

# Alternative Approaches for Graphene Oxide Synthesis and Their Application in Advancing Electrochemical Methods

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## Abstract

Carbon nanomaterials, such as Graphene Oxide (GOx) and reduced Graphene Oxide (rGO), are increasingly utilized to enhance material properties and as modifiers in chemical sensors for various analyses and monitoring applications. Since graphite, the precursor for synthesizing these nanomaterials, is both inexpensive and readily available—whether sourced industrially or naturally—the primary focus of researchers is to develop the most efficient, cost-effective, and practical methods for converting graphite into these valuable nano-sized materials.

In this study, we employed the modified Hummers method and an electrochemical synthesis method to produce graphene oxide from graphite powder. The resulting products were characterized using several techniques, including electrochemical analysis (cyclic voltammetry, CV), optical spectroscopy (NanoDrop UV-Vis), Zeta potential measurement, and scanning electron microscopy (SEM) to verify their size and uniformity. The aim of the work is to apply these graphene oxides to modify electrodes for the electrochemical degradation and analysis of antibiotics in aqueous solutions.

## References

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