Controlled Synthesis of $\text{Zn}_3(\text{OH})_2\text{V}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$ with 3D micro/nano-structure via electrochemical method

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$\text{Zn}_3(\text{OH})_2\text{V}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$ is synthesized by an electrochemical method which gives a 3D micro/nano-hierarchical structures consisting of 2D nanosheets that intercrossed each other by self-assembly. The effects of electrolytic parameters (temperature, time, current density, electrolyte concentration) on the powder morphologies are systematically studied and the resulted powders are characterized with XRD, FT-IR, BET, SEM, TEM, etc. The power structure and particle morphology are governed most by the temperature, where higher temperature will lead to better crystallinity and larger particle sizes. The photocatalytic activities of $\text{Zn}_3(\text{OH})_2\text{V}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$ prepared at 45°C shows highest photocatalytic activity for MB under UV light irradiation.

Keywords: Controlled Synthesis, electrochemical method, Zinc pyrovanadate.

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