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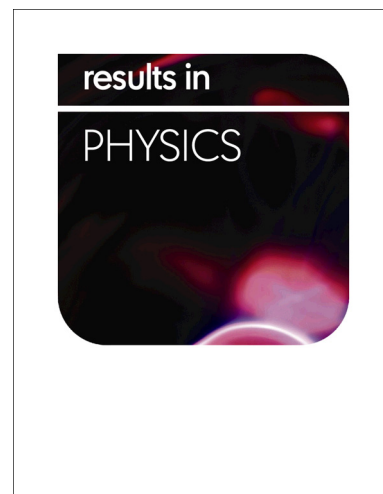
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Comparing the photocatalytic properties of g-C₃N₄ treated by thermal decomposition, solvothermal and protonation

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Abstract

The photocatalytic properties of the g-C₃N₄ obtained by the thermal decomposition (bulk g-C₃N₄), solvothermal (S-g-C₃N₄) and protonation (P-g-C₃N₄) method were compared by degrading MB in visible light. The photocatalytic activities of the bulk g-C₃N₄, the S-g-C₃N₄ and the P-g-C₃N₄ are 67.2%, 94.4% and 83.8%, respectively. It can be ascribed to the S-g-C₃N₄ and P-g-C₃N₄ had a nanosheets structure with micropores, the lower recombination rates of charge carriers, the better dispersion and the wider band gaps. Additionally, the excellent enhancement of the S-g-C₃N₄ was attributed to the fluffy nanosheets with pores, and the solvothermal treatment can better enlarge the band gap and improve the dispersion. These results showed that the photocatalytic activity of g-C₃N₄ can be improved effectively by the solvothermal treatment.

Key words: g-C₃N₄; Solvothermal; Protonation; Photocatalytic

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