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Full Length Article

Interface engineered construction of porous g-C<sub>3</sub>N<sub>4</sub>/TiO<sub>2</sub> heterostructure for enhanced photocatalysis of organic pollutants

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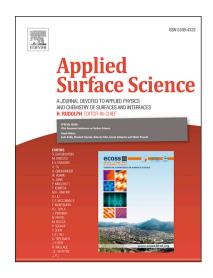
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## CCEPTED MANUSCRIPT

Interface engineered construction of porous g-C<sub>3</sub>N<sub>4</sub>/TiO<sub>2</sub> heterostructure for

enhanced photocatalysis of organic pollutants

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**Abstract:** 

A porous g-C<sub>3</sub>N<sub>4</sub>/TiO<sub>2</sub> with hierarchical heterostructure has been successfully fabricated

through the in situ assembling of small needle-like TiO<sub>2</sub> on the surface of ultrathin g-C<sub>3</sub>N<sub>4</sub> sheets.

The ultrathin g-C<sub>3</sub>N<sub>4</sub> sheets with carbon vacancies and rich hydroxyl groups were found to

facilitate the nucleation and in situ growth of TiO2 and also to modulate the surface chemical

activity of the g-C<sub>3</sub>N<sub>4</sub>/TiO<sub>2</sub> hierarchical heterostructure. The as-designed photocatalytic

heterojunction degraded Acid Orange with 82% efficiency after 10 min under simulated solar light,

and possessed excellent cycle stability. Relative physical characterizations and photochemical

experiments reveal that engineering the interface/surface of g-C<sub>3</sub>N<sub>4</sub> plays a vital role in effectively

constructing heterostructures of g-C<sub>3</sub>N<sub>4</sub>/TiO<sub>2</sub>, thus realizing efficient photoinduced electron—hole

separation during photocatalytic process.

**Keywords:** hierarchical heterostructure, interface engineering, M-g-C<sub>3</sub>N<sub>4</sub>/TiO<sub>2</sub>, photocatalyst,

1. Introduction

Azo dyes are the most infamous and widespread environmental pollutants, producing waste

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