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Supporting Information

pH-Dependent Syntheses, Luminescence and Magnetic Properties of Two-Dimensional Framework Lanthanide 1,3-Diarylphosphonate Complexes

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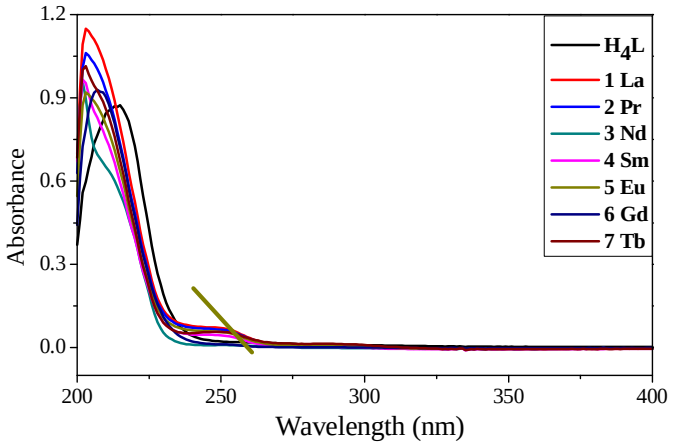


Fig. S1 The UV spectra of ligand H_4L and complexes **1**−**7**.

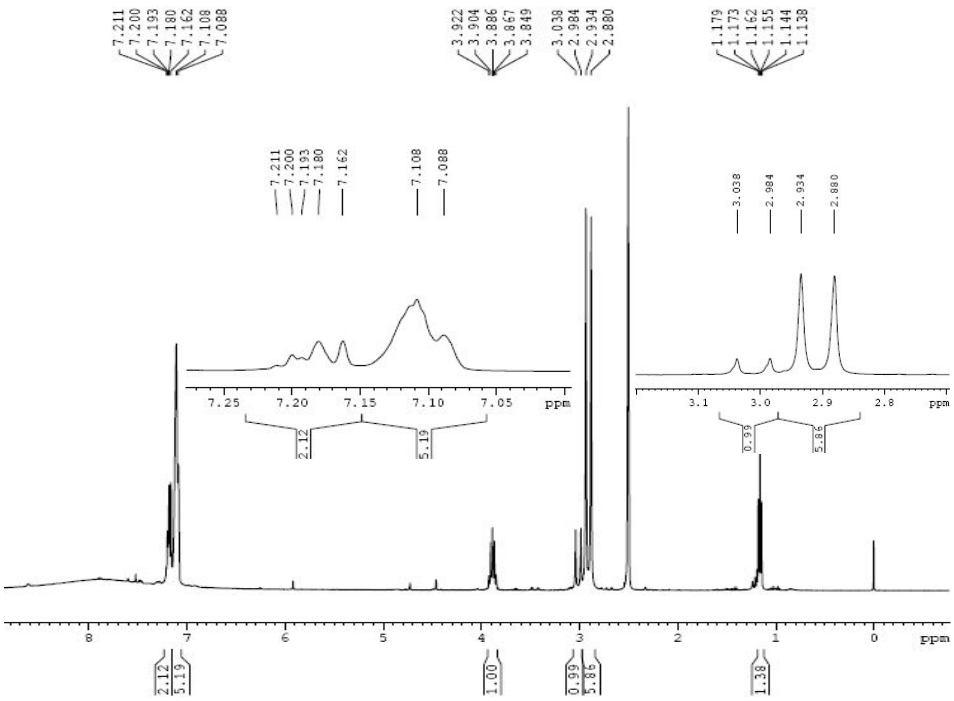


Fig. S2 The ^{1}H NMR of ligand H_4L in DMSO.

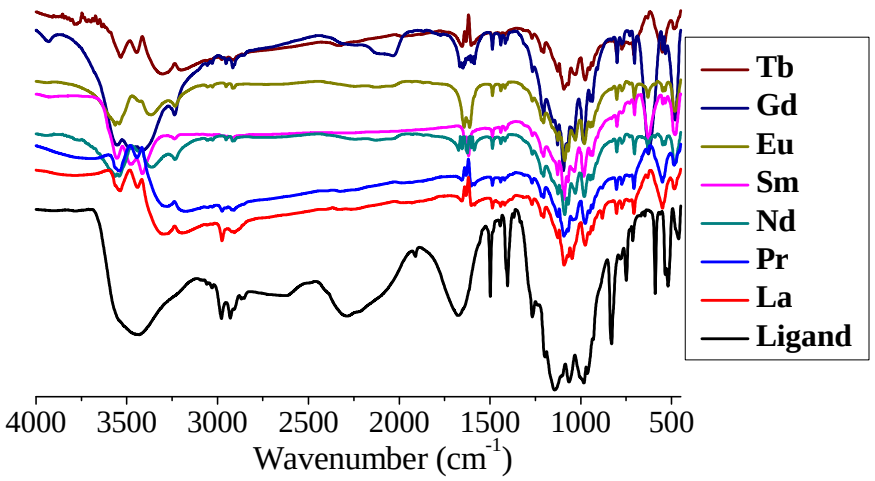


Fig. S3 The FT-IR spectra of ligand H_4L and complexes **1**−**7.**

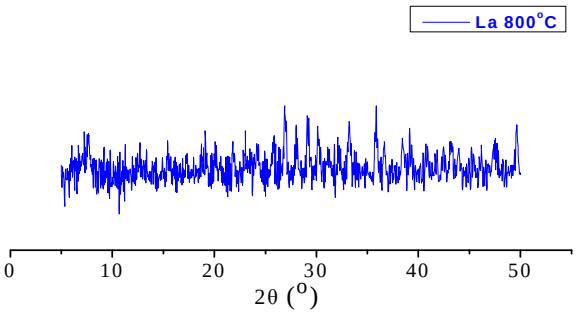
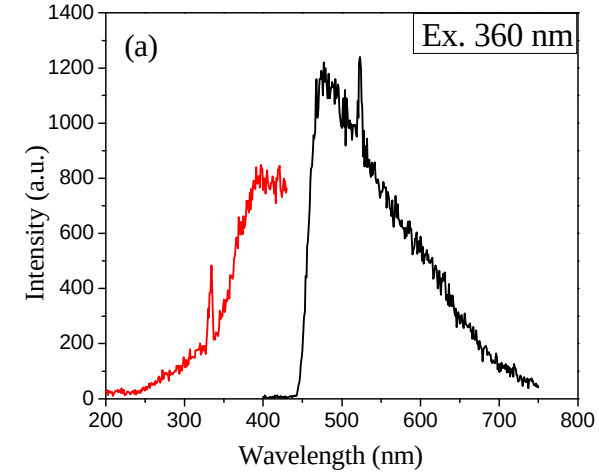
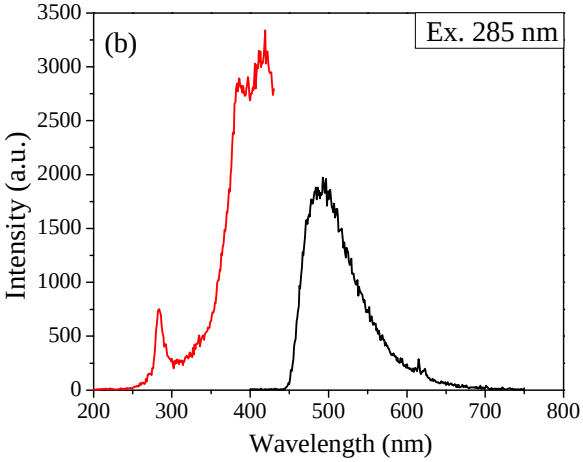


Fig. S4 Powder XRD patterns of decomposed complex La.





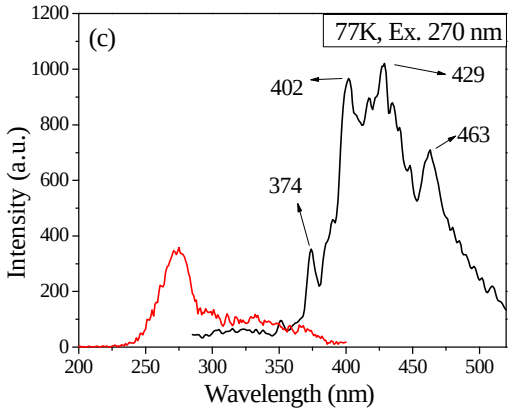


Fig. S5 Solid-state excitation (red) and emission (black) spectra of ligand (a) and **6** (b) at r.t. and phosphorescence spectra of **6** (c) at 77K.

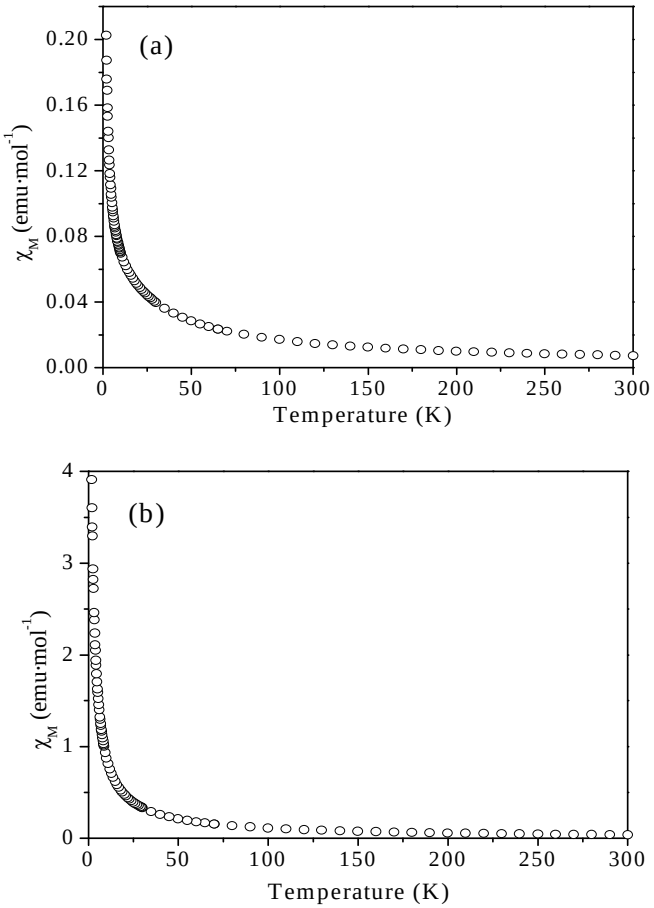


Fig. S6 Plots of the temperature dependence of χ_M for complexes **2** (a) and **7** (b).

Table S1: Selected Bond Lengths (Å) and Angles (º) for Complex **2**.

Complex **2**			
Bond Lengths (Å)			
Pr(1)−O(1)	2.360(3)	Pr(1)−O(4)	2.365(3)
Pr(1)−O(7)	2.502(3)	Pr(1)−O(8)	2.531(3)
Pr(1)−O(3)#1	2.465(3)	Pr(1)−O(5)#2	2.410(3)
Pr(1)−O(6)#3	2.402(3)		
Pr(1)−Pr(1)#1	4.8091(8)	Pr(1)−Pr(1)#3	4.9090(8)
Bond Angles (º)			
O(1)−Pr(1)−O(4)	89.15(10)	O(1)−Pr(1)−O(6)#3	153.97(9)
O(4)−Pr(1)−O(6)#3	115.97(10)	O(1)−Pr(1)−O(5)#2	81.76(10)
O(4)−Pr(1)−O(5)#2	138.59(10)	O(6)#3−Pr(1)−O(5)#2	74.82(9)
O(1)−Pr(1)−O(3)#1	116.75(11)	O(4)−Pr(1)−O(3)#1	78.66(10)
O(6)#3−Pr(1)−O(3)#1	77.18(9)	O(5)#3−Pr(1)−O(3)#1	140.95(10)
O(1)−Pr(1)−O(7)	101.94(11)	O(4)−Pr(1)−O(7)	70.22(10)
O(6)#3−Pr(1)−O(7)	81.82(10)	O(5)#2−Pr(1)−O(7)	72.36(9)
O(3)#1−Pr(1)−O(7)	129.39(9)	O(1)−Pr(1)−O(8)	77.92(10)
O(4)−Pr(1)−O(8)	141.54(10)	O(6) #3−Pr(1)−O(8)	85.33(10)
O(5) #2−Pr(1)−O(8)	75.68(9)	O(3) #1−Pr(1)−O(8)	75.43(9)
O(7) −Pr(1)−O(8)	147.66(9)		
Symmetry Code: #1 1 − x, 1 − y, 1 − z; #2 x, 1.5 − y, −0.5 + z; #3 1 − x, 2 − y, 1 − z.			

Table S2: Experimental results under different pH values.

Complex	pH and Experiment results [a]							
1	2.52	2.57	2.60	2.66	2.69	2.73	2.76,	2.80
	S	S	C	C	C	C	P	P
2	2.49	2.52	2.55	2.58	2.61	2.66	2.68	2.73
	S	C	C	C	C	C	P	P
3	2.46	2.48	2.49	2.53	2.55	2.58	2.61	2.65
	S	S	C	C	C	C	P	P
4	2.39	2.41	2.43	2.46	2.49	2.53	2.55	2.58
	S	C	C	C	C	C	P	P
5	2.33	2.36	2.38	2.43	2.46	2.48	2.51	2.55
	S	S	C	C	C	P	P	P
6	2.30	2.33	2.35	2.39	2.43	2.46	2.49	2.53
	S	S	C	C	C	C	P	P
7	2.25	2.28	2.30	2.34	2.36	2.39	2.43	2.49
	S	S	C	C	C	C	P	P

a S = Solution; C = Crystal; P = Powder