

Native defects in silver orthophosphate and their effects on photocatalytic activity under visible light irradiation

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Abstract	Native defects in silver orthophosphate could be generated by simple co-precipitation method under ethanol-aqueous solution using AgNO ₃ and Na ₂ HPO ₄ .12H(2)O. AgNO ₃ ethanol-aqueous solution with the ethanol contents of 0%, 25%, 50%, 75%, 90% and 100% was reacted with Na ₂ HPO ₄ aqueous solution. The produced catalysts were characterized using XRD, DRS, FE-SEM, BET specific surface area and XPS. The increase of ethanol content in the synthesis process decreased the Ag/P atomic ratio of Ag ₃ PO ₄ . The native defects of silver vacancy might be generated on the surface of Ag ₃ PO ₄ . The activity of Ag ₃ PO ₄ for Rhodamine B degradation dramatically increased by 5.8 times higher compared to that of the pristine Ag ₃ PO ₄ . The defect states of Ag vacancies enhanced the separation of electron-hole pairs, leading to the improvement of photocatalytic activity. (C) 2017 Elsevier B.V. All rights reserved.
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