

Photocatalytic water splitting over $\text{La}_2\text{Ti}_2\text{O}_7$ synthesized by the polymerized complex method

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Highly donor-doped (110) layered perovskite materials, $\text{La}_2\text{Ti}_2\text{O}_7$, with high surface area were synthesized by the polymerized complex (PC) method. Relative to $\text{La}_2\text{Ti}_2\text{O}_7$ prepared by the solid state reaction (SSR) method, PC-catalysts showed crystallization at lower temperatures, higher phase purity, more uniform morphology and better-distributed nickel in the outer surface of $\text{La}_2\text{Ti}_2\text{O}_7$. All these factors led to higher photocatalytic activity for overall water splitting under UV irradiation. The quantum yield of the reaction over $\text{La}_2\text{Ti}_2\text{O}_7$ prepared by the PC method was as high as 27%, about two times as large as that over $\text{La}_2\text{Ti}_2\text{O}_7$ prepared by the SSR method.