



Beaded ZnTiO₃ fibers prepared by electrospinning and their photocatalytic properties

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ABSTRACT

Beaded ZnTiO₃ fibers have been fabricated by a combination of sol-gel, electrospinning and calcination techniques. The ZnTiO₃ can be obtained by calcining at 700°C for 3.5 h. The morphology and structure of the obtained photocatalytic material were characterized by various analytical techniques such as scanning electron microscopy (SEM), transmission electron microscope (TEM), energy dispersive X-ray spectroscopy (EDX), Fourier transform infrared (FT-IR) and X-ray diffraction (XRD). Their photocatalytic activity was evaluated by the decomposition of methyl violet dye solution under simulated solar light irradiation. The fibers exhibited a beaded-like morphology as shown in the TEM image. The effect of different morphology including fibers and short fibers on the photocatalytic performance was also investigated. For the ZnTiO₃ fibers and short fibers, almost all the dyes were degraded after 4 h and 3 h, respectively.

Keywords: Sol-gel; Electrospinning; Calcination; Methyl violet; Photocatalytic degradation; ZnTiO₃

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