

Design of Defect and Metallic Silver in Silver Phosphate Photocatalyst Using the Hydroxyapatite and Glucose

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| Abstract | <p>The defect and metallic silver (Ag) in silver phosphate (Ag₃PO₄) photocatalyst were successfully generated using hydroxyapatite (HA) and glucose. Two steps of synthesis were done in these experiments. Firstly, the Ag/HA powder was prepared by reacting AgNO₃ and HA, followed by the addition of a glucose solution. Secondly, the suspension of Ag/HA was reacted with AgNO₃ aqueous solution. The yellow product of Ag/Ag₃PO₄ photocatalyst was produced. The products were characterized using X-Ray Diffraction (XRD), Diffuse Reflectance Spectroscopy (DRS), Scanning Electron Microscope (SEM), Brunauer-Emmett-Teller (BET) and X-ray Photoelectron Spectroscopy (XPS). The decreased ratio of O/Ag and metallic Ag formation observed by the XPS was detected as the possible defect and Ag-doping in the photocatalyst. The enhanced photocatalytic activity might be caused by the oxygen vacancy and metallic Ag in Ag₃PO₄ that enables the separation of photo-generated electrons and holes.</p> |
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