

## Electronic Supplementary Information

### Long Wavelength Emissions of $\text{Se}^{4+}$ -Doped $\text{In}_2\text{O}_3$ Hierarchical Nanostructures

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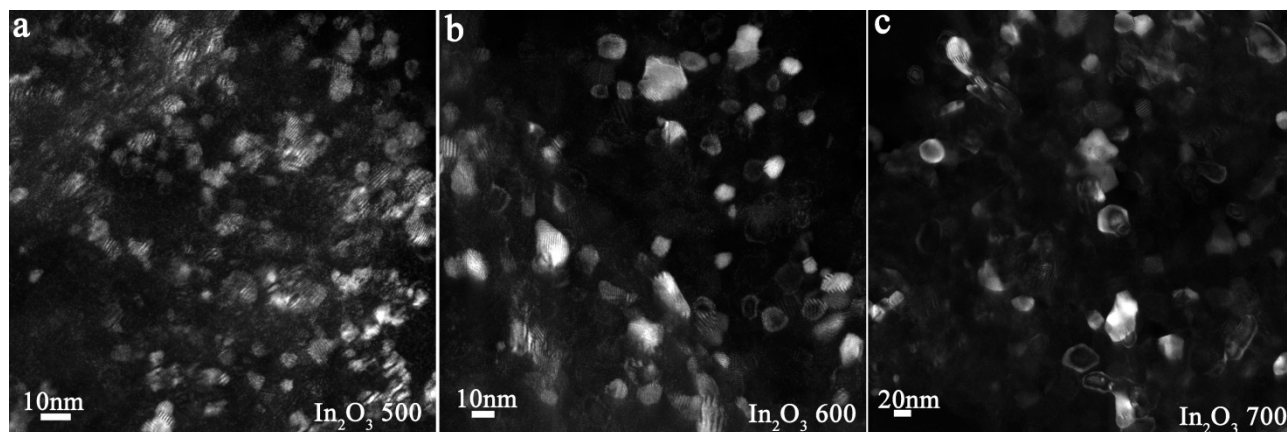


Figure S1 Dark-field TEM images of the c- $\text{In}_2\text{O}_3$  samples through thermal oxidation at different temperatures: (a) 500 °C, (b) 600 °C, and (c) 700 °C.

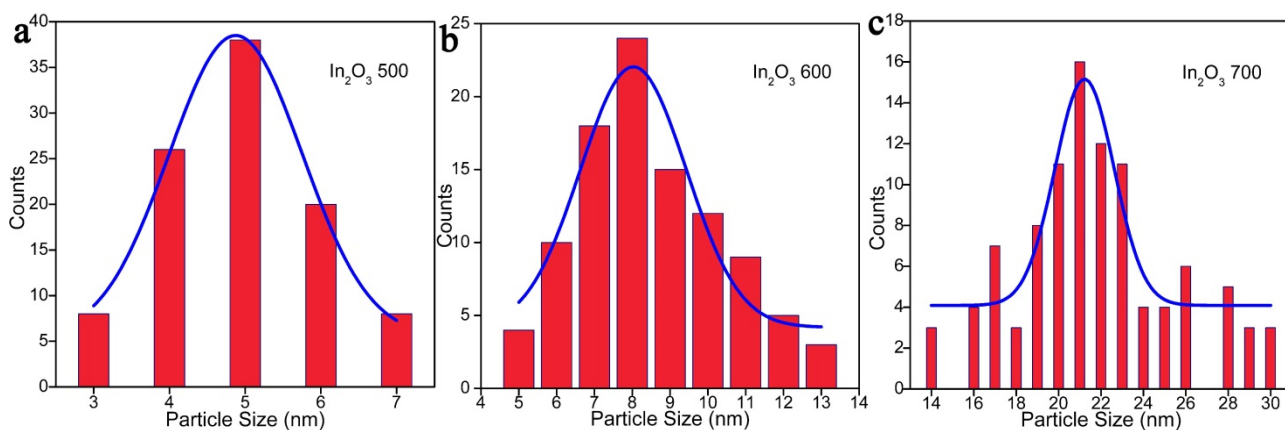


Figure S2 Statistical analyses of particle size distributions of the samples synthesized at different temperatures (average particle size is approximated by a Gaussian peak): (a) 500 °C, (b) 600 °C, and (c) 700 °C.

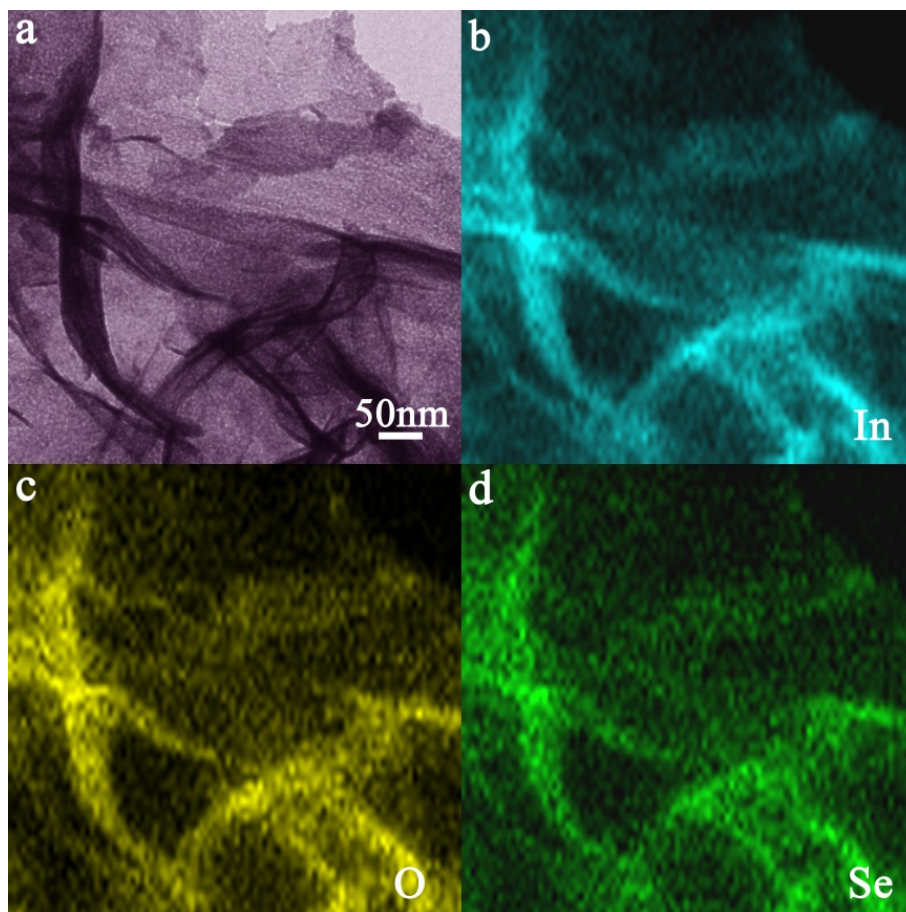


Figure S3 Compositional analysis of the synthesized  $\text{Se}^{4+}$ -doped  $\text{c-In}_2\text{O}_3$  nanostructures: (a) a TEM image, (b-d) EDS mapping of In, O, and Se, respectively.

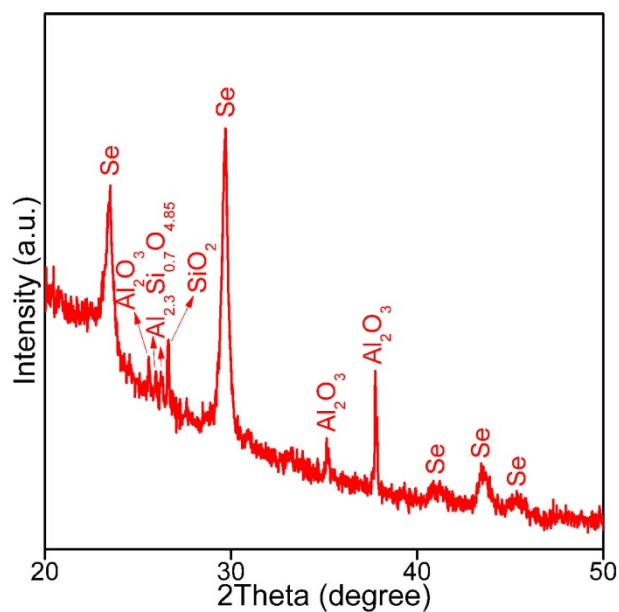


Figure S4 XRD pattern of the red powders collected from the inside surface of the corundum furnace tube after the oxidation of  $\text{In}_3\text{Se}_4$  powders ( $\text{Al}_2\text{O}_3$ ,  $\text{Al}_{2.3}\text{Si}_{0.7}\text{O}_{4.85}$ , and  $\text{SiO}_2$  were scratched from the corundum tube).