

## Nanocrystalline ZnSb<sub>2</sub>O<sub>6</sub>: a New Photocatalyst Synthesized by a Simple Hydrothermal Route

Hun Xue, Zhaohui Li\*, Xuxu Wang, Xianzhi Fu\*  
 Research Institute of Photocatalysis, Fuzhou University,  
 State Key Laboratory Breeding Base of Photocatalysis, Fuzhou 350002

### Abstract:

Wide band gap p-block metal semiconductors have been previously reported as photocatalysts materials for water splitting and degradations of organic pollutants. ZnSb<sub>2</sub>O<sub>6</sub> is another wide band gap p-block semiconductor, however its applications in the photocatalysis have never been reported so far. ZnSb<sub>2</sub>O<sub>6</sub> have been prepared via solid state reaction and sol-gel method. Herein we reported the preparation of nanocrystalline ZnSb<sub>2</sub>O<sub>6</sub> via a simple hydrothermal method from Sb<sub>2</sub>O<sub>5</sub> and its application for photocatalytic environmental remediation for the first time. The sample was characterized by XRD, N<sub>2</sub>-sorption BET surface area, UV-vis DRS, SEM, TEM, HRTEM and EDS. The as-prepared ZnSb<sub>2</sub>O<sub>6</sub> with small particles (ca. 10 nm) and large BET specific surface area (ca. 130 m<sup>2</sup>/g) showed high photocatalytic activity in the decomposition of gaseous acetone under UV irradiations.

**Keywords:** hydrothermal; photocatalysis; ZnSb<sub>2</sub>O<sub>6</sub>; acetone.

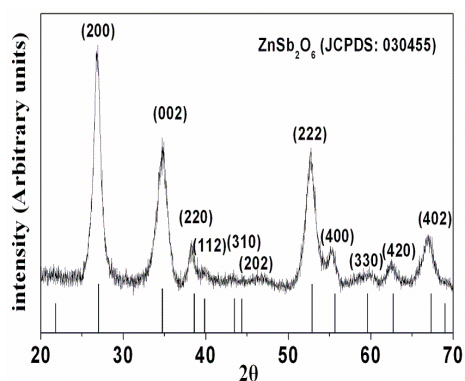


Fig. 1

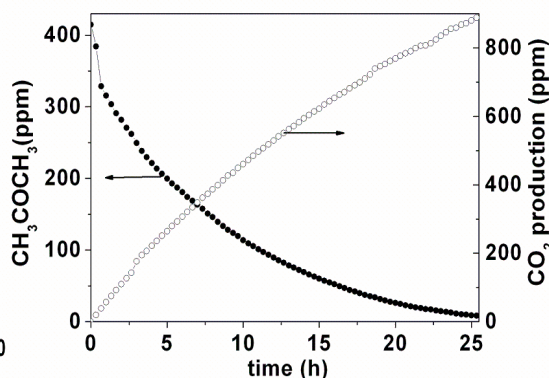


Fig. 2

**Fig. 1** XRD patterns of the synthesized ZnSb<sub>2</sub>O<sub>6</sub> sample.

**Fig. 2** Concentration change of acetone and CO<sub>2</sub> over ZnSb<sub>2</sub>O<sub>6</sub> as a function of reaction time.

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### References

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\* Corresponding authors. E-mail: zhaohuili@fzu.edu.cn; xzfu@fzu.edu.cn