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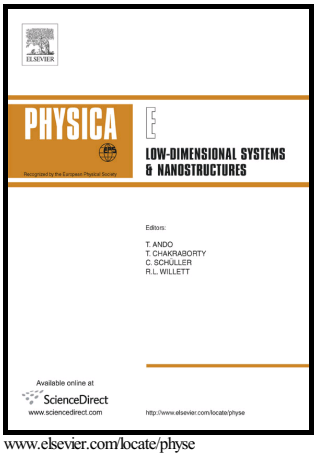

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Hydrothermal Synthesis and Photocatalytic Properties of WO_3 Nanorods by Using Capping Agent $SnCl_4 \cdot 5H_2O$

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Abstract

Hexagonal tungsten trioxide (h-WO_3) nano-rods of different sizes are prepared via hydrothermal synthesis using a capping agent of $SnCl_4 \cdot 5H_2O$. The size of the synthesized WO_3 nanoparticles can be controlled by changing concentration of the capping agent $SnCl_4 \cdot 5H_2O$ alone. We also investigate microstructures and optical properties of the WO_3 nanorods and propose a synthesis mechanism for the nanorods. The photocatalytic activities of the h-WO_3 nanorods are evaluated by degradation of Rhodamine-B (RhB), revealing that these nanorods exhibit excellent photocatalytic properties. The capping agent $SnCl_4 \cdot 5H_2O$ is found to be critical to governing sizes and properties of the h-WO_3 nanorods. Our results demonstrate that functional