Supporting Information for

New Crystalline 1D/2D/3D Indium Selenides Directed by Piperidine and Auxiliary Solvents

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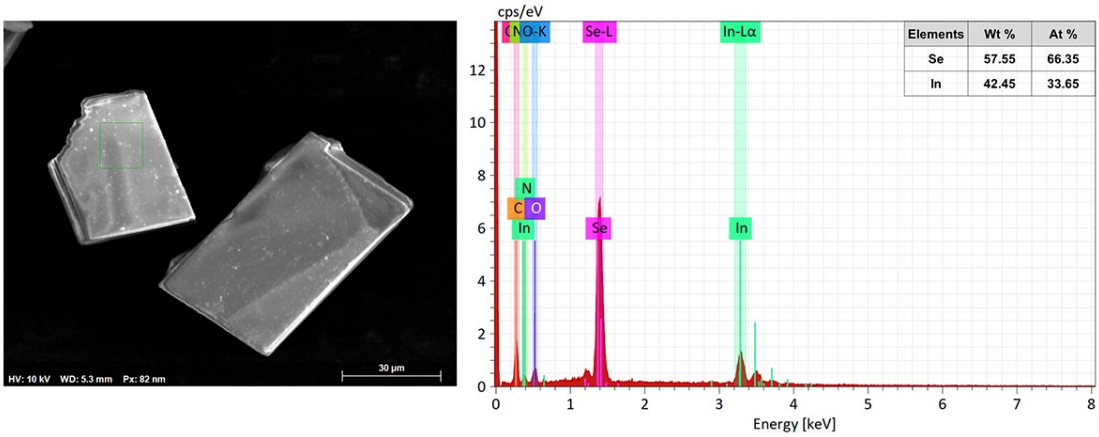

Fig. S1 SEM image and energy dispersive spectroscopy (EDS) of ISP-1.

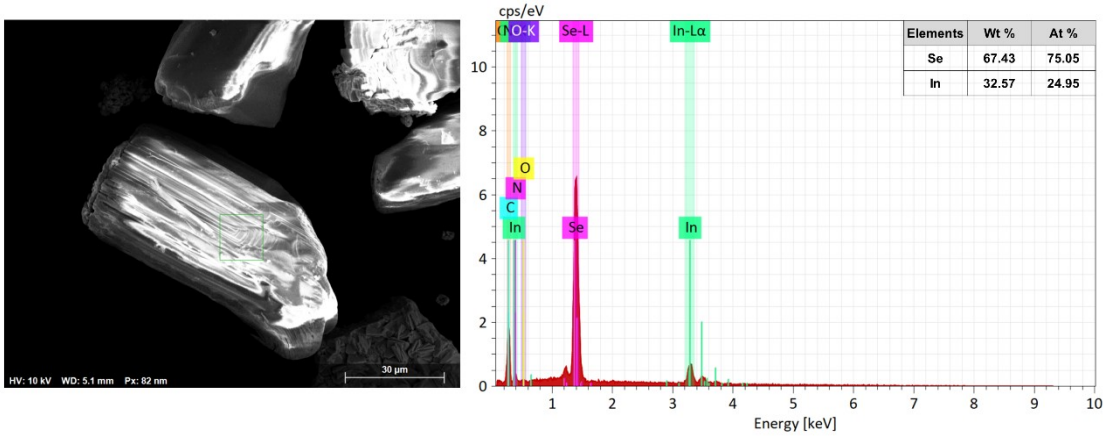

Fig. S2 SEM image and energy dispersive spectroscopy (EDS) of ISP-2.

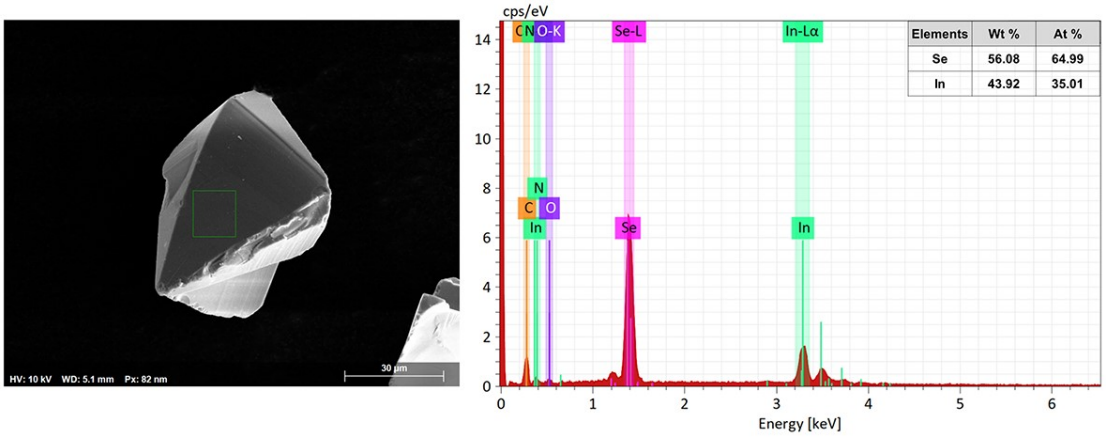

Fig. S3 SEM image and energy dispersive spectroscopy (EDS) of ISP-3.

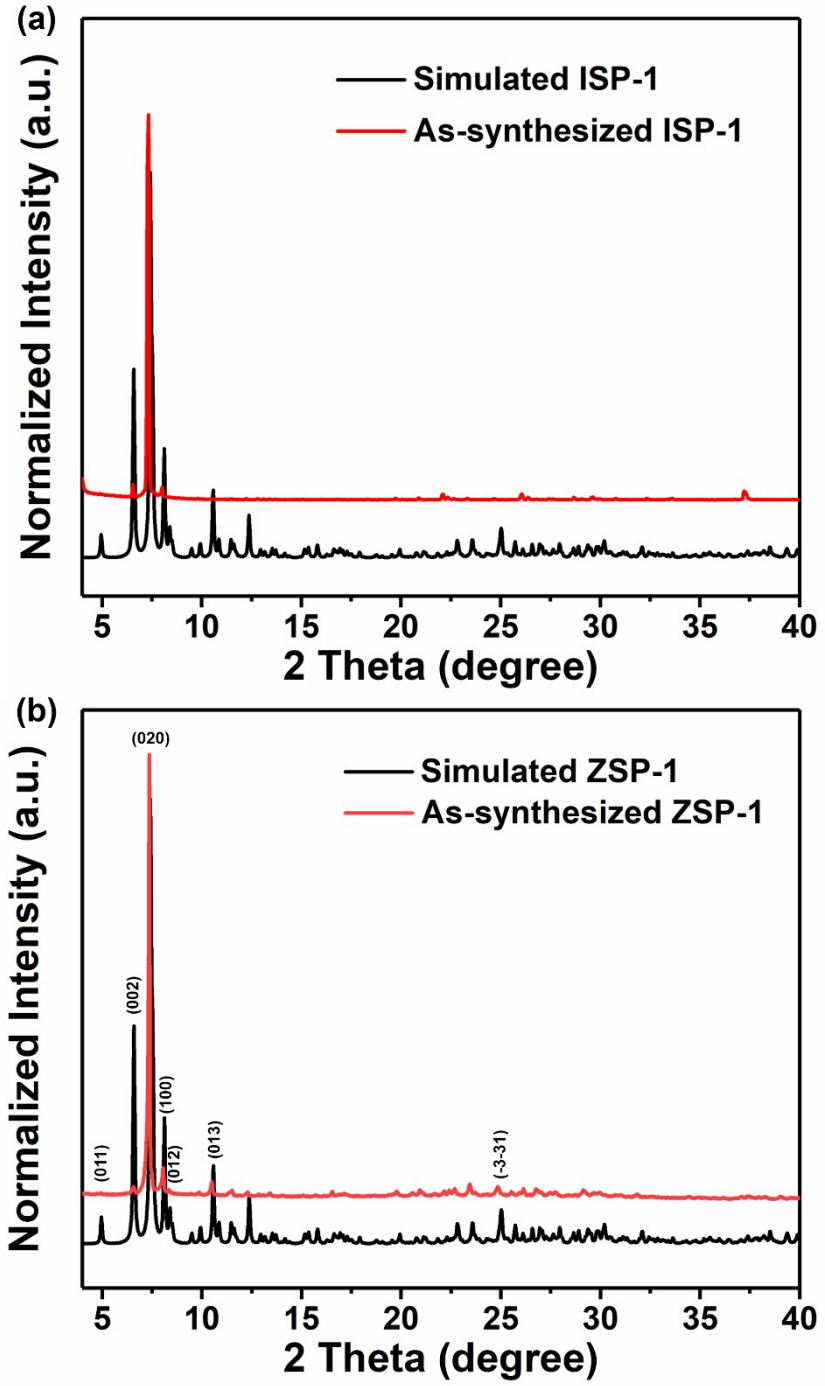

Fig. S4 Powder X-ray diffraction (PXRD) patterns of unground ISP-1(a) and grinded ISP-1 (b).

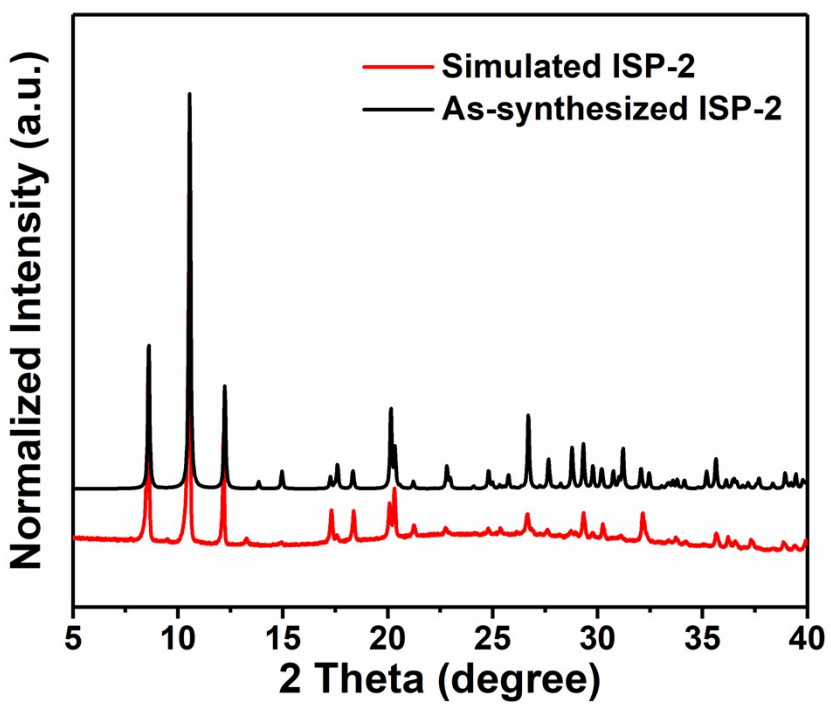

Fig. S5 Powder X-ray diffraction (PXRD) patterns of ISP-2.

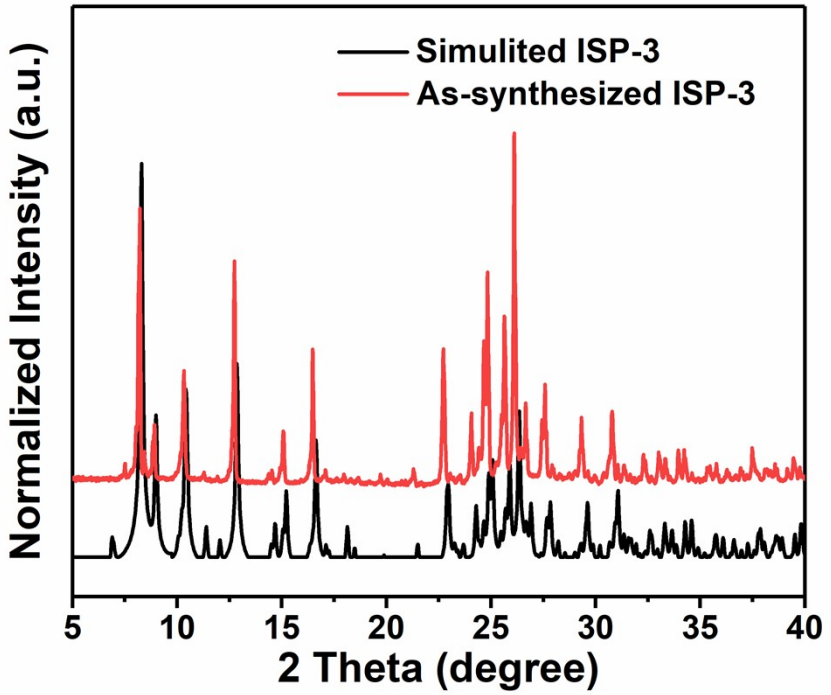

Fig. S6 Powder X-ray diffraction (PXRD) patterns of ISP-3.

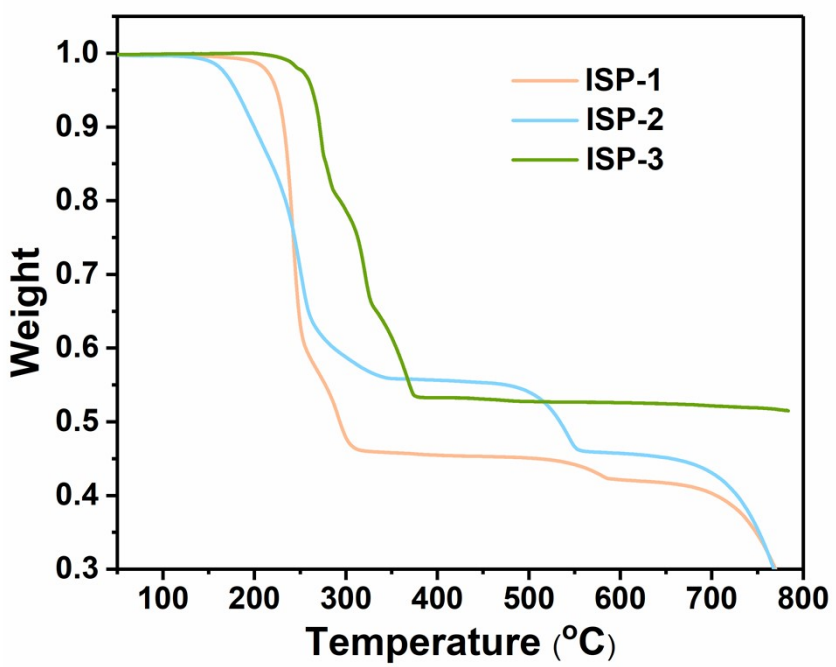

Fig. S7 TGA curves of **ISP-1**, **ISP-2** and **ISP-3**. An abrupt weight loss between 150-400°C (200°C-300°C for **ISP-1**, 150°C-350°C for **ISP-2**, 250°C-370°C for **ISP-3**) is attributed to the carbonization of template as well as the loss of adsorbed auxiliary solvents. Obviously, the thermostability of ISP-3 is better than **ISP-1** and **ISP-2**, deduced from TGA curves.

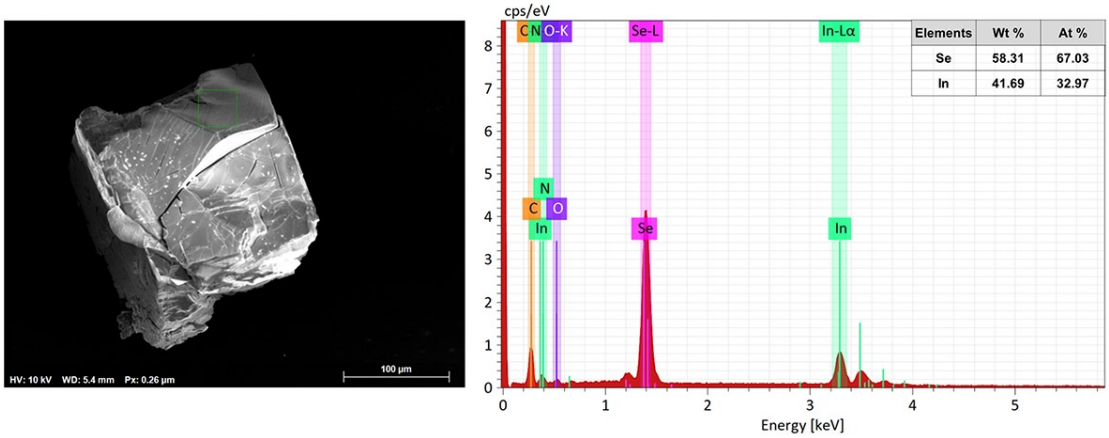

Fig. S8 SEM image and energy dispersive spectroscopy (EDS) of **ISP-4**.

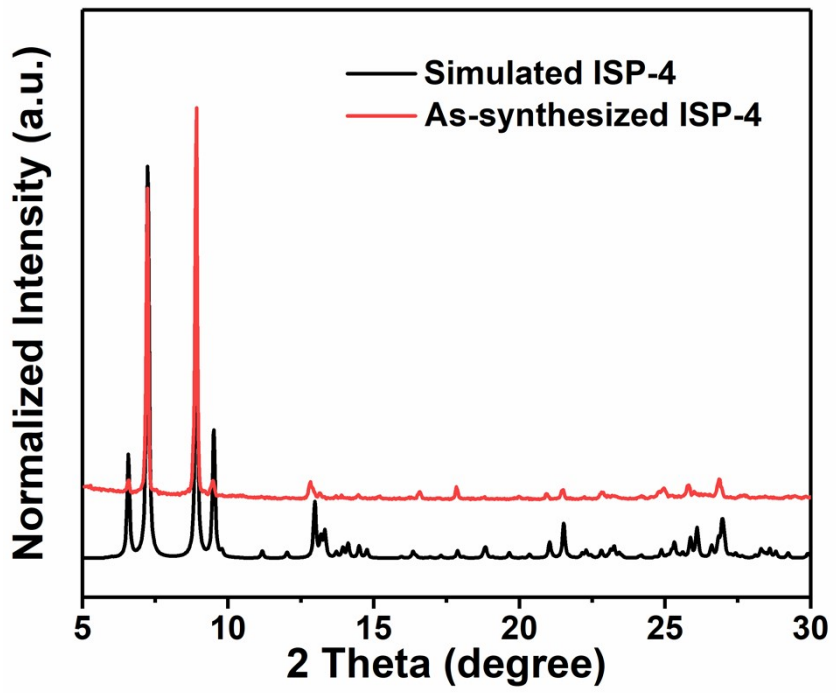

Fig. S9 Powder X-ray diffraction (PXRD) patterns of **ISP-4**.

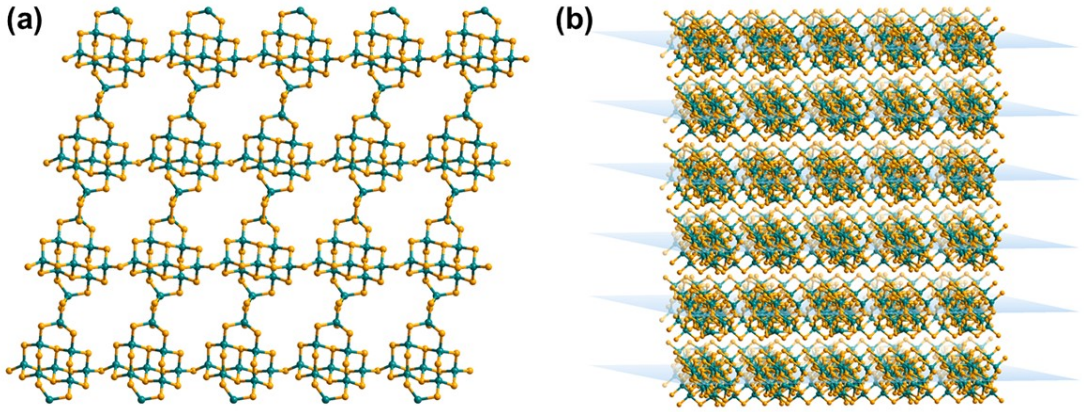

Fig. S10 (a) 2D layered structure of **ISP-1** viewed from *b*-axis and (b) the stacked structure along with *b*-axis.

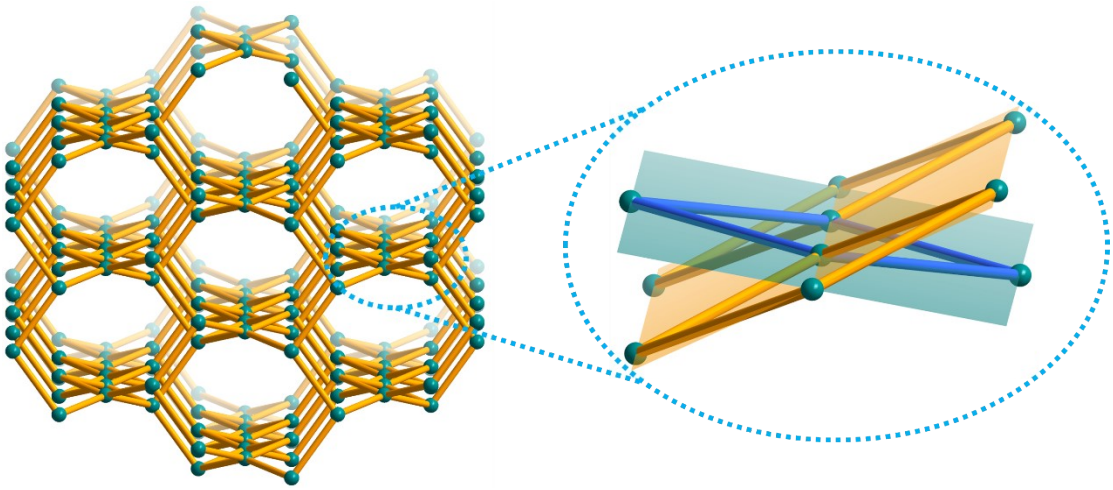

Fig. S11 Catenulate structures composed by four-membered rings in **ISP-4**.

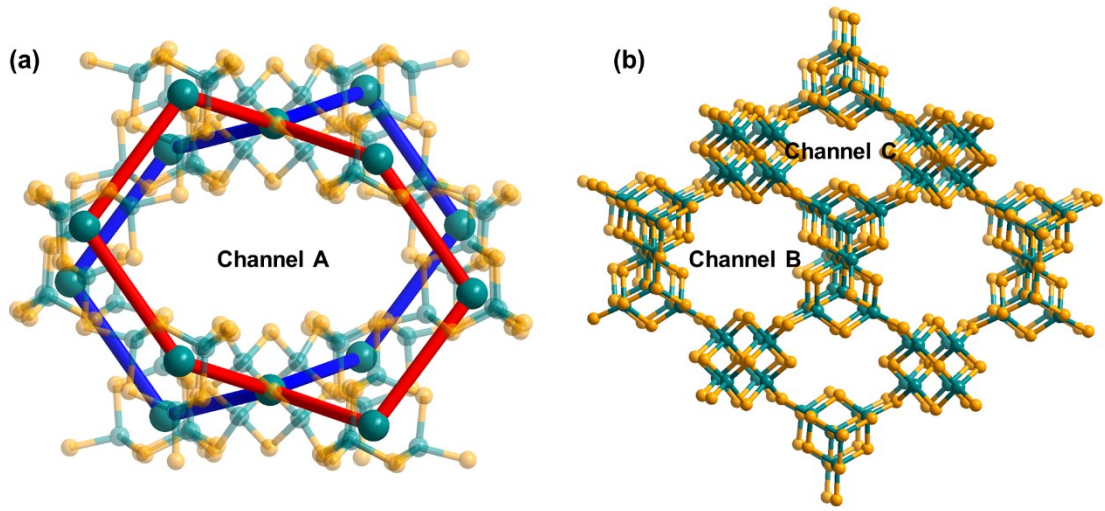

Fig. S12 (a) Interlaced eight-membered ring constructed Channel A (along with *a*-axis) and (b) six-member rings and four-member rings constructed channel B and C (along with *b*-axis) in **ISP-4**.

Table S1. Crystal data and structure refinement parameters for **ISPs**.

Compounds	**ISP-1**	**ISP-2**	**ISP-3**	**ISP-4**
Crystal system	Monoclinic	Monoclinic	Orthorhombic	Orthorhombic
Space group	P 21/c	P 21/c	P b c a	I b a m
Z	4	2	8	16
a (Å)	11.949 (15)	10.4695 (12)	19.6419 (18)	29.4109 (11)
b (Å)	23.780 (3)	14.4546 (15)	19.642 (10)	13.3976 (5)
c (Å)	27.236 (3)	7.2649 (8)	33.131 (17)	26.8483 (9)
α (deg.)	90	90	90	90
β (deg.)	100.28	101.508	90	90
γ (deg.)	90	90	90	90
V (Å^3)	7614.5 (16)	1077.3 (2)	12782 (9)	10579.2 (6)
GOF on F^2	1.059	1.055	0.987	1.183
R_1, wR_2 ($I>2\sigma(I)$)[a]	0.0577, 0.1536	0.0919, 0.2261	0.0697, 0.1880	0.0300, 0.1087
R_1, wR_2 (all data)	0.0858, 0.1761	0.1189, 0.2482	0.1421, 0.2265	0.0399, 0.1254

Note: [a] $R_1 = \sum||F_o|-|F_c||/\sum|F_o|$, $wR_2 = [\sum w(F_o^2-F_c^2)^2/\sum w\,(F_o^2)^2]^{1/2}$

Table S2. Elemental analysis results of **ISPs**.

Elements (*wt.*)	**N (%)**	**C (%)**	**H (%)**
Calculated for **ISP-1**	3.21	13.75	2.77
Experimental for **ISP-1**	3.48	14.33	3.31
Calculated for **ISP-2**	3.20	13.72	2.76
Experimental for **ISP-2**	3.15	13.26	3.34
Calculated for **ISP-3**	2.72	11.67	2.35
Experimental for **ISP-3**	2.64	12.05	2.57

Alert level B for crystallographic data of ISP-1 and ISP-2

PLAT097_ALERT_2_B Large Reported Max. (Positive) Residual Density 7.34 eA-3

DIFMN02_ALERT_2_B The minimum difference density is < -0.1*ZMAX*1.00

_refine_diff_density_min given = -5.111

Test value = -4.900

PLAT098_ALERT_2_B Large Reported Min. (Negative) Residual Density -5.11 eA-3

Response: Both Se and In atoms are heavy atoms and it is common for the large peaks appearing on the side of these heavy atoms. The large peaks near In and Se in ISP-1 and ISP-2 are derived from Fourier truncation error of heavy atom, resulting in Alert level B in checkcif.