**ABSTRACT**

Tailoring the electrical properties of [graphene oxide](https://www.sciencedirect.com/topics/physics-and-astronomy/graphene-oxide" \o "Learn more about graphene oxide from ScienceDirect's AI-generated Topic Pages) (GO) is one of the important requirements for its application in future electronic devices. A modified Hummer’s method was employed in the preparation of GO and spray coated on glass substrates, subsequently drying at 60 °C for 6 h. The as prepared samples were implanted with 100 keV [nitrogen ions](https://www.sciencedirect.com/topics/physics-and-astronomy/nitrogen-ion) at the [fluences](https://www.sciencedirect.com/topics/physics-and-astronomy/fluence" \o "Learn more about fluences from ScienceDirect's AI-generated Topic Pages) of 1E15, 5E15 and 1E16 ions/cm2. A peak shift to higher 2θ in [XRD](https://www.sciencedirect.com/topics/materials-science/x-ray-diffraction) pattern indicates the reduction of GO to rGO after N [ion implantation](https://www.sciencedirect.com/topics/physics-and-astronomy/ion-implantation). The intensity ratio of G and D bands (IG/ID) for GO derived from the Raman analysis increased from 0.97 to 1.02 after implantation (1E16 ions/cm2). The EDS analysis confirms the implantation of N [ions in](https://www.sciencedirect.com/topics/materials-science/indium-ion) GO. The [electrical conductivity](https://www.sciencedirect.com/topics/materials-science/electrical-conductivity) improved as a function of fluence, and observed to be high for the sample of 1E16 ions/cm2, and is tested for methanol sensing. Concentration dependent methanol sensing shows 5.9% response for 300 ppm. Above results show that ion implantation is a promising method for controlled reduction of GO for tuning the electrical properties.