

Abstract:

Phosphorous doped graphitic carbon nitride (P-GCN) fabricated by hydrothermal method using Urea and ammonium phosphate as precursors. The prepared P-GCN showed strong blue-green fluorescence, which is effectively quenched in the presence of Fe^{3+} ions. The fluorescence intensity decreases with increasing the concentration of Fe^{3+} , following the stern-volmer relationship. A good linear range is observed within the range of 10-100 μM with low detection limit of 3.4 μM . The quench behavior confirmed static quenching mechanism, suggesting strong interaction between P-GCN and of Fe^{3+} ions. The observed **“turn-off” fluorescence response** demonstrates that P-GCN is highly sensitive and selective for Fe^{3+} detection, making it a promising candidate for environmental and analytical applications.

