Supporting Information.

Surfactant-assisted hydrothermal synthesis of rGO/SnIn$_4$S$_8$ nanosheets and its application in complete removal of Cr(VI)

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Fig. S1. Nitrogen adsorption-desorption isotherm of rGO, In$_4$SnS$_8$ and rGO/SnIn$_4$S$_8$. 
Table S1: Comparison of photocatalytic activity between rGO/SnIn$_4$S$_8$ and other reported photocatalysts under visible light irradiation

| Sample               | Cr(VI) Concentration (mg/L) | Catalyst Concentration (g/L) | Irradiation time (min) | Result (%) | Reference |
|----------------------|-----------------------------|------------------------------|------------------------|------------|-----------|
| TiO$_2$(P25)         | 10                          | 0.67                         | 180                    | 50         | 1         |
| TiO$_2$(pure)        | 10                          | 0.67                         | 180                    | 30         | 2         |
| TiO$_2$/rGO          | 10                          | 0.67                         | 180                    | 98         | 2         |
| CuO/ZrO$_2$-MCM-41   | 20                          | 1                            | 30                     | 99         | 3         |
| CdS                  | 10                          | 1                            | 250                    | 79         | 4         |
| CdS/rGO              | 10                          | 1                            | 250                    | 92         | 4         |
| SnS$_2$              | 50                          | 1                            | 150                    | 36         | 5         |
| SnS$_2$/rGO          | 50                          | 1                            | 150                    | 90         | 5         |
| SnIn$_4$S$_8$        | 50                          | 0.2                          | 60                     | 89         | Present   |
| rGO/SnIn$_4$S$_8$    | 50                          | 0.2                          | 30                     | 99         | Present   |

Fig. S2: Recycled photocatalytic reduction of Cr(VI) over the rGO/SnIn$_4$S$_8$. Experimental conditions: 50mg/L initial Cr(VI) concentration, 0.5mM citric acid, 0.1g/L catalyst, pH 2, N$_2$ purging.
**Fig. S3** The XRD analysis of rGO/SnIn$_4$S$_8$ before and after 5 times photocatalytic reaction.

**Fig. S4** The FTIR Spectra of rGO/SnIn$_4$S$_8$ before and after 5 times photocatalytic reaction.
References

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