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GO/rGO: Structural and electrical correlation through experimental and software simulation

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Graphene oxide (GO) and Reduced Graphene Oxide (rGO) are easier to manufacture in large quantities than perfect single-layer graphene and this quality of GO and rGO is lucrative for bulk material applications. In this paper, GO and rGO have been synthesized using chemical methods, and process parameters were examined. Further prepared GO and rGO were characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FTIR) and Raman spectroscopy. XRD patterns, Raman spectra and FTIR spectroscopy substantiate eloquent structural changes while reducing GO to rGO. The obtained products were then analysed for their optical and electrical properties using UV spectroscopy, photoluminescence spectroscopy and four-point probe. The conductivity is measured by proposed 4-probe measuring device designed on LABVIEW software and is later on verified experimentally also. There have been minor changes in d-spacing and improvements in crystal perfection and orientation as concluded from XRD patterns. Various structural and electrical correlation in GO and rGO have also been observed and thermal impact on conductivity is shown theoretically and experimentally.

Biography

Rashmi Chawla is pursuing her PhD in the field of Graphene: 2D materials and its optoelectronic application. She is working as Assistant Professor in YMCA University of Science and Technology. She holds membership in several national and international professional bodies and serves in technical committees like Vigyan Prasar (Department of Science and Technology) in her area of research. She has published more than 20 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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