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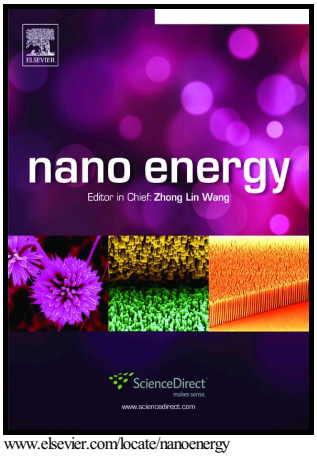


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# Rational design of carbon-doped $TiO_2$ modified g-$C_3N_4$ via in-situ heat treatment for drastically improved photocatalytic hydrogen with excellent photostability

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ABSTRACT

Graphitic carbon nitride (g-$C_3N_4$) 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-$C_3N_4$. Here, we report the tiny amount of carbon doped $TiO_2$ modified g-$C_3N_4$ (C-$TiO_2$/g-$C_3N_4$) 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