

3D porous g-C₃N₄ with spatially separated cocatalyst using Pt and Co₃O₄ for efficient photocatalyst

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Recently, graphitic carbon nitride (g-C₃N₄) have been issued because it is a promising visible-active photocatalyst. However, g-C₃N₄ has low photocatalytic activity due to its fast recombination of photo-generated charge carriers. So, there are some strategies for long time charge separation. Herein, we fabricated the 3D porous g-C₃N₄ with spatially separated cocatalyst using fibrous mesoporous silica (KCC-1) as hard template. We used Janus surface whereby the reaction of reduction and oxidation sites are spatially separated to prevent internal recombination. This system has 3D porous structure which enhance the light harvesting and mass transfer because of the highly accessible mesoporous structure of KCC-1. Moreover, The cocatalysts which are consisted by Pt and Co₃O₄ are separately located onto the interior and exterior surface of 3D porous g-C₃N₄. This system gives an insight to prepare highly efficient photocatalyst both on oxidation and reduction reaction under visible light using highly stable, earth abundant, low cost g-C₃N₄.