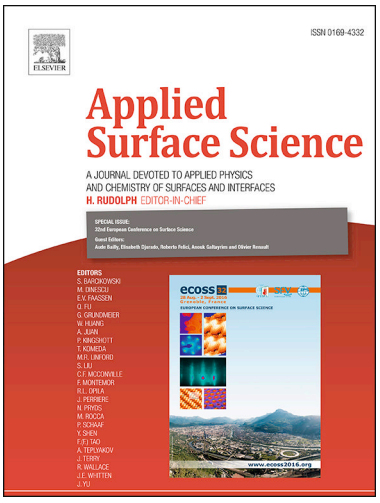

Full Length Article

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PII: S0169-4332(18)30115-6
DOI: https://doi.org/10.1016/j.apsusc.2018.01.106
Reference: APSUSC 38245

To appear in: *Applied Surface Science*

Received Date: 21 October 2017
Revised Date: 5 January 2018
Accepted Date: 10 January 2018

Please cite this article as: Y-N. Li, Z-Y. Chen, M-Q. Wang, L-z. Zhang, S-J. Bao, Interface engineered construction of porous g-C_3N_4/TiO_2 heterostructure for enhanced photocatalysis of organic pollutants, *Applied Surface Science* (2018), doi: https://doi.org/10.1016/j.apsusc.2018.01.106

Interface engineered construction of porous g-C_3N_4/TiO_2 heterostructure for enhanced photocatalysis of organic pollutants

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Abstract:

A porous g-C_3N_4/TiO_2 with hierarchical heterostructure has been successfully fabricated through the in situ assembling of small needle-like TiO_2 on the surface of ultrathin g-C_3N_4 sheets. The ultrathin g-C_3N_4 sheets with carbon vacancies and rich hydroxyl groups were found to facilitate the nucleation and in situ growth of TiO_2 and also to modulate the surface chemical activity of the g-C_3N_4/TiO_2 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_3N_4 plays a vital role in effectively constructing heterostructures of g-C_3N_4/TiO_2, thus realizing efficient photoinduced electron–hole separation during photocatalytic process.

Keywords: hierarchical heterostructure, interface engineering, M-g-C_3N_4/TiO_2, photocatalyst,

1. Introduction

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