Supplementary Information

Liquid Phase Epitaxy of CuGaO₂ on GaN: P-N Heterostructure for Photocatalytic Water Splitting

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![Graph showing photocatalytic hydrogen generation](image)
Experimental procedure of CuGaO$_2$ synthesized by a hydrothermal method.

The CuGaO$_2$ was synthesized by the classical alcohol reduction method at low temperature. 5 mmol of Ga(NO$_3$)$_3$.xH$_2$O and 5 mmol of Cu(NO$_3$)$_2$.3H$_2$O were dissolved in 40 mL deionized water. Then, 1 M KOH water solution was slowly added to the mixture and the pH was adjusted to 7.5. After that, the hydrothermal precursor was transferred to a 150 mL container and reacted at 230°C for 3 h. After discarding the supernatant, the collected precipitates were washed with diluted ammonia (5 wt%), nitric acid solution (5 wt%) and deionized water 5 times. Finally, pure CuGaO$_2$ was obtained by washing the product with ethanol 3 times.