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## Synthesis, physicochemical and optical properties of bis-thiosemicarbazone functionalized graphene oxide

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### ABSTRACT

Fluorescent materials are important for low-cost opto-electronic and biomedical sensor devices. In this study we present the synthesis and characterization of graphene modified with bis-thiosemicarbazone (BTS). This new material was characterized using Fourier transform infrared spectroscopy (FT-IR), Ultraviolet-visible (UV-vis) and Raman spectroscopy techniques. Further evaluation by X-ray diffraction (XRD), thermo-gravimetric analysis (TGA), differential scanning calorimetry (DSC), scanning electron microscopy (SEM) and atomic-force microscopy (AFM) allowed us to fully characterize the morphology of the fabricated material. The average height of the BTSGO sheet is around 10 nm. Optical properties of BTSGO evaluated by photoluminescence (PL) spectroscopy showed red shift at different excitation wavelength compared to graphene oxide or bithiosemicarbazide alone. These results strongly suggest that BTSGO material could find potential applications in graphene based optoelectronic devices.

**KEYWORDS:** Graphene oxide; Bis-thiosemicarbazone; Characterization; Photoluminescence.

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