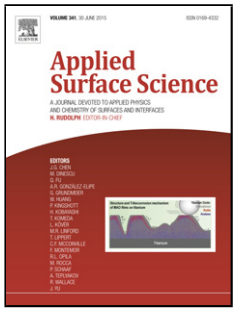

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Hydrothermal synthesis of $BiVO_4/TiO_2$ composites and their application for degradation of gaseous benzene under visible light irradiation

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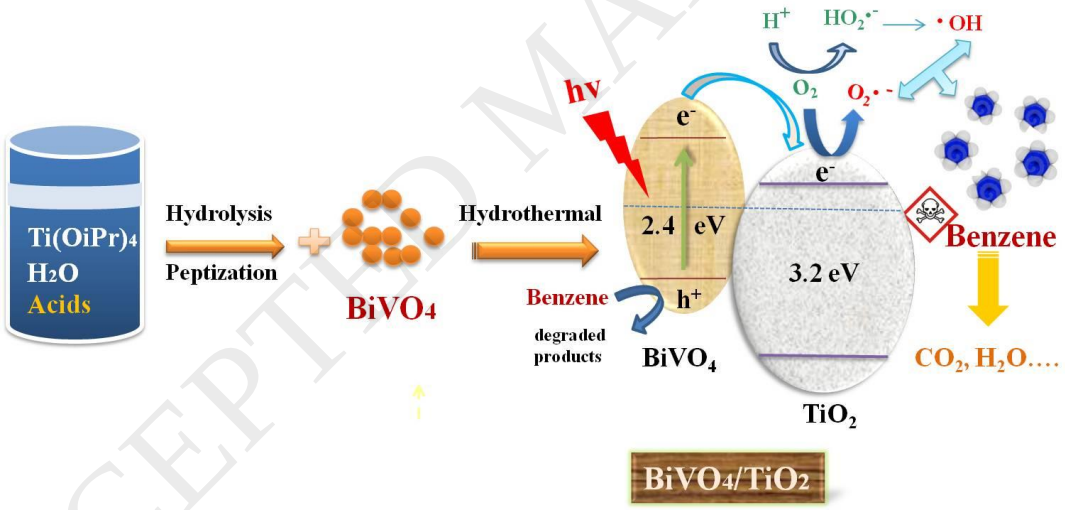
Graphical Abstract



$BiVO_4/TiO_2$ has been synthesized via a sol-gel method and a facile hydrothermal route by adjusting the precursor hydrolysis rate with the use of different acids (CH_3COOH, HNO_3 and H_2SO_4). The influence of these acids on the physicochemical characteristics and photocatalytic performance is investigated. $BiVO_4/TiO_2$ synthesized in CH_3COOH has better photocatalytic activity for the degradation of gaseous benzene than that in HNO_3 and H_2SO_4 under visible light irradiation. Results of XPS measurement demonstrate that more active hydroxyl groups in $BiVO_4/TiO_2$-CH_3COOH could lead to higher photocatalytic activity.