

## Supplementary Information

*for*

### Facile fabrication of alveolate $\text{Cu}_{2-x}\text{Se}$ microsheets as a new visible-light photocatalyst for **discoloration** of Rhodamine B<sup>†</sup>

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**Figure S1** Nitrogen adsorption isotherms and pore size distribution of the alveolate  $\text{Cu}_{2-x}\text{Se}$  microsheets.

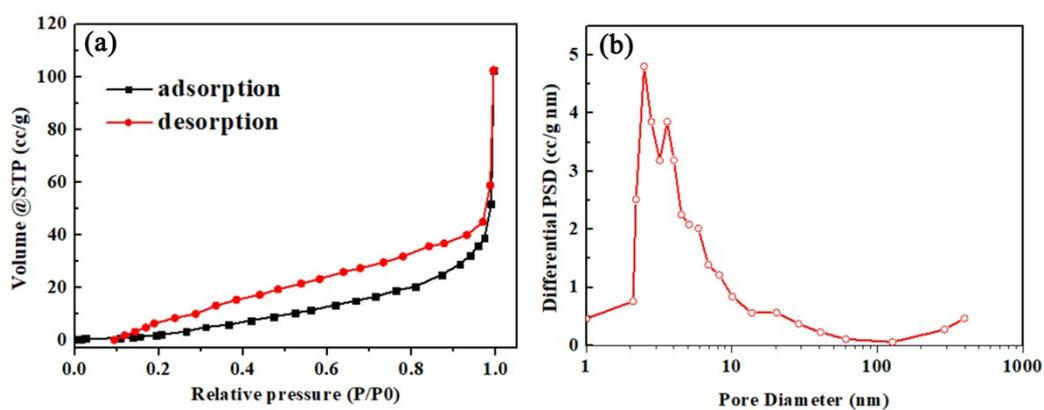
**Figure S2** EDS mapping of Cu and Se elements on alveolate  $\text{Cu}_{2-x}\text{Se}$  microsheets.

**Figure S3** Dynamic absorption of RhB and visible light discoloration of RhB over the alveolate  $\text{Cu}_{2-x}\text{Se}$  microsheets with  $\text{H}_2\text{O}_2$ .

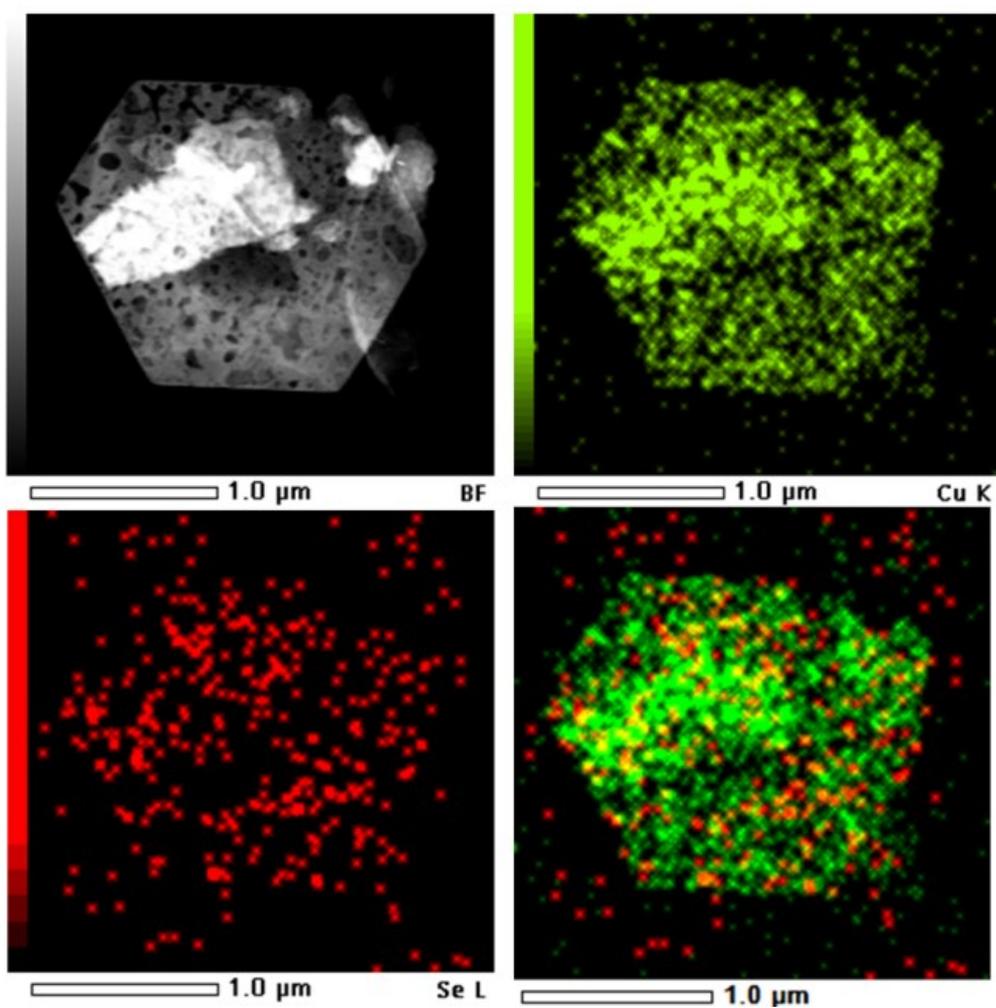
**Figure S4** pH value of RhB solution shown against the time over the alveolate  $\text{Cu}_{2-x}\text{Se}$  microsheets

**Figure S5** PL spectrum of the alveolate  $\text{Cu}_{2-x}\text{Se}$  microsheets.

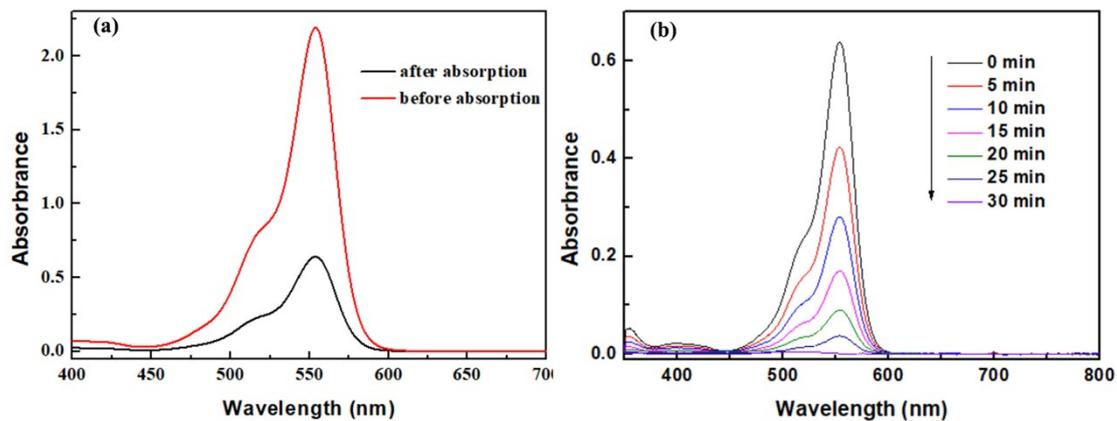
**Figure S6** UV–vis diffuse reflectance spectrum of the alveolate  $\text{Cu}_{2-x}\text{Se}$  microsheets.



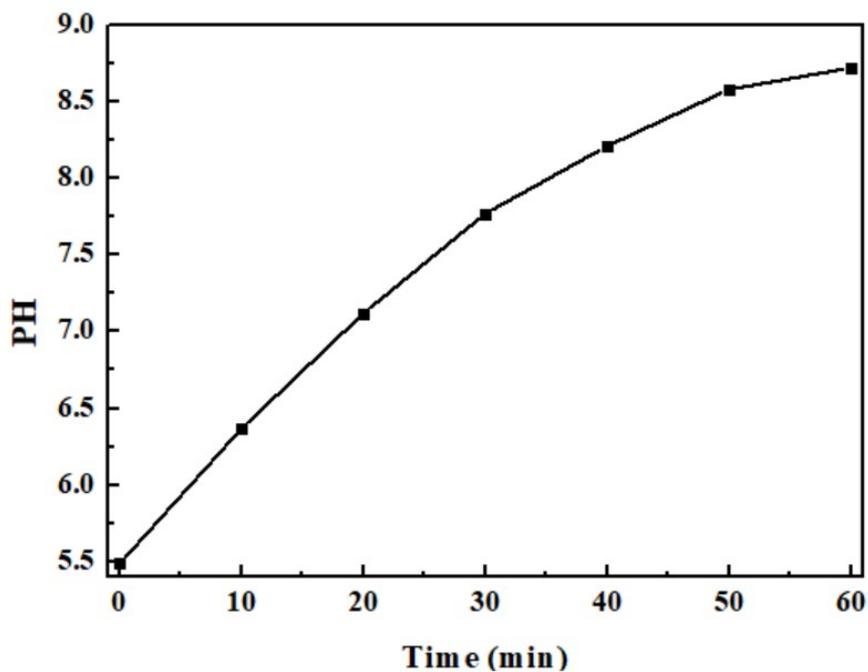
**Figure S1** (a) Nitrogen adsorption isotherms and (b) pore size distribution of the alveolate  $\text{Cu}_{2-x}\text{Se}$  microsheets.



**Figure S2** EDS mapping of Cu and Se elements on alveolate  $\text{Cu}_{2-x}\text{Se}$  microsheets.



**Figure S3** (a) Dynamic absorption of RhB on the  $\text{Cu}_{2-x}\text{Se}$  and (b) the visible light discoloration of RhB over the  $\text{Cu}_{2-x}\text{Se}$  with  $\text{H}_2\text{O}_2$  for the various times.



**Figure S4** The pH value of the RhB solution shown against the time over the alveolate  $\text{Cu}_{2-x}\text{Se}$  microsheets.

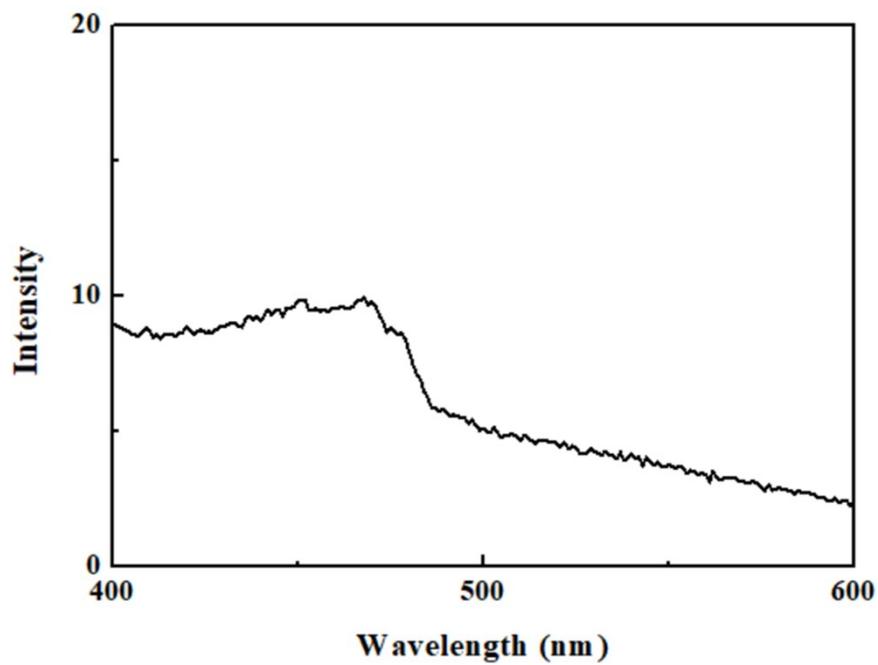


Figure S5 PL spectrum of the alveolate  $\text{Cu}_{2-x}\text{Se}$  microsheets.

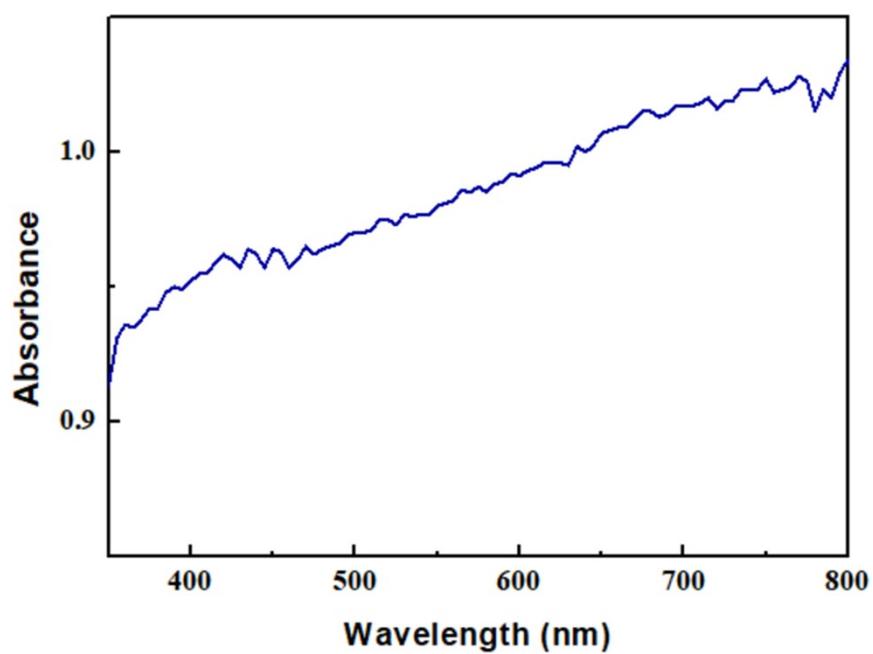


Figure S6 UV-vis diffuse reflectance spectrum of the alveolate  $\text{Cu}_{2-x}\text{Se}$  microsheets.