Electronic Supplementary Information (ESI)

Photoelectroactive ternary chalcogenido-indate-stannates with a unique 2-D porous structure

Jing Wu, Ya-Yang Pu, Xiao-Wei Zhao, Li-Wen Qian, Guo-Qing Bian, Qin-Yu Zhu* and Jie Dai*

CONTENT

Figures：

Figures

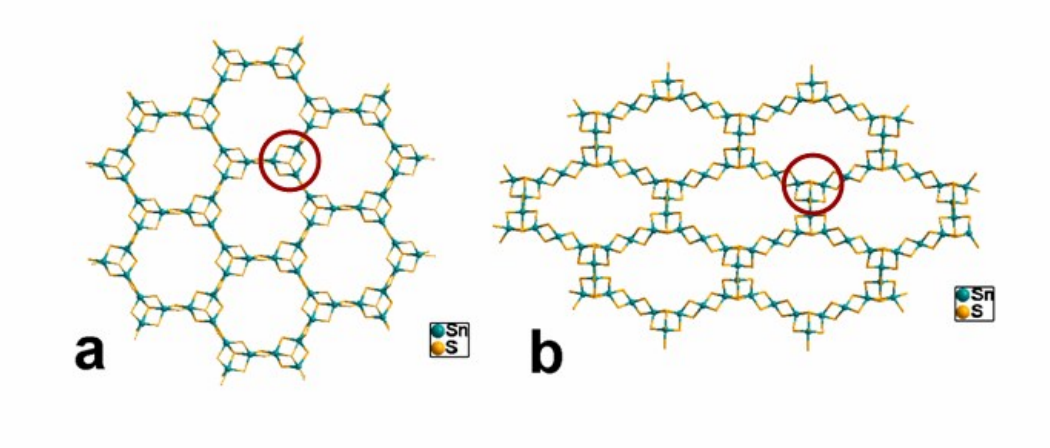
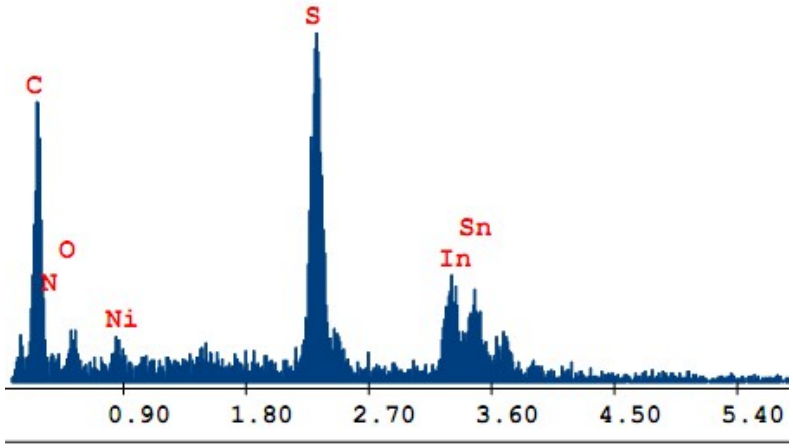
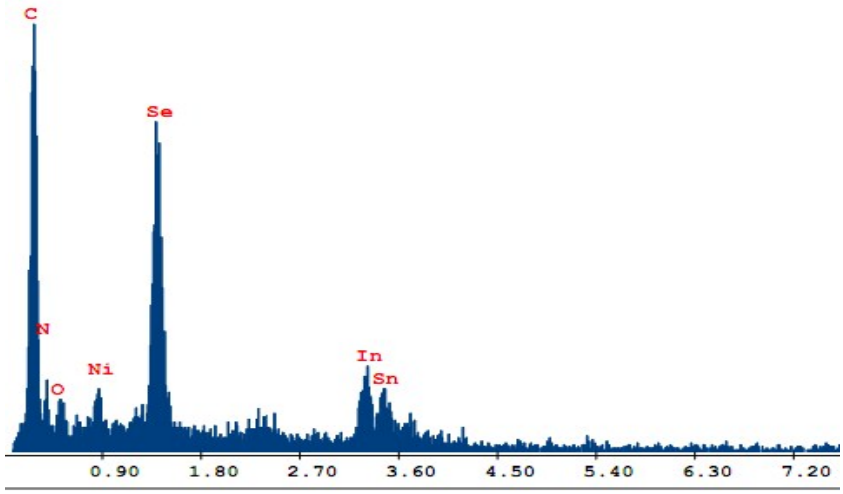


Figure S1. Two types of 2-D structures of thiostannates: (a) ortho-hexagonal 24-atom ring, and (b) elliptical-hexagonal 32-atom ring.

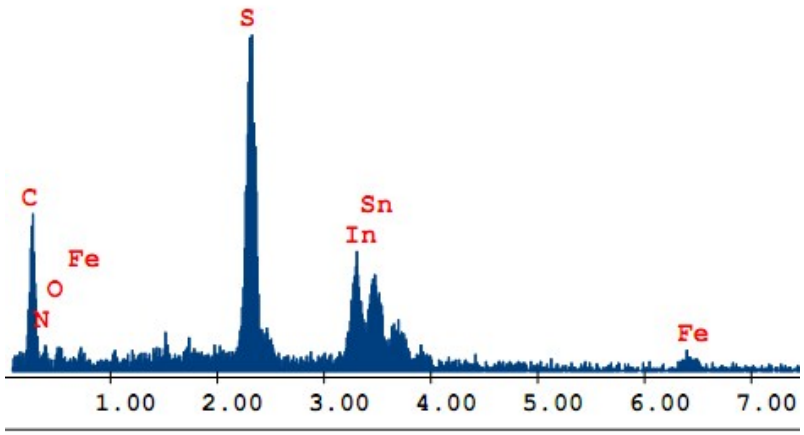
(a) InSnSNi (1)



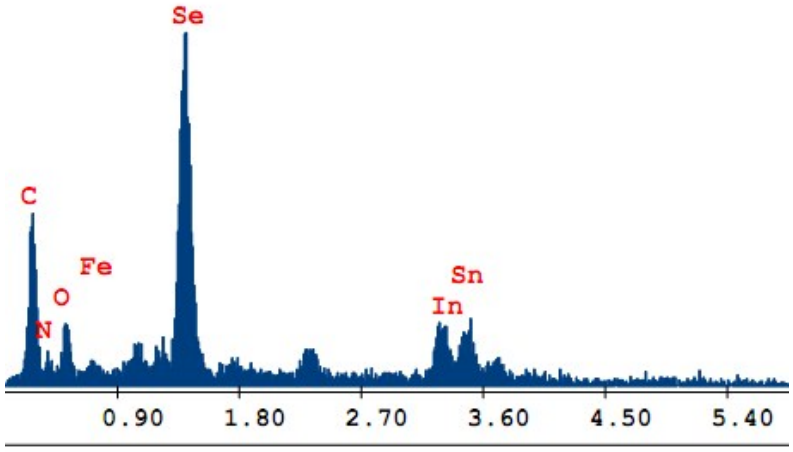
(b) InSnSeNi (2)



(c) InSnSFe (3)



(d) InSnSeFe (4)



(e) InSnSeCo (5)

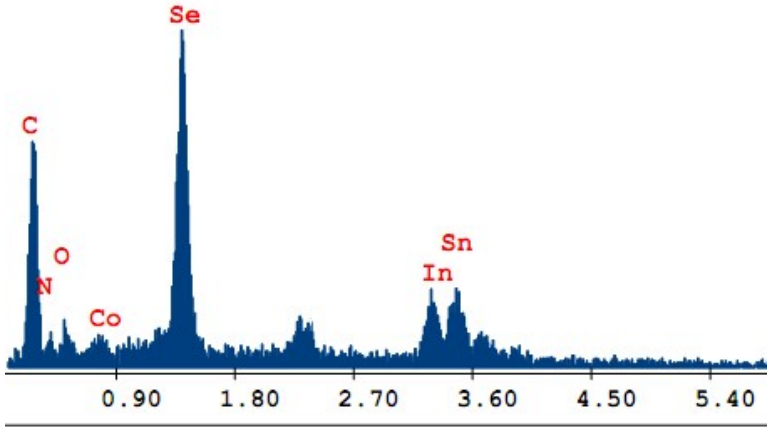


Figure S2. EDS results of compounds **1**–**5**.

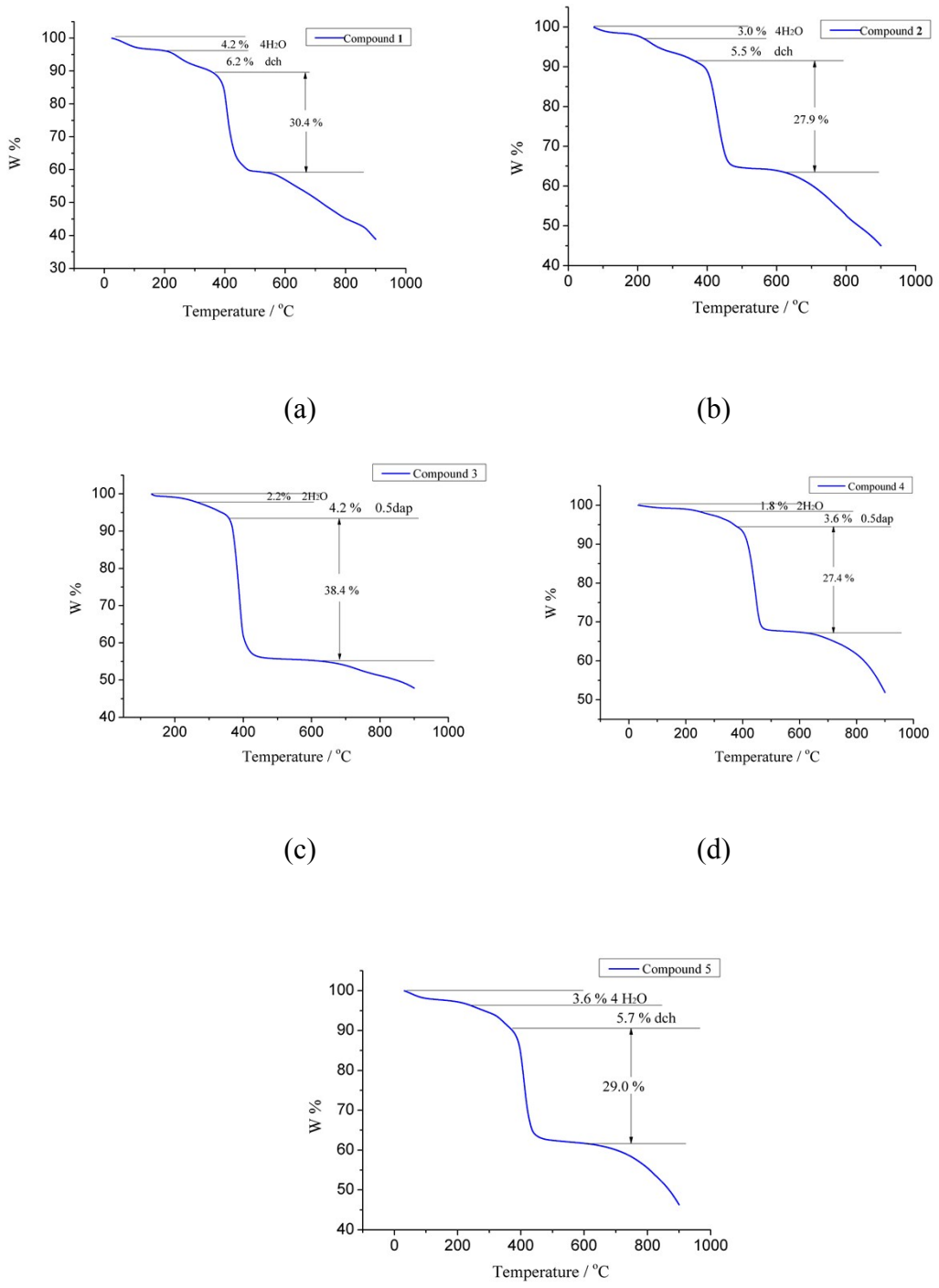


Figure S3. Thermogravimetic analysis of compounds **1-5**. Calculated weight loss of water and amine molecules: (a) 4.8 % and 6.2 % for **1**; (b) 3.8 % and 4.9 % for **2**; (c) 2.5 % and 4.1 % for **3**; (d) 2.0 % and 3.2 % for **4**; (e) 3.8 % and 4.9 % for **5**.

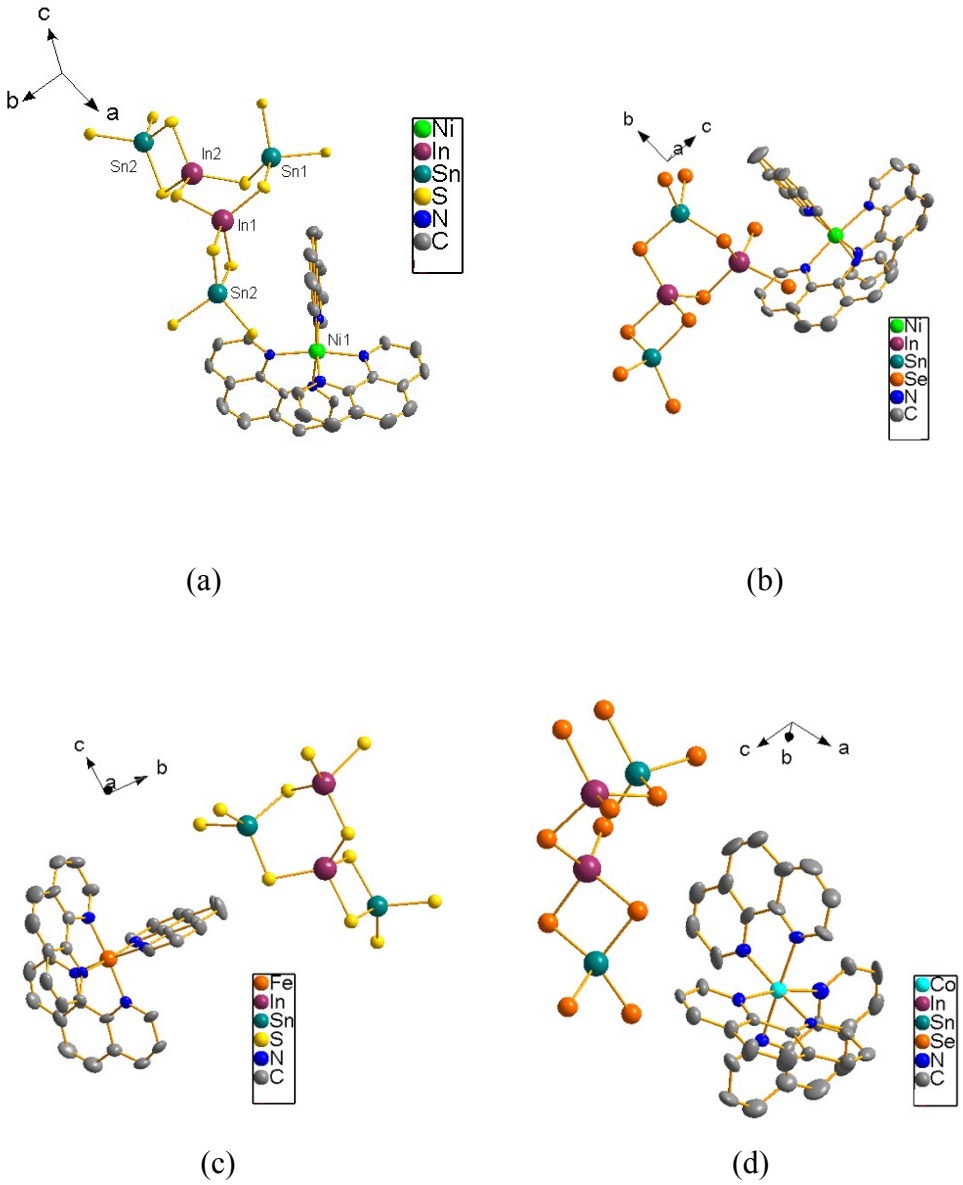


Figure S4. Asymmetric molecular structures of **1** (a), **2** (b), **3** (c), and **5**(d). The Sn and In atoms are temporary assigned for the convenience in crystallographic treatment. The In and Sn atom sites may be statistically occupied with In and Sn.

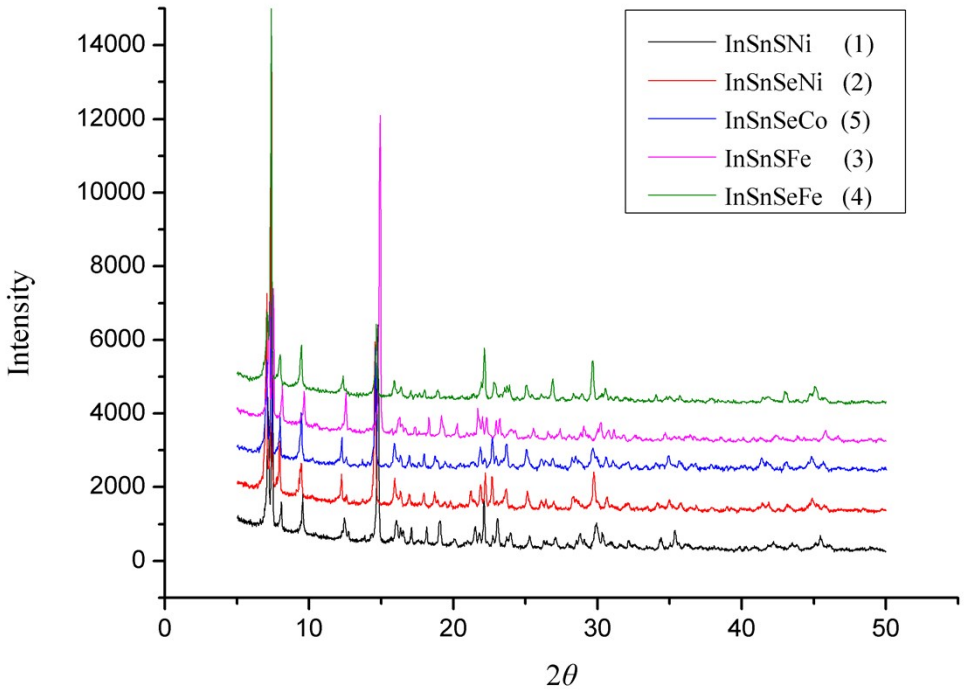
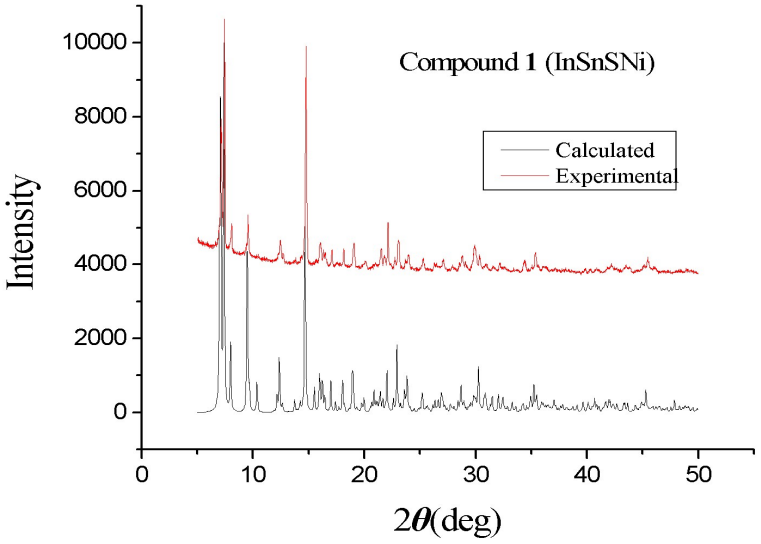
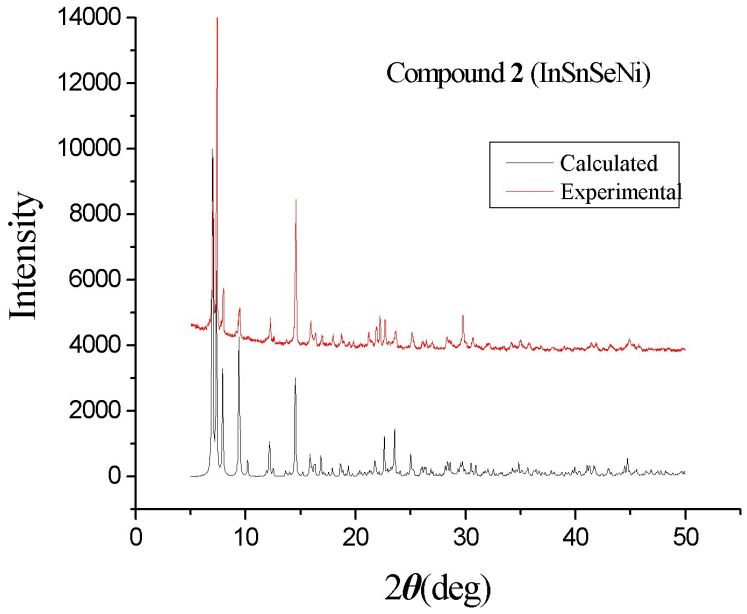


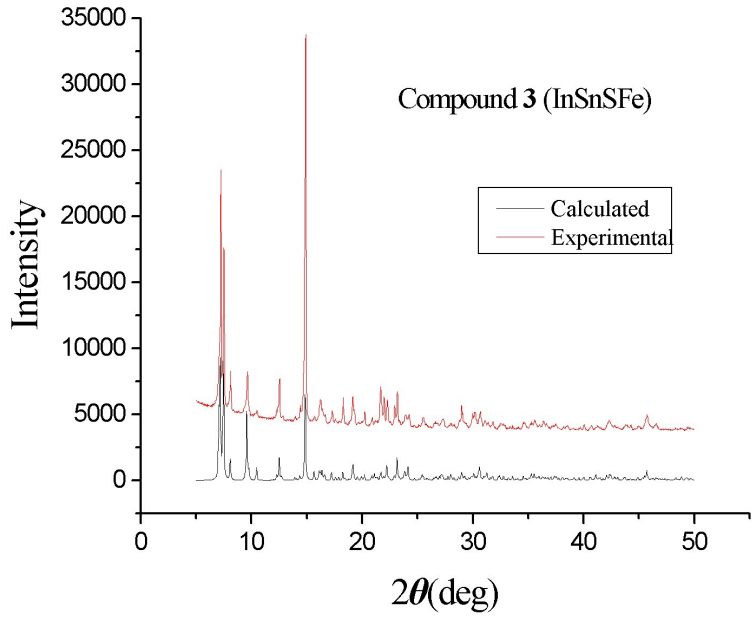
Figure S5. XRD results of compounds **1**–**5**.


Compound 1 (InSnSNi)
Calculated
Experimental
Intensity
2θ(deg)
0
2000
4000
6000
8000
10000
0
10
20
30
40
50

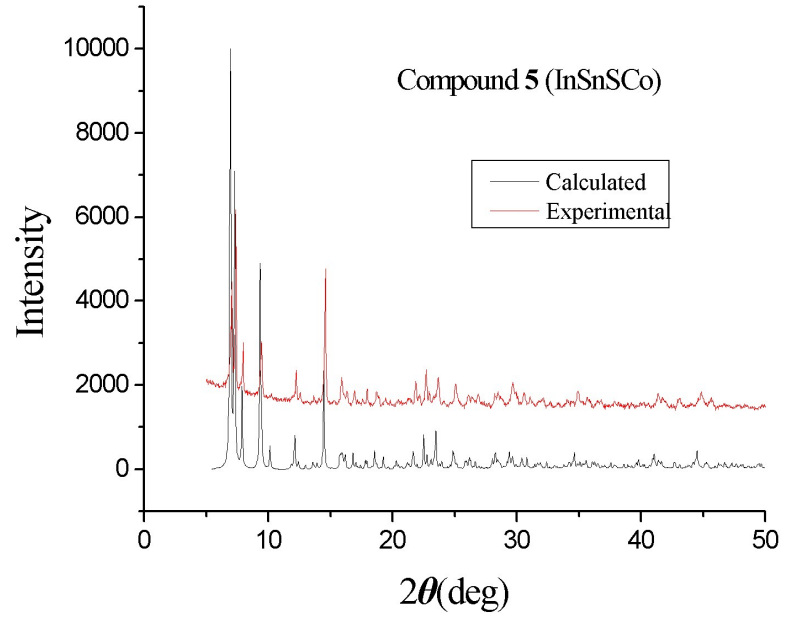
(a)


Compound 2 (InSnSeNi)
Calculated
Experimental
Intensity
2θ(deg)
0
2000
4000
6000
8000
10000
12000
14000
0
10
20
30
40
50

(b)



(c)



(d)

Figure S6. Experimental and calculated XRD results of compounds **1**–**3** and **5**.

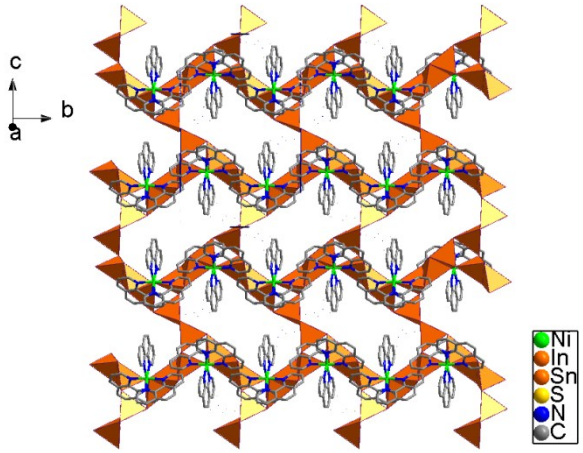


Figure S7. The 1-D tunnels formed by the windows of the porous 2-D anions, showing the orientation of Phen planes of the $[Ni(Phen)_3]^{2+}$ cations.

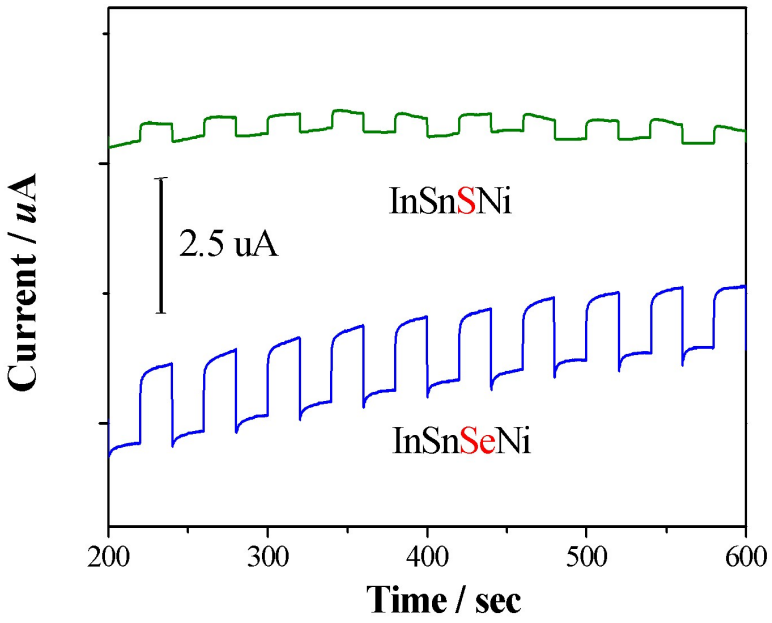


Figure S8. Photocurrent responses of the Ni-Phen compounds **1** and **2**.

Table S1 The mole ratio of In:Sn measured by ICP.

	In (mg/dm^3)	Sn (mg/dm^3)	In:Sn (in mole ratio)
Compound **1**	2.8837	2.790	1:0.936
Compound **2**	3.6659	3.641	1:0.960
Compound **3**	2.9137	2.712	1:0.900
Compound **4**	3.3368	2.771	1:0.805
Compound **5**	2.4476	2.856	1:1.128