

Synthesis and Visible light Photocatalytic Properties of Iron Oxide-Silver Orthophosphate Composites

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Abstract	The iron oxide-silver orthophosphate composites were successfully synthesized by co-precipitation method using $\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$, AgNO_3 , and $\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O}$, followed by calcination at 500 degrees C for 5 hours. The Fe/Ag mole ratios of iron oxide-silver orthophosphate composites were designed at 0, 0.1, 0.2, 0.3 and 0.4. The samples were characterized using X-ray Diffraction, Diffuse Reflectance Spectroscopy, Scanning Electron Microscopy and Specific Surface Area. The photocatalytic activities were evaluated using Rhodamine B degradation under visible light irradiation. The iron oxide-silver orthophosphate composite with the Fe/Ag mole ratio of 0.2 exhibited higher photocatalytic activity compared to the pure Ag_3PO_4 under visible light irradiation. The enhanced photocatalytic activity could be attributed to the effective separation of hole (+) and electron pairs in the iron oxide-silver orthophosphate composite.
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