



## **A comparative study of graphene derivatives-Fe<sub>3</sub>O<sub>4</sub> nanocomposites: Structural and optical properties.**

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### **Abstract:**

Development of novel graphene-based nanocomposites has been attracting growing research effort worldwide over last few years. Deposition of iron oxide nanostructures on graphene nanosheets may possess the key factors to improve their application performance in different fields. Addressed herein is a comparative study between two different nanocomposites of graphene derivatives, graphene oxide (GO) and reduced graphene oxide (RGO), coated with nanostructured Fe<sub>3</sub>O<sub>4</sub>. These nanocomposites were synthesized via a simple chemical method, and their morphology and structure are investigated aiming to get an insight into on how the removal of oxygen group affects the dispersibility of Fe<sub>3</sub>O<sub>4</sub> on graphene layers. Moreover, the optical absorption and photoluminescence properties were investigated in order to elucidate the interfacial interaction between Fe<sub>3</sub>O<sub>4</sub> and GO/RGO which can display additional functionalities of these heterostructures and thus will have great advantage for potential applications.

Contribution:

Oral