Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information

Visible-light photocatalysis in Cu_2Se manowires with exposed {111} facets and charge separation between (111) and $(\bar{1}\bar{1}\bar{1})$ polar surfaces

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Preparation of Cu_2Se powders. 0.100 g $Cu(Ac)_2 \cdot H_2O$ (0.5 mmol), 0.039 g of Se powder (0.5 mmol), 1.200 g NaOH, 15.0 mL of H_2O and 10.0 mL of glycerol were added in order into a Teflon-lined autoclave of 50 mL capacity, After the mixture was stirred for 30 min, the autoclave was sealed and heated at 200 ^oC for 12 h. After the heating treatment, the autoclave was cooled to room temperature naturally. The products were collected by centrifugation, washed three times with de-ionized water and absolute ethanol, respectively. Finally, the product was dried under vacuum and stored in a vacuum desiccator.

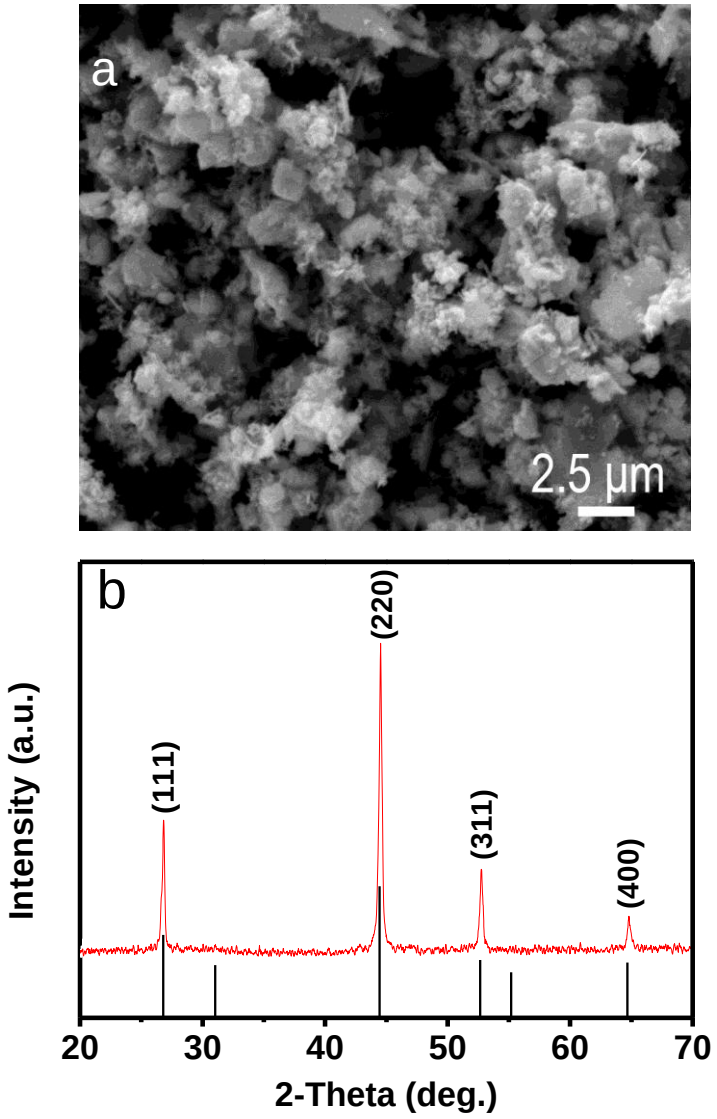

Fig. S1. SEM image and XRD pattern of Cu_2Se powders.

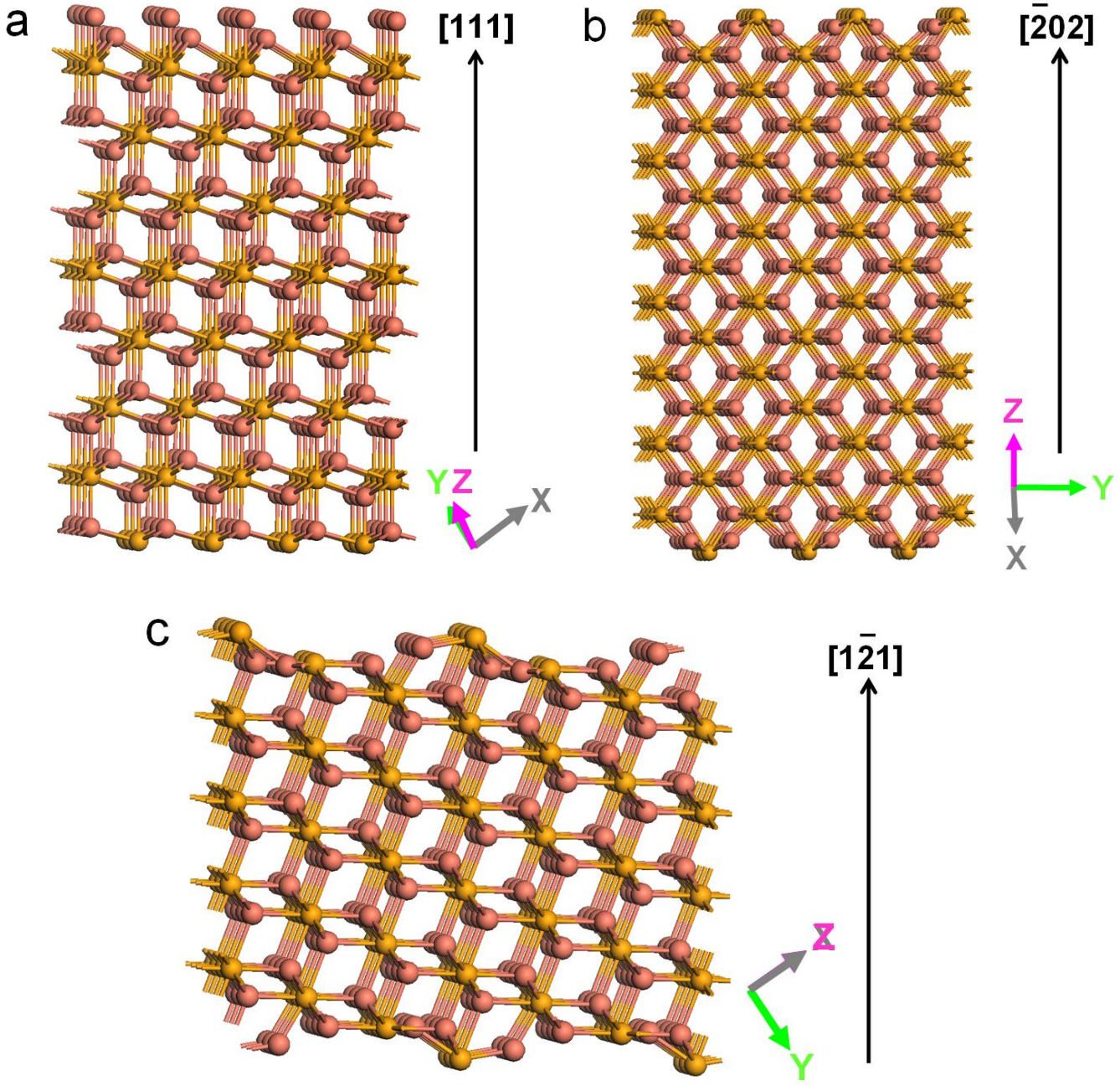

Fig. S2. Relaxed geometries for the (111), ($\bar{2}02$) and (1$\bar{2}$1) surfaces of Cu_2Se.

Table S1. The surface energies of (111), $(1\bar{2}1)$ and $(\bar{2}02)$ faces of Cu_2Se.

(111) (J/m^2)	(1-21) (J/m^2)	(-202) (J/m^2)
1.00	0.39	0.26

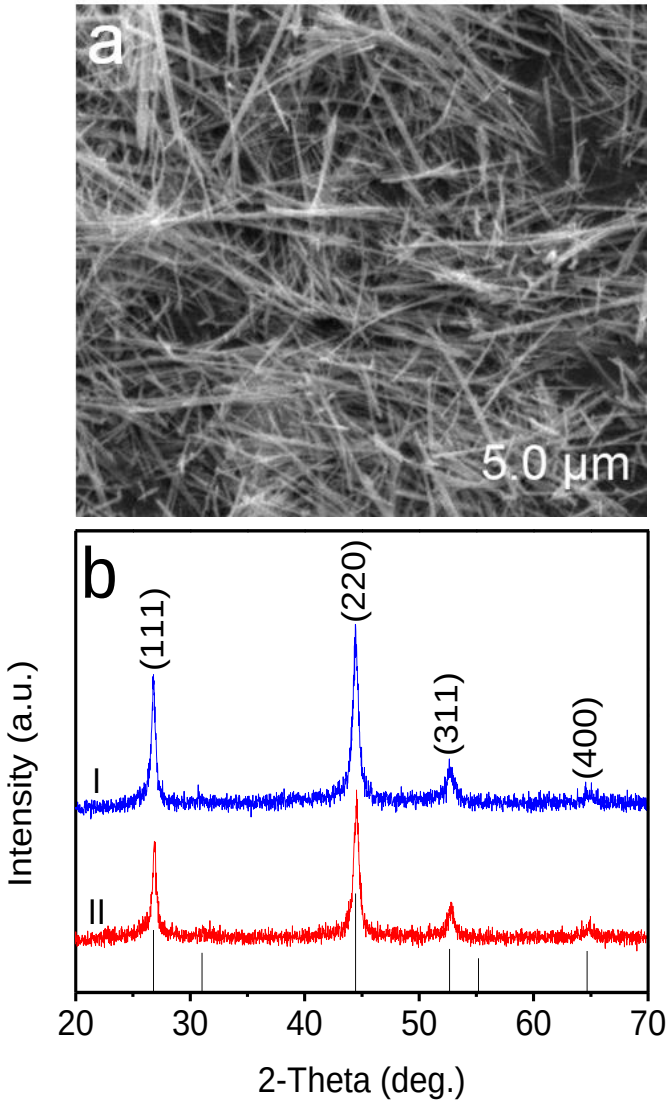

Fig. S3. (a) SEM image of the sample 3 after four cycles. (b) XRD pattern of the sample 3 before (I) and after (II) four cycles.