Abstract:

Iron is essential for proper functioning of body, so its monitoring is also essential for maintenance of homeostasis and oxygen balance. Graphitic carbon nitide (GCN) is widely used sensor due to its unique properties and biocompatibility. Doping of sulphur onto it enhances electronic and optical properties, making it highly specific for Fe^{+3}. Decrease in bandgap due to sulphur doping makes it highly selective and sensitive for Fe^{+3}. Synthesized material was characterized using UV-Visible spectroscopy, PL spectroscopy, SEM, EDX and FTIR to analyze its structural, morphological and fluorescent properties. Sulphur doped GCN (S-GCN) showed superior fluorescent activity which was quenched by Fe^{+3}, due to charge transfer. S-GCN was highly selective for Fe^{+3} even in mixture of various ions. It has good linear range ranging from 10-100μM and low detection limit of 3.6 μM which is efficient for detection of low concentration of Fe^{+3}.