

Synthesis of Vertically Aligned Mesoporous
TiO₂-Graphene Oxide Composites:
A Promising Photocatalyst with Fast
Charge Separation

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Photocatalyst have attracted attention to eliminate the toxicant in water and air and create the sustainable energy source by water-splitting and photoreduction of carbon dioxide. However, previously reported photocatalytic efficiency is still low due to recombination of generated electron and hole and low specific surface area. Graphene, two dimensional material with honey comb like sp²-bonded carbon, has been studied extensively in material science due to its excellent electrical properties. Herein, we report the two dimensional mesoporous TiO₂ sheets-graphene composite for enhanced photocatalytic activity. The mesoporous material has the high surface area and it increases not only reaction active sites but also shortens the diffusion length of electron to surface. Additionally, graphene is the excellent co-catalyst as efficient electron separator. So, our photocatalyst has the great performance with high stability.