

CHAPTER 4

Conclusions

The cubic $\text{ZnSn}(\text{OH})_6$ (ZHS) samples were successfully synthesized by a facile microwave method at different pH conditions. Tin chloride dihydrate ($\text{SnCl}_4 \cdot 2\text{H}_2\text{O}$) and zinc acetate dihydrate ($\text{Zn}(\text{CH}_3\text{COO})_2 \cdot 2\text{H}_2\text{O}$) were used as the starting precursors. The phase morphology and specific surface area of samples were controlled by different pH values of solution. In an alkaline solution with $\text{pH} > 11$, they have cubic shape. The ZHS photocatalyst has the potential to be used for photodegradation of methyl orange (MO) dye under UV radiation. The sample synthesized in the solution with the pH 14 has the BET surface area of $13.69 \text{ m}^2 \cdot \text{g}^{-1}$ and shows the highest photodegradation efficiency of 96% within 240 min. No deactivation performance or stable deposits was detected although the photocatalysis was repeated for five cycle testing.

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