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Supporting Information

Two-dimensional layered metal-organic frameworks (MOFs) of lanthanum(III) pyridine-2,6-dicarboxylate

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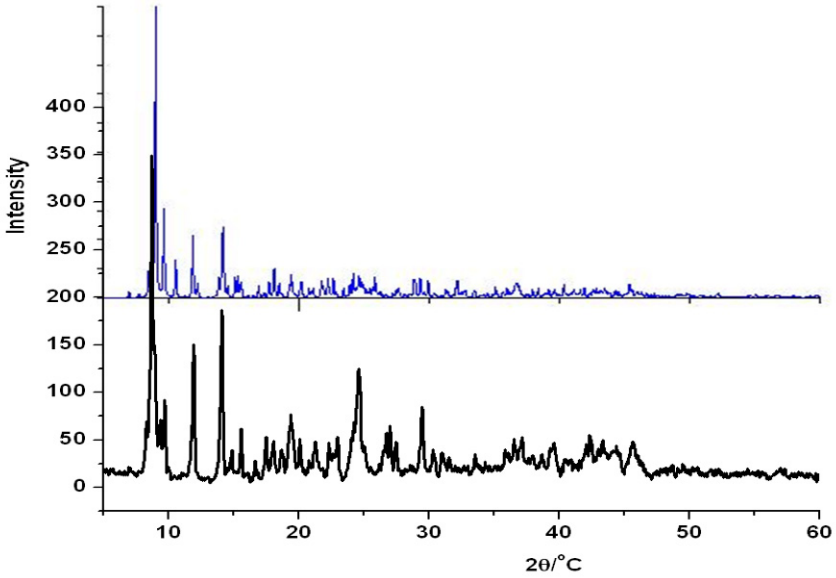

Fig. S1. The simulated X-ray powder diffraction patterns (upper) and the measured one (lower) of complex **1.**

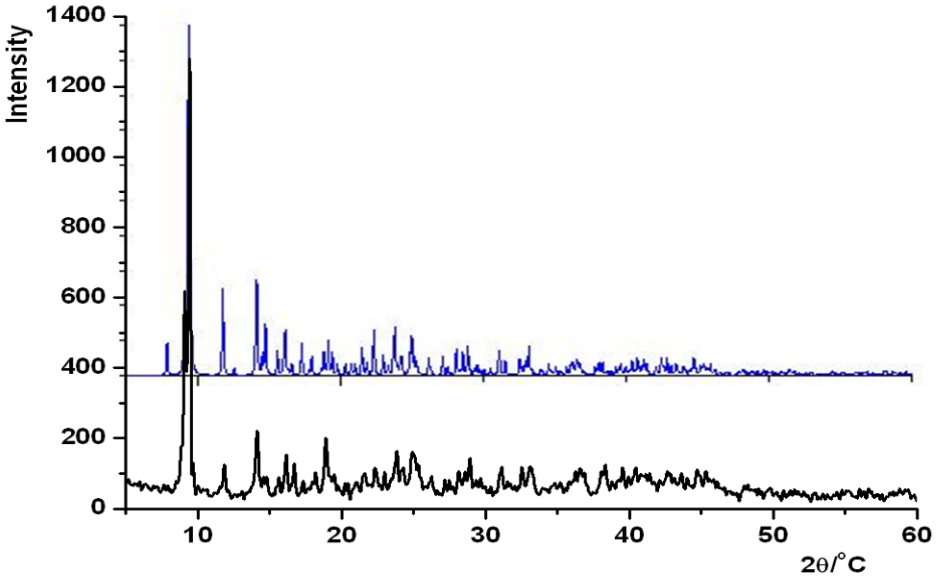

Fig. S2. The simulated X-ray powder diffraction patterns (upper) and the measured one (lower) of complex **2.**

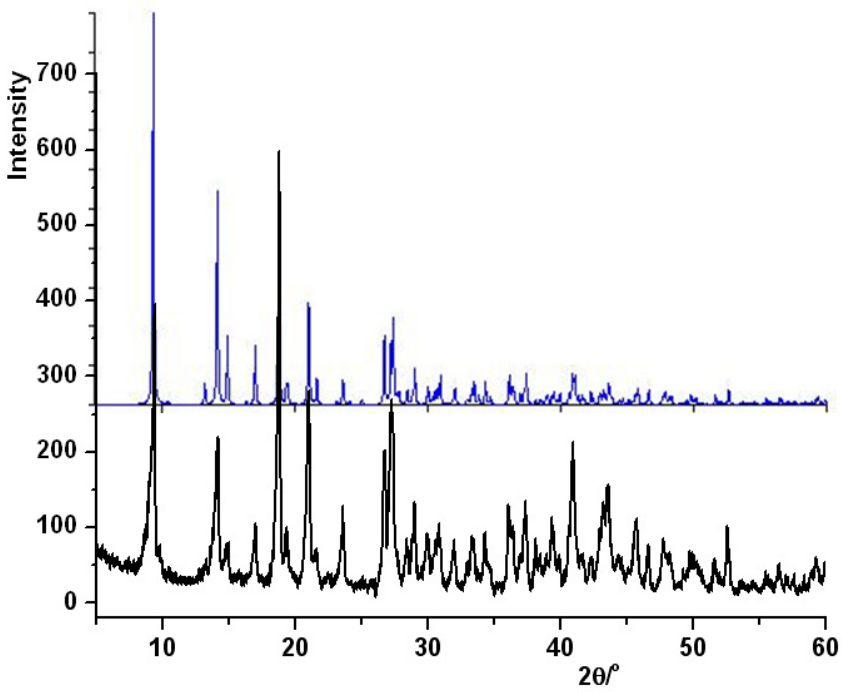

Fig. S3. The simulated X-ray powder diffraction patterns (upper) and the measured one (lower) of complex **3.**

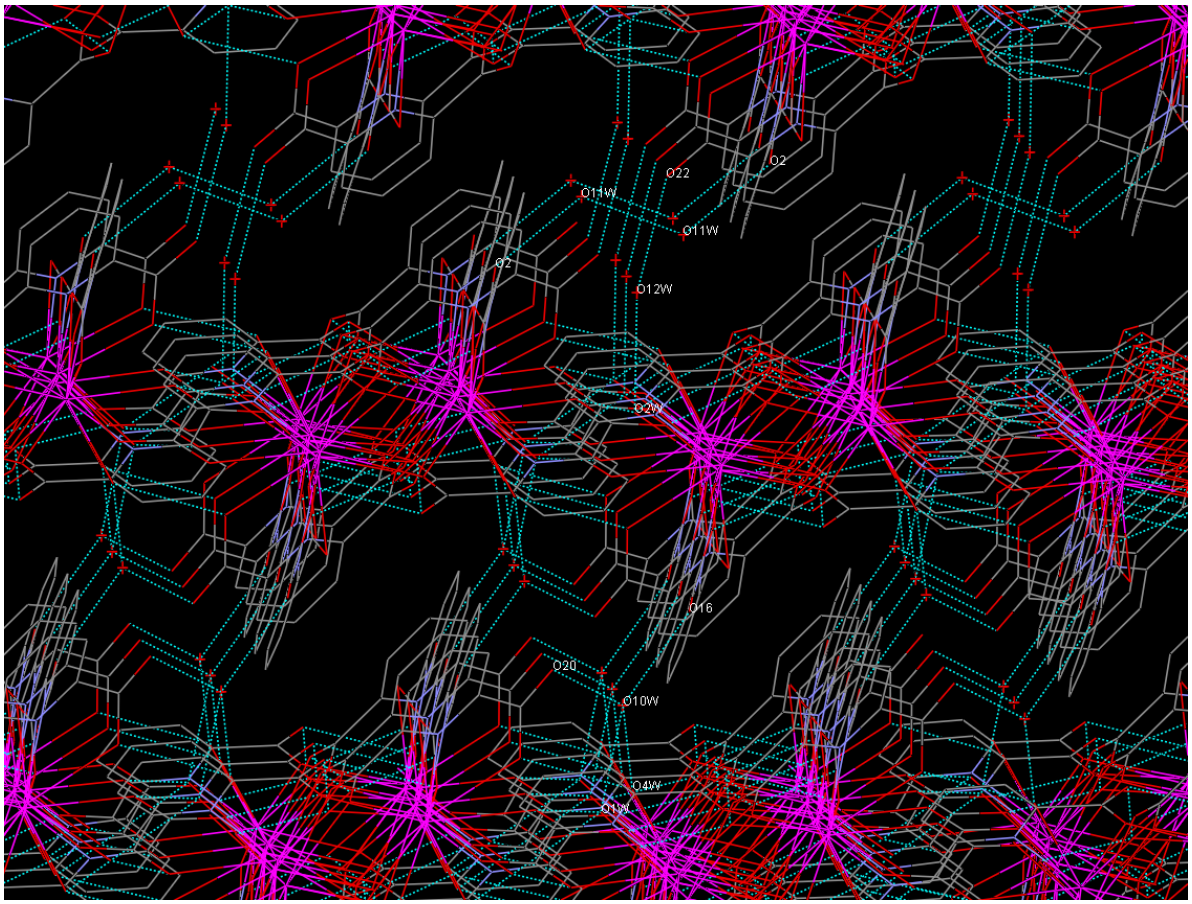

Fig. S4. The O-H···O hydrogen bonds formed between the layers in complex **1.**

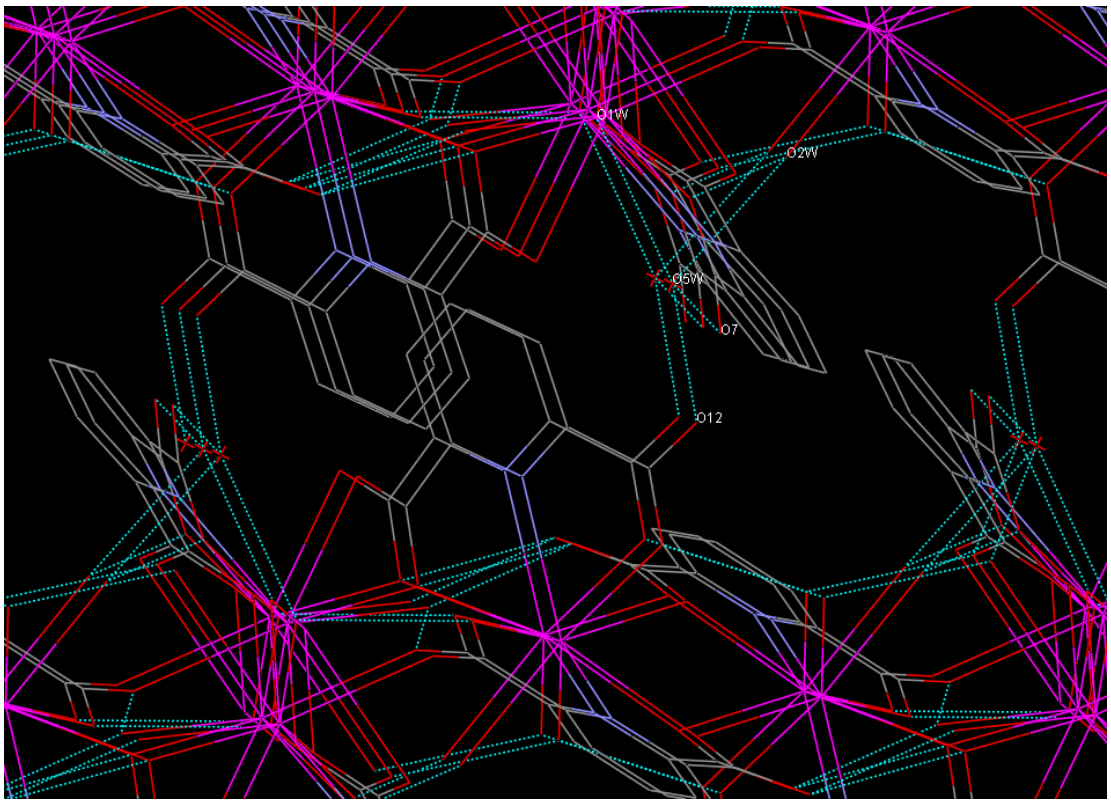

Fig. S5. The O-H···O hydrogen bonds formed between the layers in complex **2.**

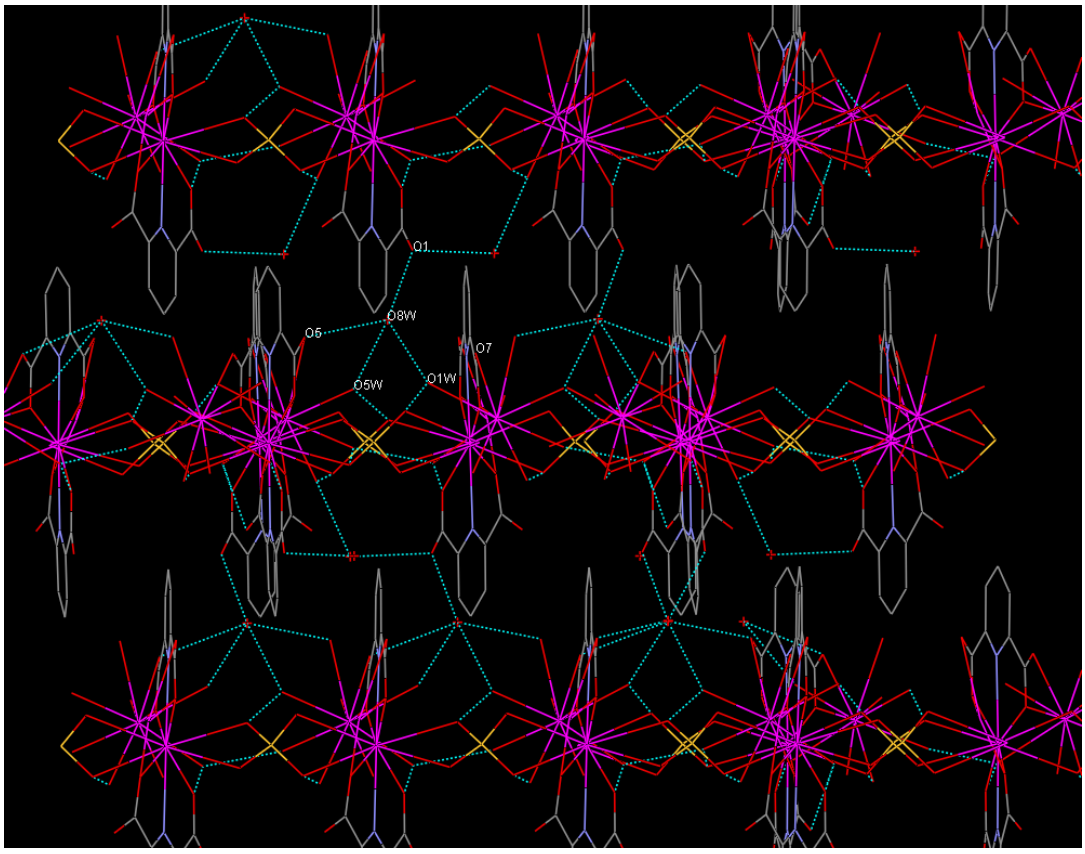

Fig. S6. The O-H···O hydrogen bonds formed between the layers in complex **3.**

Table S1. Summary Ln-pda complexes from CCDC (*version* 5.29).

Composition	Topology	Method	Structure	Ref.
$\{[Ln_2(pda)_3(H_2O)_6]\cdot 2H_2O\}_n$	1D	Hydrothermal	Zigzag chain	*19,21*
$\{[La(pda)(Hpda)(H_2O)_6]\cdot 2H_2O \cdot EtOH\}_n$	1D	Slow evaporation	Chain	*20*
$\{[Pr_3(pda)_4(Hpda)(H_2O)_8]\cdot 8H_2O\}n$	2D	Hydrothermal	Grid	*22*
$\{[Pr_2(pda)_2(H_2O)_5SO_4]\cdot 2H_2O\}_n$	2D	Hydrothermal	(4,4) grid	*22*
$[Ho(pda)_2(Hpda)]_n$	2D	Hydrothermal	(4,4) grid	*23*
$[Ce_2(pda)_3(H_2O)_3]_n$	3D	Hydrothermal	Open Framework	*24*
$\{[Ln_2(pda)_3(H_2O)_3]\cdot H_2O\}_n$	3D	Hydrothermal	Open Framework	*22,24,25*
$[Ce_3(pda)_4(Hpda)(H_2O)_2]_n$	3D	Hydrothermal	Open Framework	*26*
$\{[Nd_3(pda)_5(NH_4)(H_2O)_8]\cdot 5H_2O\}_n$	3D	Slow evaporation	Open Framework	*27*
$\{[Pr_2(pda)_3(H_2O)_3]\cdot H_2O\}_n$	3D	Hydrothermal	Open Framework	*22*
$\{[La(pda)(H_2O)_4]\cdot 2Cl\}_n$	3D	Hydrothermal	Open Framework	*19*

Table S2. Geometry Parameters for Hydrogen Bonds in **1**[a]

D-H···A	d(D-H)	d(H···A)	d(D···A)	∠DHA
O(5W)-H(51) ···O(17)	0.85	1.87	2.68	156.6
O(7W)-H(71) ···O(9)#2	0.85	2.08	2.82	144.4
O(7W)-H(72) ···O(6)	0.85	2.52	3.00	115.9
O(5W)-H(52) ···O(15)#3	0.85	2.19	2.75	123.0
O(10W)-H(101) ···O(20)	0.86	1.94	2.66	139.1
O(10W)-H(102) ···O(1W)#1	0.86	2.24	2.75	117.5
O(11W)-H(111) ···O(2)#7	0.85	2.02	2.74	141.3
O(12W)-H(122) ···O(22)#4	0.86	1.98	2.79	156.3

[a]Symmetry codes: # , -1+x,y,z; #2, x,1+y,z; #3, 1+x,1+y,z; #4, 1-x,1-y,-z; #5, -1+x,-1+y,z; #6, -x,1-y,1-z; #7, 2-x,2-y,-z.

Table S3. Geometry Parameters for Hydrogen Bonds in **2**[b]

D-H···A	d(D-H)	d(H···A)	d(D···A)	∠DHA
O(1W)-H(1D) ···O(2)	0.94	1.83	2.72	154.8
O(2W)-H(2E) ···O(8)	0.94	1.77	2.71	176.5
O(3W)-H(3E) ···O(6)#1	0.95	1.96	2.74	137.9
O(4W)-H(4E) ···O(1)#2	0.94	1.98	2.87	158.2
O(1W)-H(1E) ···O(5W)#1	0.94	1.87	2.81	170.8
O(2W)-H(2D) ···O(5W)	0.94	1.99	2.77	139.3
O(3W)-H(3D) ···O(11)#3	0.95	1.85	2.74	153.4
O(4W)-H(4D) ···O(3)#4	0.94	1.99	2.83	147.2
O(5W)-H(51) ···O(7)	0.91	1.74	2.65	171.2
O(5W)-H(52) ···O(12)#5	0.86	1.97	2.74	146.1

[b]Symmetry codes: #1, 1-x,1-y,1-z; #2, 2-x,1-y,1-z; #3, -1+x,-1+y,-1+z; #4, 1+x,1+y,1+z; #5, 1-x,2-y,1-z.

Table S4. Geometry Parameters for Hydrogen Bonds in **3**[c]

D-H···A	d(D-H)	d(H···A)	d(D···A)	∠DHA
O(7W)-H(71)···O(1)#2	0.89	1.92	2.78	161.2
O(7W)-H(72)···O(3W)#5	0.85	1.89	2.74	169.8
O(8W)-H(81)···O(1W)#1	0.85	1.99	2.78	155.1
O(8W)-H(82)···O(5W)	0.86	1.92	2.76	162.0

[c]Symmetry codes: #1, x,-1+y,z; #2, 1/2-x,1/2+y,-1/2+z; #3, 1/2-x,-1/2+y,1/2+z; #4, 1/2-x,-1/2+y,-1/2+z; #5, -x,1-y,-1/2+z.