2)	27(1)
C(11)	7506(3)	5560(4)	6756(2)	24(1)
C(12)	9848(3)	6415(4)	6371(2)	26(1)
C(13)	2940(3)	9334(3)	5900(2)	22(1)
C(14)	2447(4)	9550(4)	6632(3)	36(1)
C(15)	2612(5)	8542(4)	7059(3)	46(1)
C(16)	3238(4)	7766(3)	6602(2)	25(1)
C(17)	4142(3)	7946(3)	5385(2)	21(1)
C(18)	3445(4)	10320(4)	5548(2)	26(1)

Table S3. Atomic coordinates [$\times 10^4$] and equivalent isotropic displacement parameters [$Å^2 \times 10^3$] for **3**. Ueq is defined as one third of the trace of the orthogonalized U_{ij} tensor

	x	y	z	U(eq)
Eu(1)	9310(1)	9610(1)	1975(1)	16(1)
P(1)	9316(1)	8134(1)	238(1)	20(1)
P(2)	7336(1)	10686(1)	696(1)	21(1)
P(3)	7983(1)	10262(1)	3694(1)	20(1)
O(1)	9433(2)	8564(2)	977(2)	37(1)
O(2)	9149(2)	8948(2)	-331(1)	29(1)
O(3)	8404(2)	7301(2)	182(2)	34(1)
O(4)	12141(2)	4623(2)	-712(2)	42(1)
O(5)	10440(2)	5065(2)	-484(2)	41(1)
O(6)	7927(2)	10384(2)	1358(2)	32(1)
O(7)	8022(2)	10961(2)	65(2)	31(1)
O(8)	6563(2)	11629(2)	814(1)	30(1)
O(9)	4129(2)	9764(2)	252(2)	38(1)
O(10)	3546(3)	8127(2)	-27(2)	45(1)
O(11)	8498(2)	10313(2)	2973(1)	31(1)
O(12)	8729(2)	10091(2)	4307(1)	26(1)
O(13)	7290(2)	11279(2)	3803(1)	31(1)
O(14)	4026(2)	7751(2)	3530(2)	39(1)
O(15)	4581(2)	9424(2)	3755(2)	35(1)
O(1W)	4528(4)	5581(4)	2976(3)	75(1)
O(2W)	5563(4)	4679(5)	4143(3)	86(2)
N(1)	10959(2)	6620(2)	457(2)	20(1)
N(2)	5827(2)	9079(2)	1005(2)	21(1)
N(3)	6509(2)	8770(2)	4281(1)	20(1)
C(1)	11850(3)	5975(3)	122(2)	24(1)
C(2)	12457(4)	5479(4)	755(3)	46(1)
C(3)	12039(3)	6049(3)	1411(2)	32(1)
C(4)	11436(3)	7014(3)	1138(2)	27(1)
C(5)	10555(3)	7475(3)	-26(2)	26(1)
C(6)	11414(3)	5156(3)	-404(2)	27(1)
C(7)	5026(3)	8264(3)	741(2)	23(1)
C(8)	4624(3)	7738(3)	1423(2)	35(1)
C(9)	5604(4)	7731(4)	1917(3)	52(1)
C(10)	6420(3)	8501(3)	1593(2)	31(1)
C(11)	6529(3)	9533(3)	441(2)	24(1)
C(12)	4156(3)	8776(3)	281(2)	28(1)
C(13)	5661(3)	7944(3)	4131(2)	23(1)
C(14)	5454(3)	7429(4)	4853(2)	36(1)
C(15)	6452(4)	7610(4)	5284(3)	47(1)
C(16)	7225(3)	8240(3)	4829(2)	27(1)
C(17)	7047(3)	9142(3)	3620(2)	23(1)
C(18)	4679(3)	8439(3)	3775(2)	27(1)

Table S4. Atomic coordinates (× 10^4) and equivalent isotropic displacement parameters (Å^2 × 10^3) for **4**. U(eq) is defined as one third of the trace of the orthogonalized Uij tensor.

	x	y	z	U(eq)
Gd	9310(1)	391(1)	3748(1)	15(1)
P(1)	10259(1)	-2008(1)	4532(1)	18(1)
P(2)	11861(1)	678(1)	2978(1)	19(1)
P(3)	9318(1)	2659(1)	2527(1)	20(1)
O(1)	10086(3)	-1254(2)	3917(2)	23(1)
O(2)	10311(3)	-1501(3)	5259(2)	28(1)
O(3)	11280(3)	-2698(3)	4421(2)	28(1)
O(4)	7748(3)	-5972(3)	4695(2)	38(1)
O(5)	9425(3)	-5421(3)	4466(2)	32(1)
O(6)	11026(3)	840(3)	3544(2)	30(1)
O(7)	11436(3)	558(3)	2238(2)	35(1)
O(8)	12694(3)	1589(3)	3024(2)	32(1)
O(9)	15382(3)	-2145(3)	3934(2)	41(1)
O(10)	14935(3)	-442(3)	3703(3)	40(1)
O(11)	9040(3)	1970(3)	3159(2)	29(1)
O(12)	9628(3)	2071(3)	1861(2)	30(1)
O(13)	8375(3)	3426(3)	2395(2)	28(1)
O(14)	11873(3)	6457(3)	3250(2)	42(1)
O(15)	10231(3)	5868(3)	2969(2)	38(1)
O(1W)	4523(5)	-5581(4)	2747(4)	74(2)
O(2W)	5545(5)	-4666(6)	1555(3)	83(2)
N(1)	8767(3)	-3486(3)	3942(2)	19(1)
N(2)	13375(3)	-965(3)	2764(2)	18(1)
N(3)	10925(3)	4168(3)	2213(2)	20(1)
C(1)	7939(4)	-4339(4)	4096(3)	22(1)
C(2)	7447(5)	-4544(4)	3369(3)	35(1)
C(3)	7607(5)	-3551(5)	2936(3)	45(2)
C(4)	8242(4)	-2771(4)	3395(3)	25(1)
C(5)	9145(4)	-2950(4)	4605(3)	19(1)
C(6)	8446(4)	-5318(4)	4445(3)	24(1)
C(7)	14026(4)	-1858(4)	3102(3)	22(1)
C(8)	14521(5)	-2459(5)	2474(3)	45(2)
C(9)	13957(5)	-2047(4)	1810(3)	33(1)
C(10)	12985(4)	-1439(4)	2079(3)	27(1)
C(11)	12521(4)	-556(4)	3246(3)	26(1)
C(12)	14836(4)	-1421(4)	3622(3)	26(1)
C(13)	11736(4)	4977(4)	2488(3)	22(1)
C(14)	12257(4)	5372(4)	1787(3)	31(1)
C(15)	12266(5)	4399(5)	1301(4)	52(2)
C(16)	11496(4)	3577(4)	1625(3)	29(1)
C(17)	10469(4)	3470(4)	2787(3)	21(1)

Table S5. The interatomic distances and angles for the hydrogen bonds in **2** [Å and deg]

D-H...A	d(D-H)	d(H...A)	d(D...A)	<(DHA)
O(3)-H(3)...O(9)#3	0.82	1.73	2.446(4)	144.0
O(8)-H(8)...O(14)#4	0.82	1.75	2.452(4)	142.1
O(8)-H(8)...O(15)#4	0.82	2.58	3.355(5)	158.8
O(13)-H(13)...O(4)#5	0.82	1.78	2.552(4)	156.2
O(1W)-H(1WA)...O(2W)#3	0.86(2)	2.17(5)	2.903(8)	143(7)
O(1W)-H(1WB)...O(2W)	0.85(2)	2.19(6)	2.799(8)	128(7)
O(2W)-H(2WA)...O(1W)#6	0.85(2)	2.05(2)	2.903(8)	177(9)
O(2W)-H(2WB)...O(1W)	0.85(2)	2.13(5)	2.799(8)	136(7)
N(1)-H(1)...O(10)#3	0.91	1.95	2.785(5)	152.5
N(2)-H(2)...O(15)#4	0.91	2.02	2.858(5)	152.9
N(3)-H(3A)...O(5)#5	0.91	1.86	2.705(5)	153.3

Symmetry transformations used to generate equivalent atoms:
#1 y,-x+1,z-1/4 #2 -y+1,x,z+1/4 #3 -y+1,x-1,z+1/4
#4 -y+2,x,z+1/4 #5 x,y+1,z #6 y+1,-x+1,z-1/4

Table S6. The interatomic distances and angles for the hydrogen bonds in **3** [Å and deg.]

D-H...A	d(D-H)	d(H...A)	d(D...A)	<(DHA)
O(3)-H(3)...O(14)#3	0.82	1.74	2.440(4)	141.5
O(3)-H(3)...O(15)#3	0.82	2.57	3.349(4)	158.8
O(8)-H(8)...O(4)#4	0.82	1.73	2.442(4)	144.7
O(13)-H(13)...O(10)#5	0.82	1.77	2.547(4)	156.5
O(1W)-H(1WA)...O(2W)	0.90(2)	2.24(7)	2.787(8)	119(6)
O(1W)-H(1WB)...O(14)	0.90(2)	2.11(3)	2.969(5)	160(6)
O(2W)-H(2WA)...O(1W)#4	0.91(2)	2.20(6)	2.892(8)	132(7)
O(2W)-H(2WB)...O(4)#6	0.89(2)	2.15(3)	3.007(6)	161(6)
N(1)-H(1)...O(15)#3	0.91	2.02	2.859(4)	152.3
N(2)-H(2)...O(5)#4	0.91	1.95	2.785(4)	152.5
N(3)-H(3A)...O(9)#5	0.91	1.86	2.706(4)	153.7

Symmetry transformations used to generate equivalent atoms:
#1 -y+2,x,z+1/4 #2 y,-x+2,z-1/4 #3 y,-x+1,z-1/4
#4 -y+1,x,z+1/4 #5 -x+1,-y+2,z+1/2 #6 -x+2,-y+1,z+1/2

Table S7. The interatomic distances and angles for the hydrogen bonds in **4** [Å and deg.]

D-H...A	d(D-H)	d(H...A)	d(D...A)	<(DHA)
O(1W)-H(1WB)...O(4)#3	0.86(2)	2.16(4)	2.964(7)	157(8)
O(1W)-H(1WA)...O(2W)	0.86(2)	2.42(9)	2.823(9)	110(7)
O(2W)-H(2WB)...O(1W)	0.834(19)	2.25(7)	2.823(9)	127(8)
N(1)-H(1)...O(15)#4	0.91	1.86	2.710(5)	153.9
N(2)-H(2)...O(5)#5	0.91	2.03	2.866(5)	152.3
N(3)-H(3A)...O(10)#6	0.91	1.82	2.673(6)	156.1
O(3)-H(3)...O(14)#4	0.82	1.80	2.553(5)	152.2

Symmetry transformations used to generate equivalent atoms:
#1 -y+1,x-1,z+1/4 #2 y+1,-x+1,z-1/4 #3 y+1,-x,z-1/4

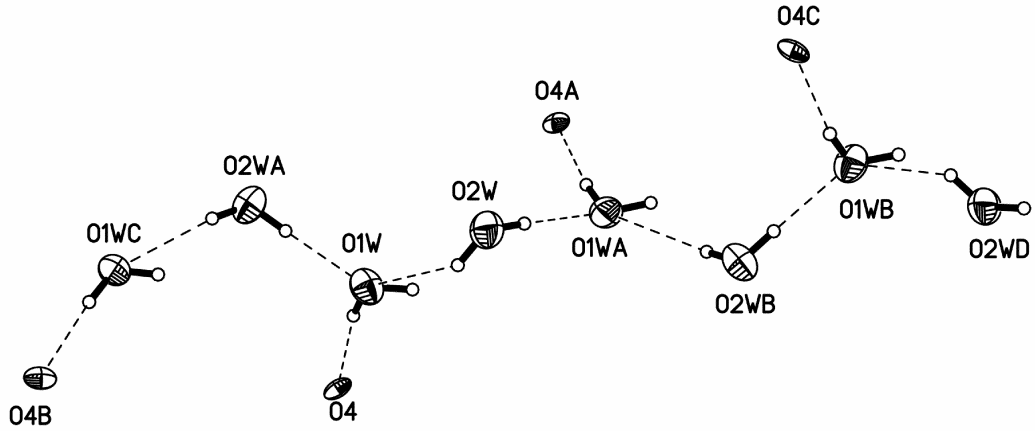

Figure S1. The helical water chain of **1.** There is hydrogen bonding interaction between the non-coordinating carboxylate oxygen atom (O4) of the H_2L^- and a water molecule (O1w)

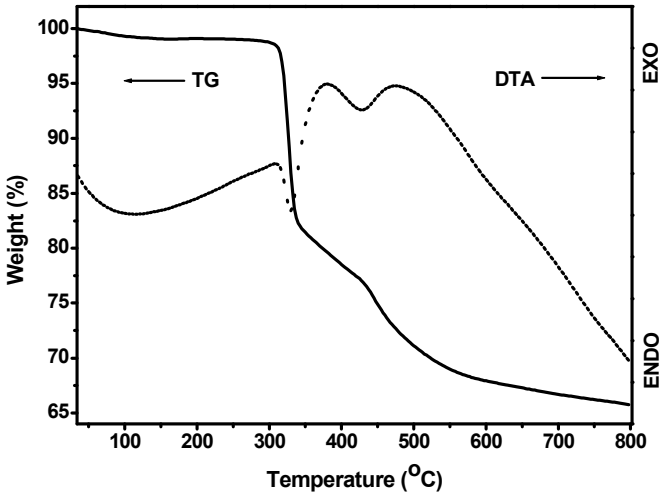

Figure S2. TG-DTA curves of **1**.

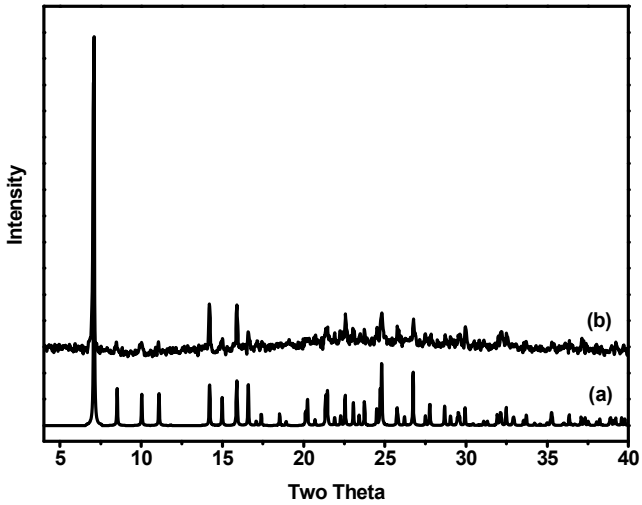

Figure S3. Powder X-ray diffraction patterns (a) simulated on the basis of the crystallographic data of the as-synthesized compound **1** and (b) recorded for **1** after evacuation treatment at 250 °C.

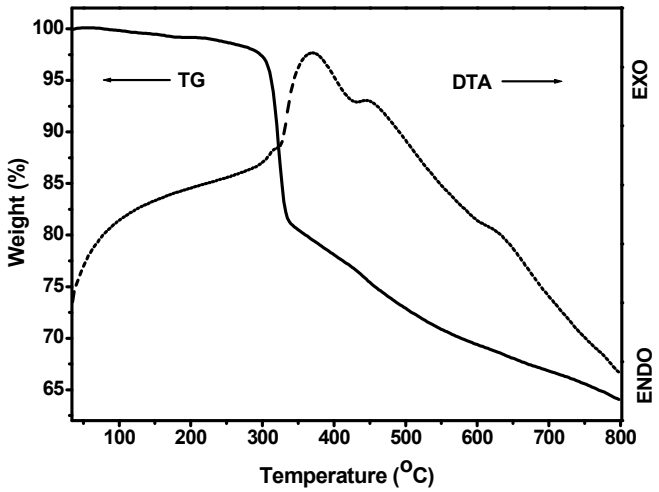

Figure S4. TG-DTA curves of **2**.

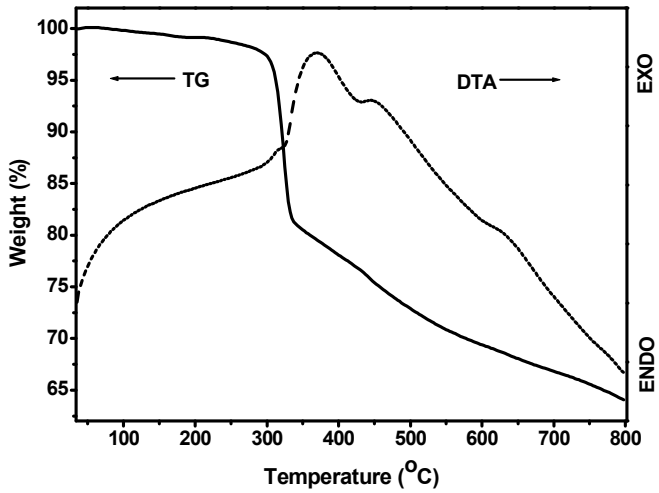

Figure S5. TG-DTA curves of **3**.

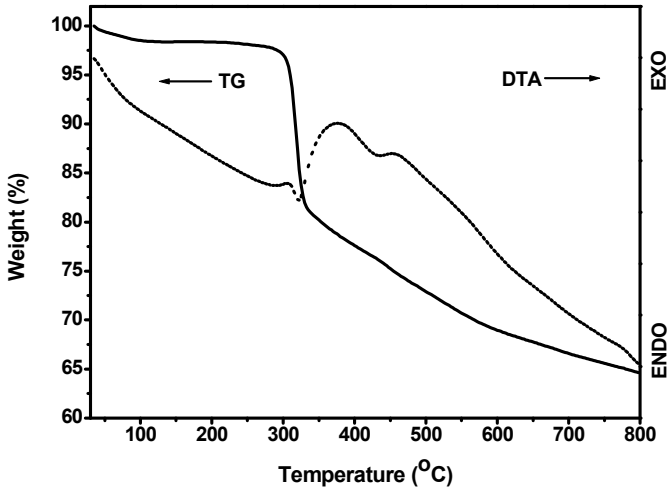

Figure S6. TG-DTA curves of **4**.

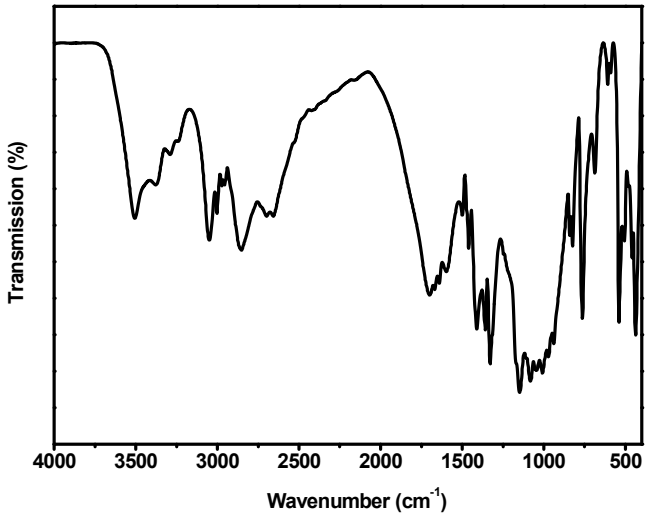

Figure S7. The IR spectrum of the compound **1**.

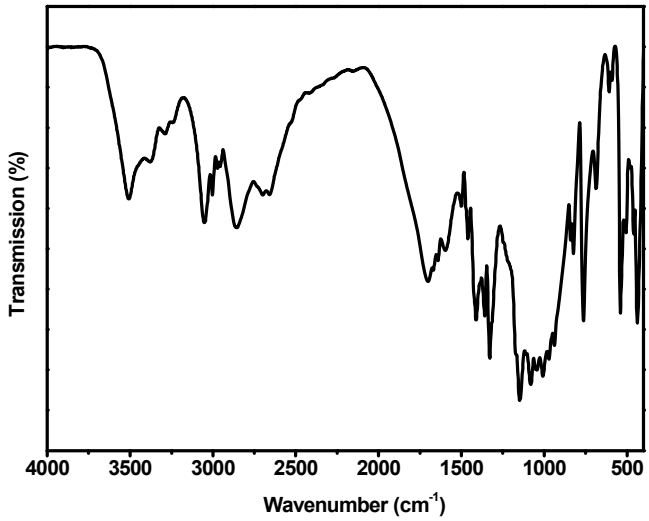

Figure S8. The IR spectrum of the compound **2**.

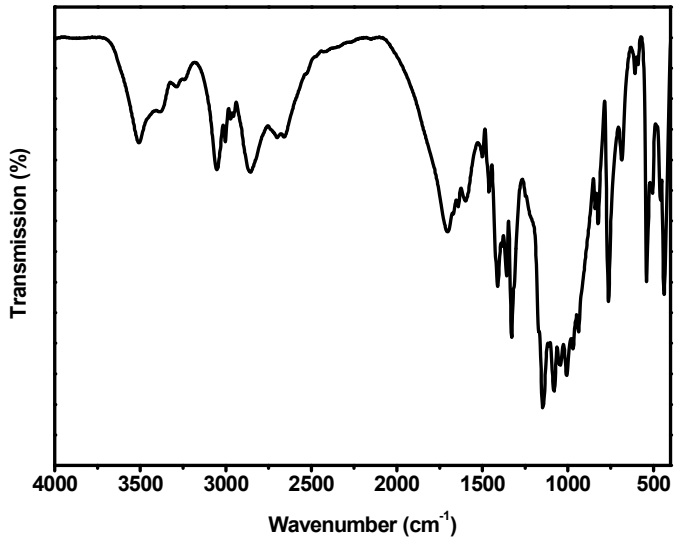

Figure S9. The IR spectrum of the compound **3**.

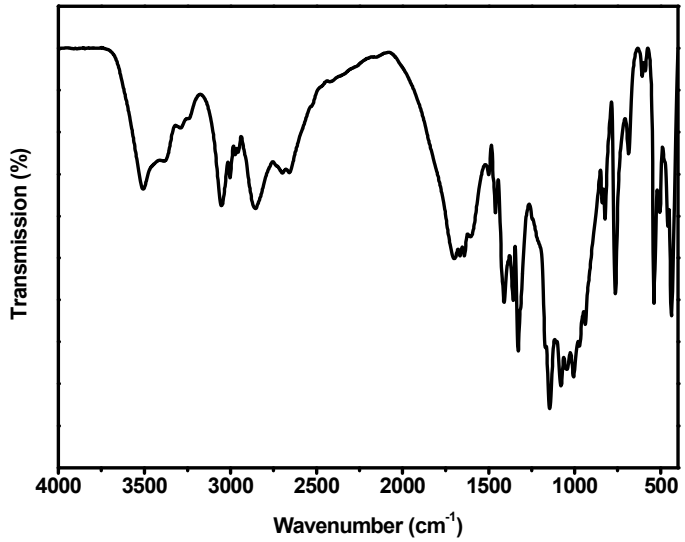

Figure S10. The IR spectrum of the compound **4**.