Electronic Supplementary Information for MS:

Anion influence on transformations of nonporous 3D to porous 3D coordination polymer

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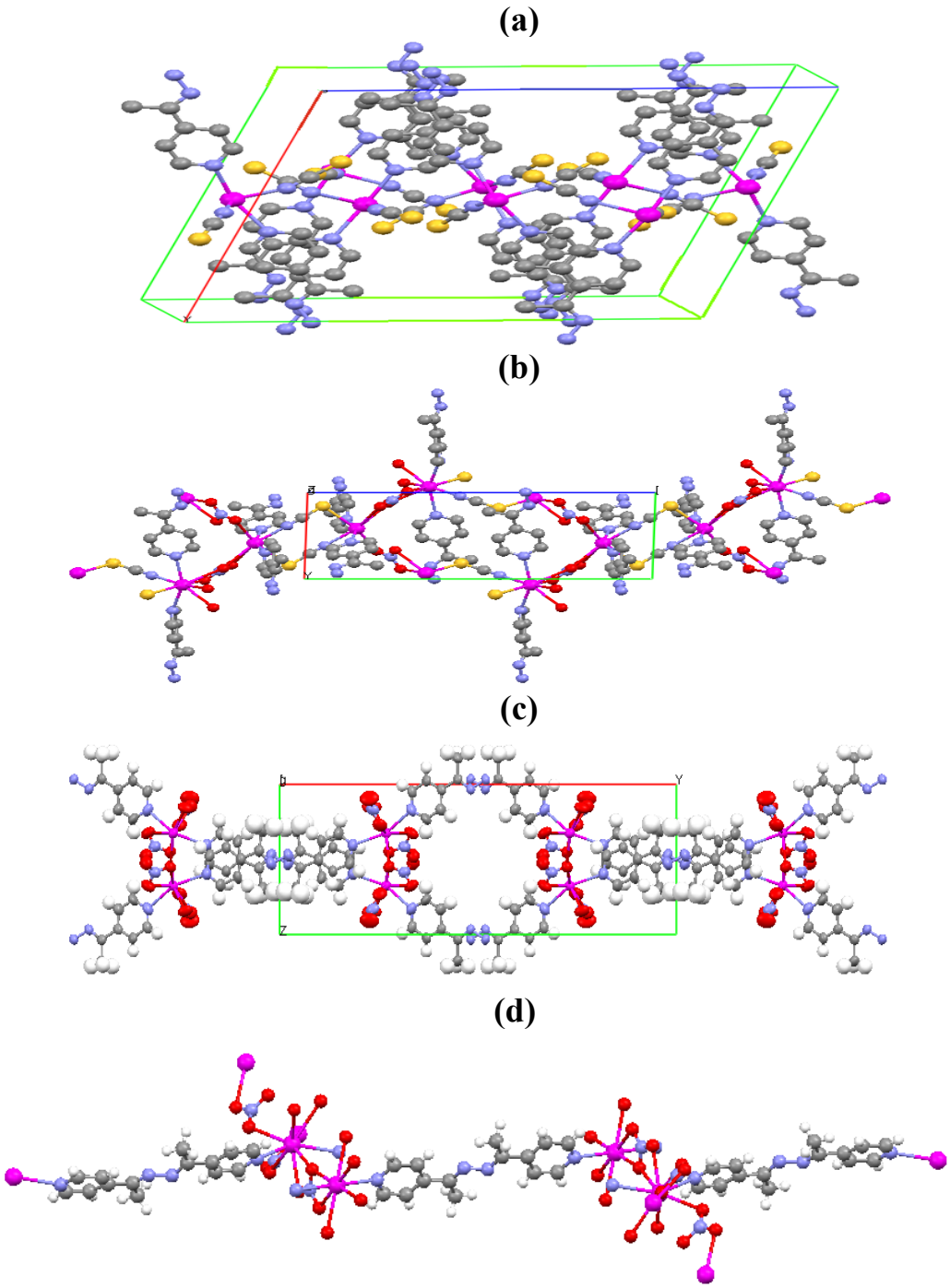


Fig. S1 The coordination environments and unit cell of (a) compound $[Pb(4\text{-bpdh})(SCN)_2]_n$ (**1**) (b) compound $[Pb(4\text{-bpdh})(SCN)(NO_3)]_n$ (**2**) (c) compound $[Pb(4\text{-bpdh})(NO_3)_2(H_2O)]_n$ (**3**) and (d) compound $[Pb(4\text{-bpdh})(NO_3)_2]_n$ (**4**) (Pb= violet, O = red, C = gray and N= blue S= orange and H= white).

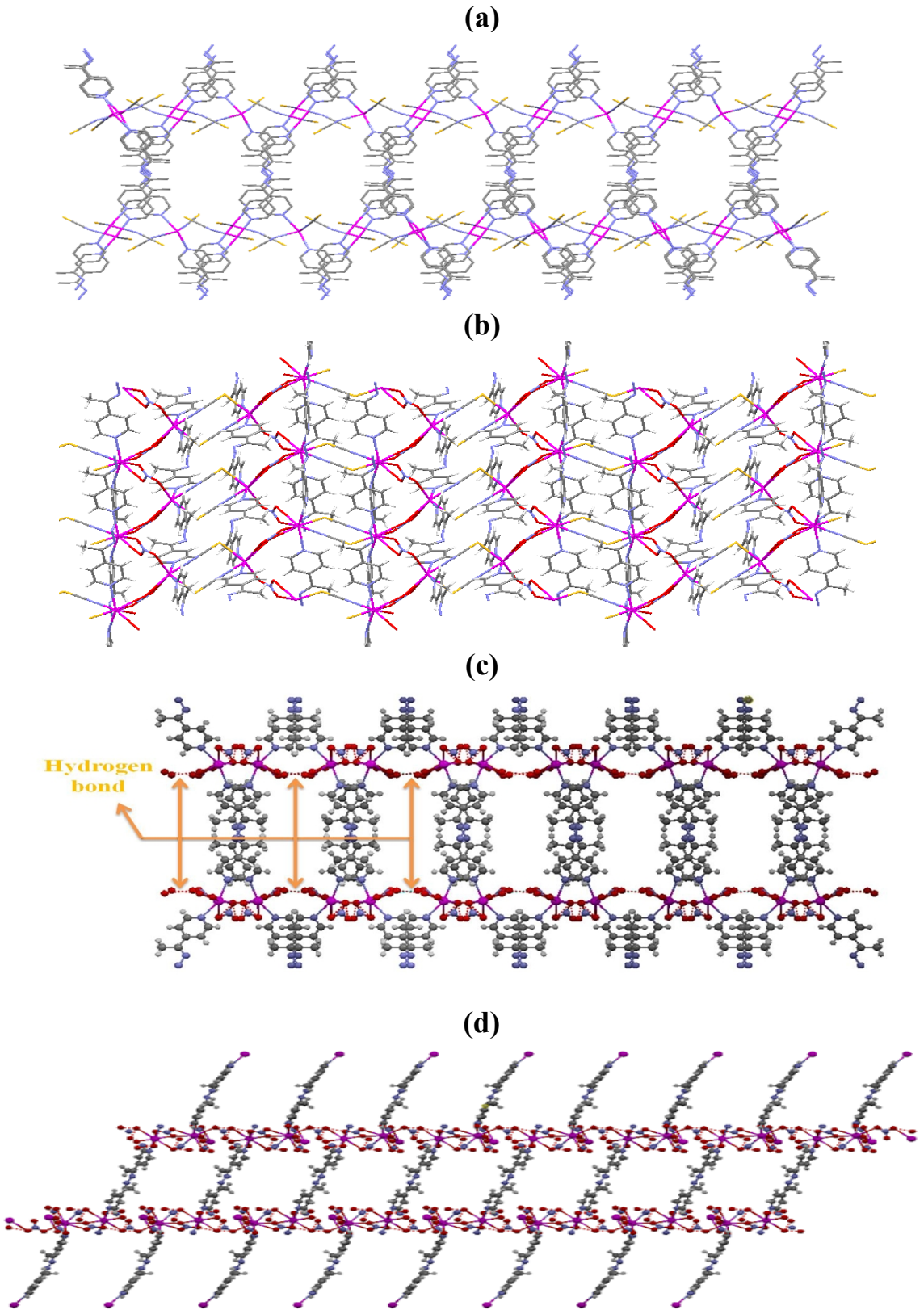


Fig. S2 A schematic diagram illustrating the interactions in polymeric chains of (a) compound **1,** (b) compound **2,** (c) compound **3** and (d) compound **4** .

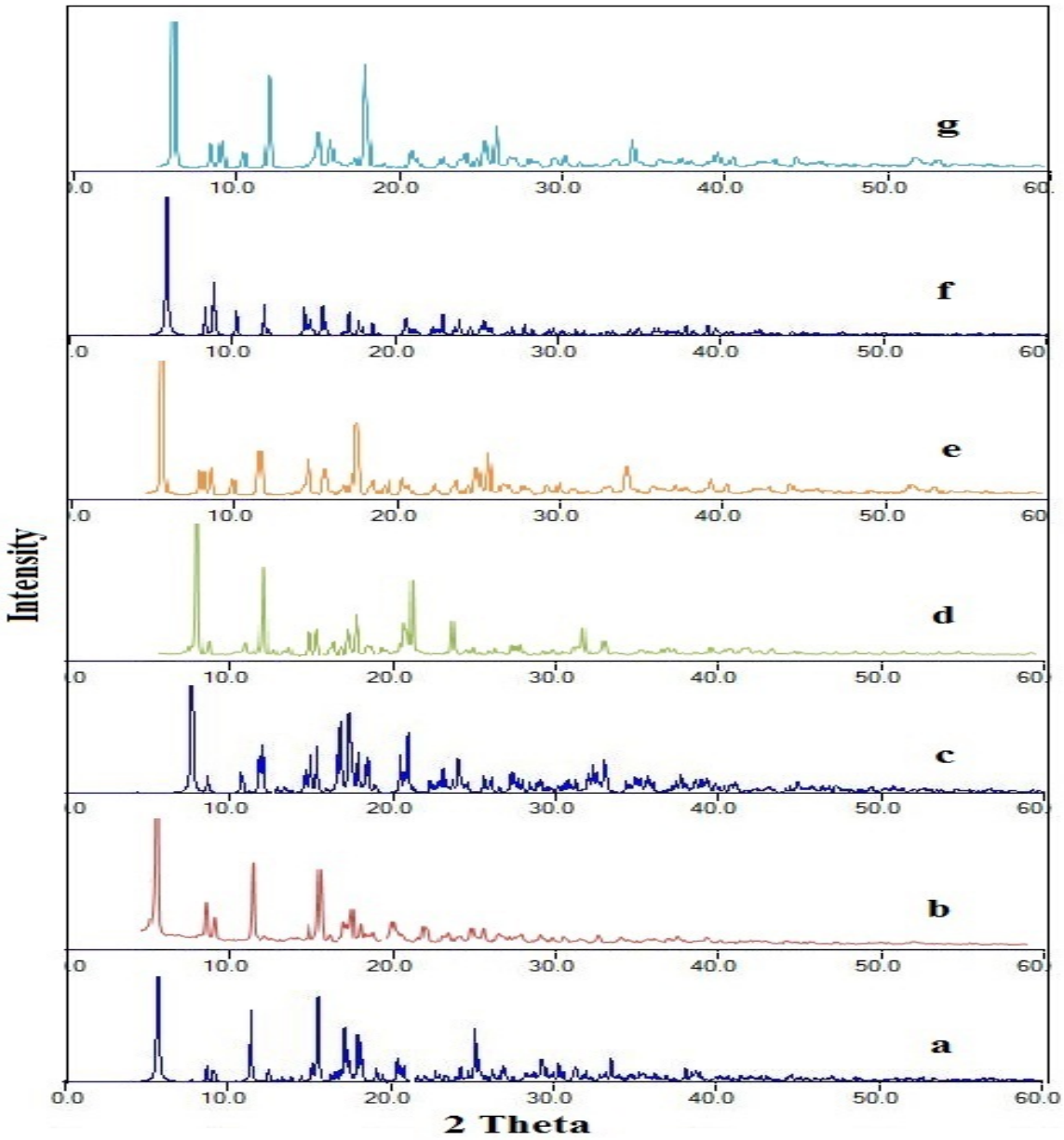


Fig. S3 The XRD patterns of (a) simulated from single crystal X-ray data of compound **1**, (b) bulk materials as synthesized of compound **1**, (c) simulated from single crystal X-ray data of compound **2**, (d) bulk materials obtained by solid state anion-replacement of compound **1** with 1 mmol $NaNO_3$**,** (e) bulk materials obtained by solid state anion-replacement of compound **2** with 1 mmol $NaNO_3$, and (f) simulated from single crystal X-ray data of compound **3**, (g) compound **3** obtained by solid state anion-replacement of compound **1** with 2 mmol $NaNO_3$.

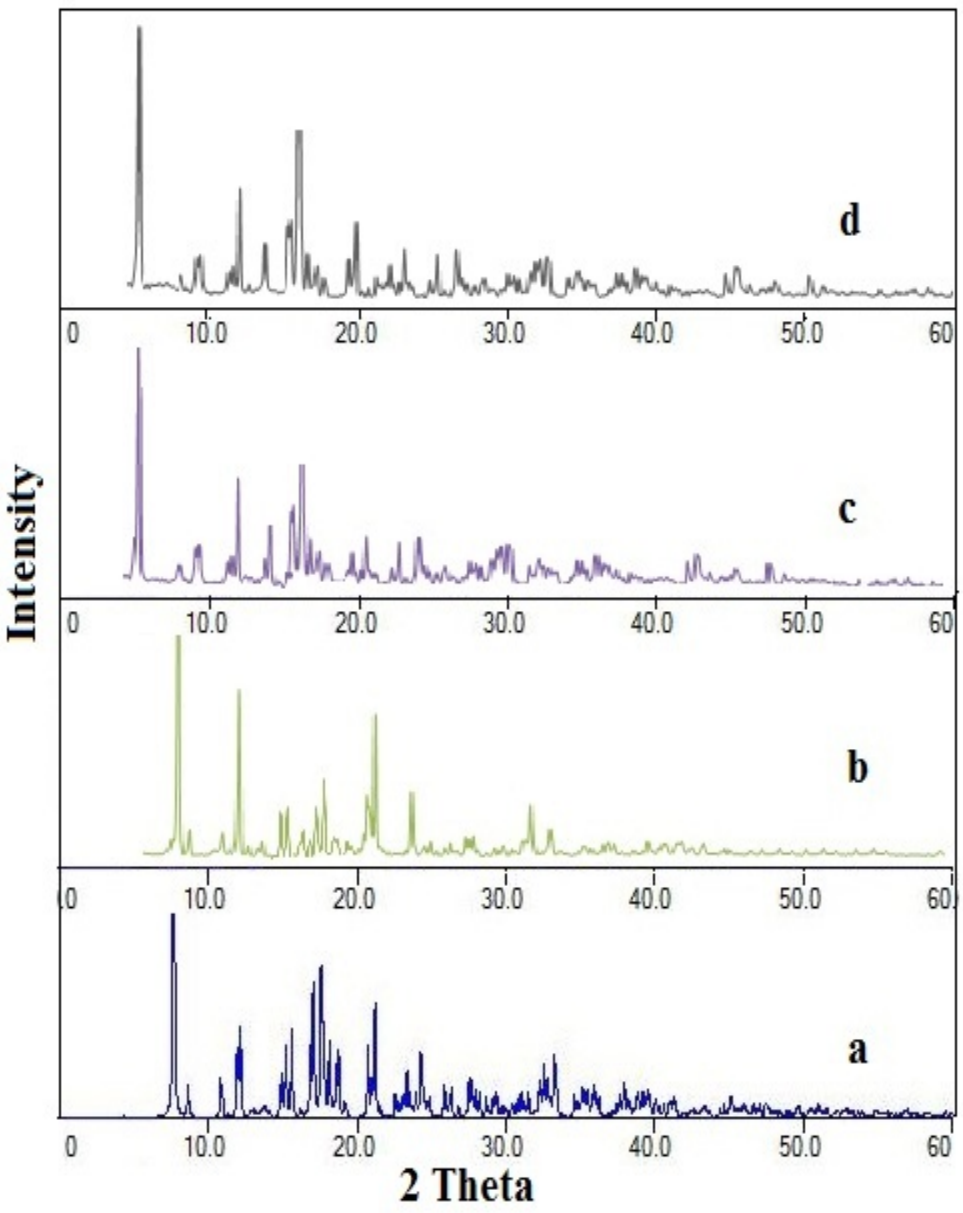


Fig. S4 The XRD patterns of (a) simulated from single crystal X-ray data of compound **2**, (b) compound **2** that obtained by solid state anion-replacement of compound **3** with 1 mmol NH_4SCN (c) compound **1** obtained by solid state anion-replacement of compound **2** with 1 mmol NH_4SCN, (d) compound **1** obtained by solid state anion-replacement of compound **3** with 2 mmol NH_4SCN.

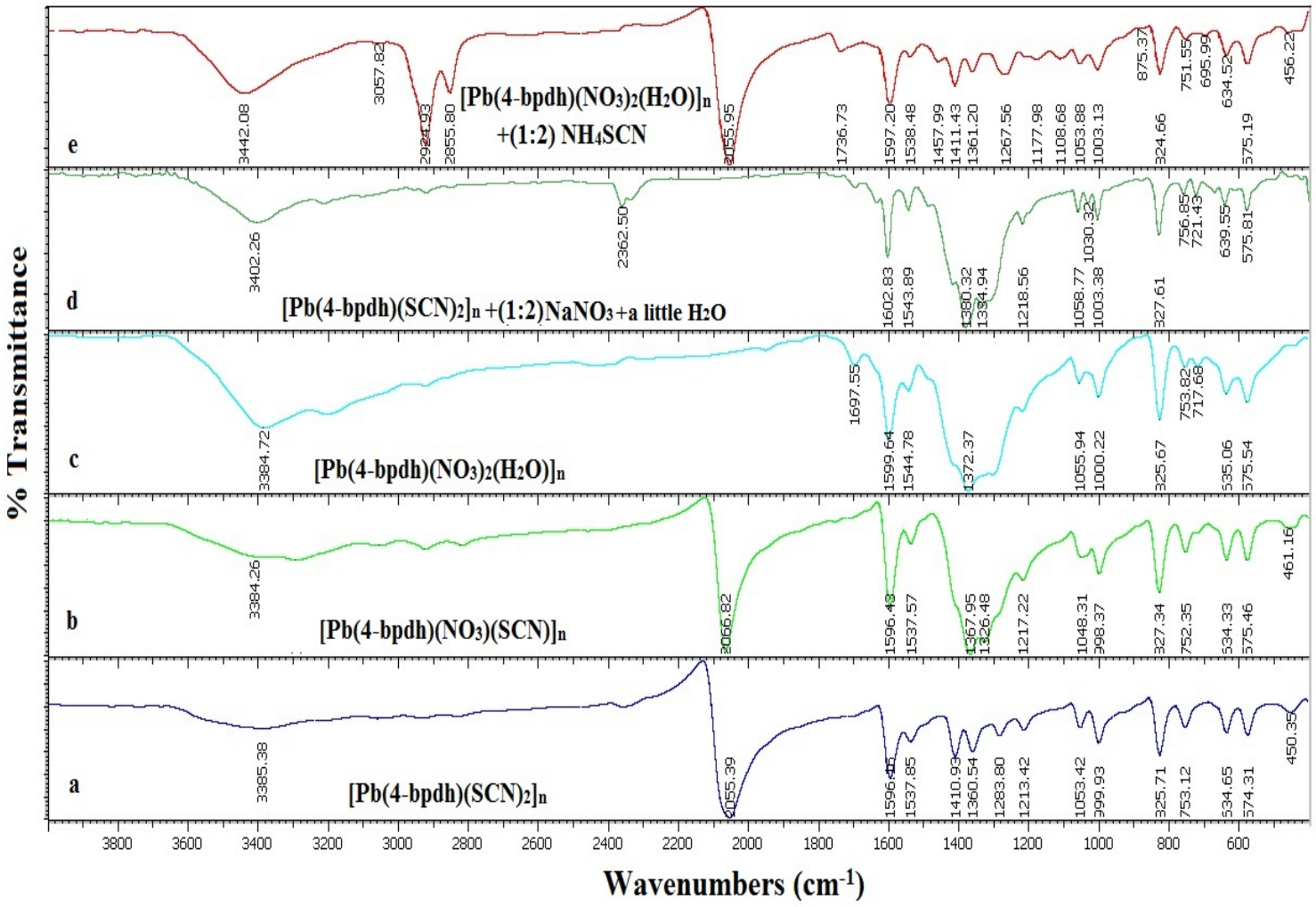


Fig. S5 IR spectra of (a) compound $[Pb(4\text{-bpdh})(SCN)_2]_n$ **(1)**, (b) bulk materials of compound $[Pb(4\text{-bpdh})(NO_3)(SCN)]_n$ **(2)** obtained by solid state anion-replacement of compound **1** by grinding with 1 mmol $NaNO_3$**,** (c) bulk materials of compound $[Pb(4\text{-bpdh})(NO_3)_2(H_2O)]_n$ **(3)** obtained by solid state anion-replacement of compound **2** by grinding with 1 mmol $NaNO_3$, (d) bulk materials obtained by solid state anion-replacement of compound **1** by grinding with 2 mmol $NaNO_3$ and a little water, and (e) bulk materials obtained by solid state anion-replacement of compound **3** by grinding with 2 mmol NH_4SCN.

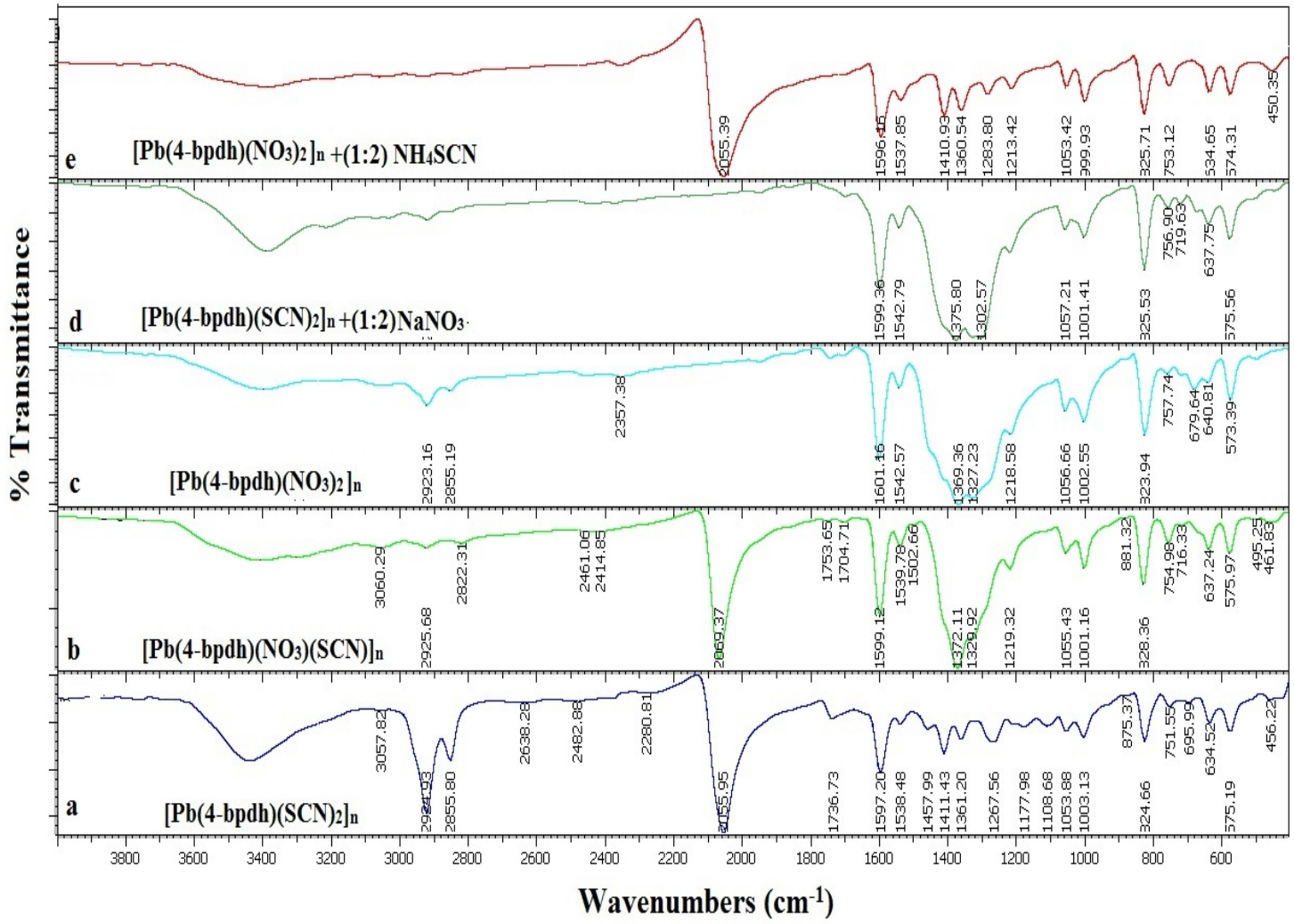
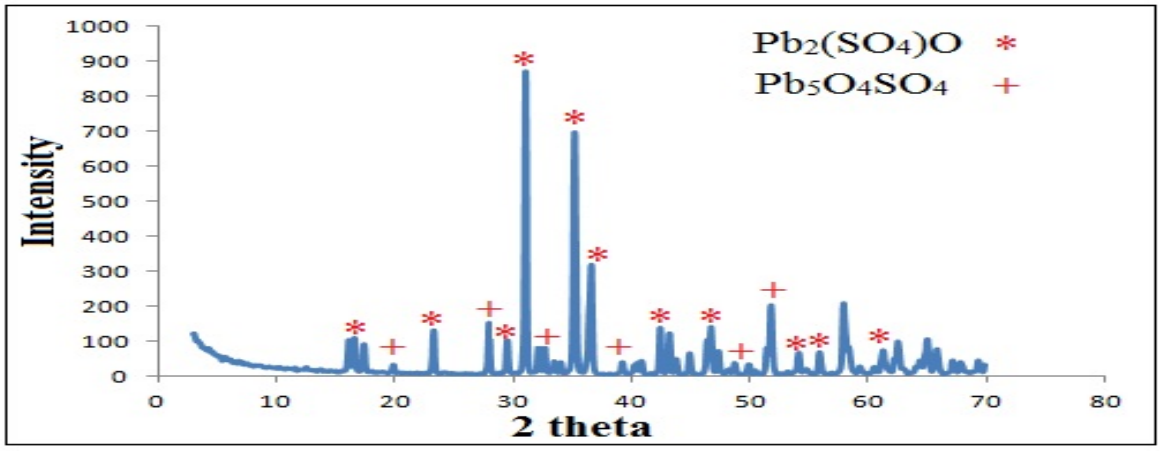
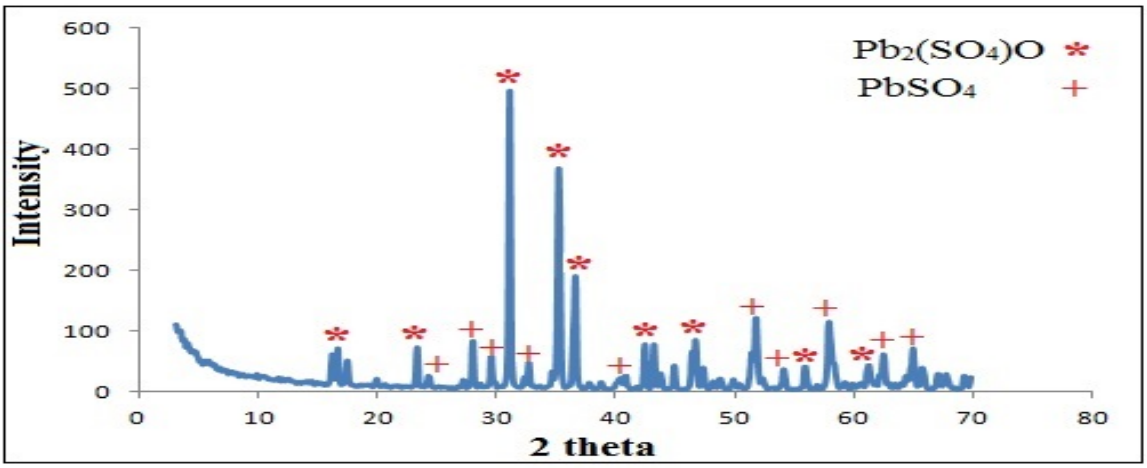


Fig. S6 IR spectra of (a) compound $[Pb(4\text{-bpdh})(SCN)_2]_n$ **(1)**, (b) bulk materials of compound $[Pb(4\text{-bpdh})(NO_3)(SCN)]_n$ **(2)** obtained by solid state anion-replacement of compound **1** by grinding with 1 mmol $NaNO_3$**,** (c) bulk materials of compound $[Pb(4\text{-bpdh})(NO_3)_2]_n$ **(3)** obtained by solid state anion-replacement of compound **2** by grinding with 1 mmol $NaNO_3$, (d) bulk materials obtained by solid state anion-replacement of compound **1** by grinding with 2 mmol $NaNO_3$, and (e) bulk materials obtained by solid state anion-replacement of compound **3** by grinding with 2 mmol NH_4SCN.

(a)



(b)



(c)

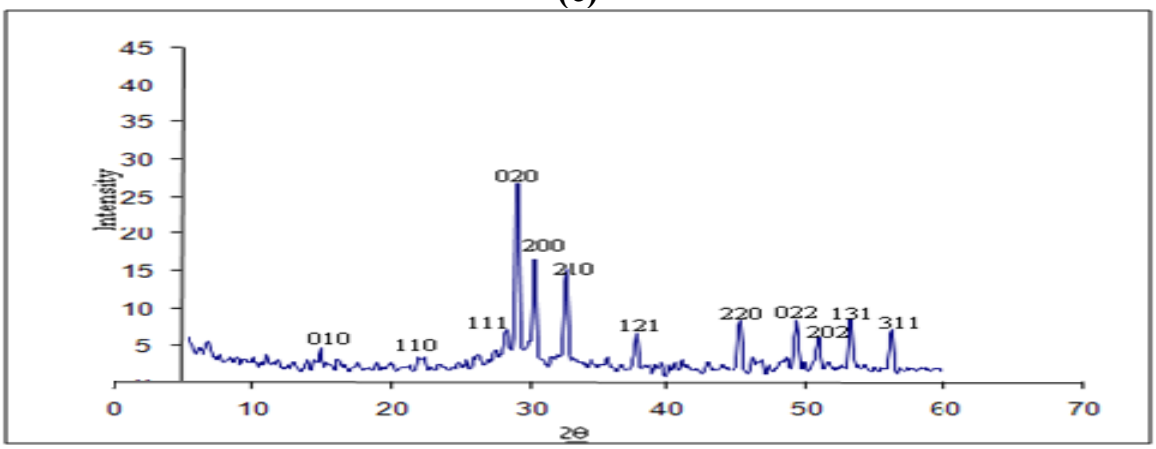


Fig. S7 XRD patterns of (a) $Pb_2(SO_4)O/Pb_5O_4SO_4$, (b) $Pb_2(SO_4)O/PbSO_4$and (c) PbO nanoparticles prepared by by thermal decomposition of compounds **1**, **2** and **3, 4** at 600 °C under air atmosphere, respectively.