



Physicochemical characterization of La-doped g-C₃N₄ for degradation of phenol and organic dye

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ABSTRACT

A series of La-doped (0.001–1 g) graphitic carbon nitride (g-C₃N₄) samples was prepared through the air atmospheric pyrolysis of melamine. Different analytical techniques were employed to characterize the structural, morphological, optical, and photocatalytic properties of both pure and doped g-C₃N₄ samples. The phase structures of pure and La-doped g-C₃N₄ samples were revealed by X-ray diffraction. The scanning electron microscopy analysis expressed that the well-defined particle shape became ambiguous, and the particle size gradually decreased with the increasing doping amount of La nitrate ions. Due to La doping on g-C₃N₄, the optical properties of the samples were improved. In comparison to pure g-C₃N₄, La-doped g-C₃N₄ manifested higher photocatalytic degradation efficiency toward methylene blue (MB) and phenol under visible light irradiation.

Keywords: Graphitic carbon nitride; Photocatalytic efficiency; Pyrolysis; La nitrate ions; Phenol; Methylene blue

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