Degradation enhancement of methylene blue on ZnO nanocombs synthesized by thermal evaporation technique

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Abstract:

Different zinc oxide (ZnO) morphologies were synthesized via a thermal evaporation-like technique without a catalyst introduction. The morphology of ZnO has been controlled by varying the evaporation pressure of ambient air. X-ray diffractometer and field emission scanning electron microscope were used for crystallinity and morphology investigation, respectively. The X-ray data confirmed the purity and crystallinity of the as-prepared ZnO structure. A variation of the pressure led to different morphologies of ZnO nanostructure such as nanocombs and nanorods. The influence of these different morphologies on the photocatalytic activity was performed on a water wasted methylene blue. The results showed the geometry of one-dimensional nanostructures deposited at different pressures strongly controls the photocatalytic activity of ZnO. The most suitable photocatalytic performance was recorded for ZnO deposited at 0.15 Torr, which showed one-side nanocombs of long nails.

Keywords:

Nanostructures; ZnO; Thermal evaporation; Photocatalytic

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