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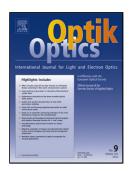
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A facile solvothermal method synthesis of nitrogen-doped

graphene quantum dots/BiOX (X=Br, CI) hybrid material for

enhanced visible-light photoactivity

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Abstract

An efficient photocatalyst consisting of nitrogen-doped graphene quantum dots

(N-GQDs) dispersed on the surface of the three-dimensional hierarchical bismuth

oxyhalide (BiOX, X=Br, Cl) was synthesized via a simple solvothermal method. The

catalysts were characterized by X-ray diffraction (XRD), scanning electron

microscopy (SEM), X-ray photoelectron spectroscopy (XPS), UV-visible diffuse

reflectance spectrophotometer (DRS), and photoluminescence spectroscopy (PL). The

N-GQDs play an important role in the improvement of photocatalytic performance

because it significantly increases BiOX absorption of visible light and effectively

traps photogenerated electrons to accelerate the separation of photogenerated

electron-hole pairs. The superior activity of N-GQDs/BiOX was exhibited to the

organic contaminant degradation under visible light. The 7 wt% N-GQDs/BiOBr and

7 wt% N-GQDs/BiOCl exhibited strong catalytic activity, in which RhB was almost

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