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Chengwu Yang, Jiaqian Qin, Zhe Xue, Mingzhen Ma, Xinyu Zhang, Riping Liu



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**Rational design of carbon-doped TiO₂ modified g-C₃N₄ via
in-situ heat treatment for drastically improved
photocatalytic hydrogen with excellent photostability**

Chengwu Yang^a, Jiaqian Qin^{b,*}, Zhe Xue^a, Mingzhen Ma^a, Xinyu Zhang^{a,*}, and
Riping Liu^{a,*}

^aState Key Laboratory of Metastable Materials Science and Technology, Yanshan
University, Qinhuangdao 066004, P. R. China

^bMetallurgy and Materials Science Research Institute, Chulalongkorn University,
Bangkok 10330, Thailand

ABSTRACT

Graphitic carbon nitride (g-C₃N₄) photocatalysts have attracted much attention towards harvesting solar energy for applications in energy and environment sectors. However, separation of electron-hole pairs is an intrinsic problem for the bulk g-C₃N₄. Here, we report the tiny amount of carbon doped TiO₂ modified g-C₃N₄ (C-TiO₂/g-C₃N₄) with a narrow bandgap and prolonged lifetime of charge carriers. This heterojunction photocatalysts were successfully fabricated via a facile heat treatment under atmosphere. The enhanced separation of photogenerated charge carriers and narrow band gap confer superior photocatalytic activities with 5.728 mmol/g photogenerated hydrogen gas for 5h and 52.395 mmol/g for 64h in

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