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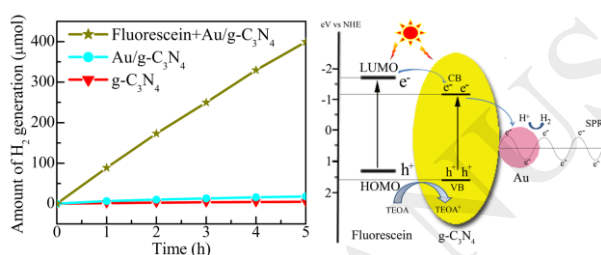
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Graphical abstract

Fluorescein-sensitized Au/g-C₃N₄ nanocomposite significantly enhances the visible light photocatalytic activity for H₂ evolution from water in the presence of triethanolamine as sacrificial electron donor.



Highlights

- Preparation of Au/g-C₃N₄ composite through protonation, adsorption and reduction.
- Au nanoparticles with average diameter of 4.1 nm are homogeneous deposited on g-C₃N₄.
- The H₂ evolution rate of Au/g-C₃N₄ raises by 22 times after fluorescein sensitization.
- Efficient transfer of photo-generated electrons among fluorescein, g-C₃N₄ and Au.

Abstract

Au/g-C₃N₄ composite is prepared through protonation of g-C₃N₄, followed by electrostatic adsorption of AuCl₄⁻ and subsequent chemical reduction. The homogeneous deposition of Au nanoparticles with an average diameter of 4.1 nm on g-C₃N₄ is confirmed by TEM measurement. Compared with pure g-C₃N₄, Au/g-C₃N₄ composite exhibits a significant improvement in the photocatalytic activity for H₂ production from water in the presence of triethanolamine as sacrificial electron donor under visible light irradiation ($\lambda > 420$ nm). Significantly, the rate of H₂ production

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