

Nanotechnology and nanomaterials

Application and properties of chemical synthesis of **Reduced Graphene Oxide**

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Recently, graphene has been considered as a potential bio-carrier of among nanocomposites due to its unique structural and fantastic physical properties [1]. The graphene oxide nanosheets were transformed by graphite oxide in this study, which was synthesized according to the modified Hummer's method using expandable graphite powder as the starting material [2-5]. The structural, optical, and surface wettability of graphene oxide nanosheets were investigated by x-ray diffraction (XRD), Raman spectroscopy, and contact angle measurement. The XRD results (Fig. 1) indicated that the (001) diffraction peak of graphite oxide (GO) and the (002) diffraction peak of reduced graphene oxide (rGO) were located at 11.3° and 23.3°, respectively. As shown in Fig. 2, the peaks from main G and D features were clearly observed in the Raman spectrum of graphite oxide (GO) and reduced graphene oxide (rGO). The first-order G and D peaks both arise to cause the vibrations of sp² carbon, which appeared at around 1580 cm⁻¹ and 1350 cm⁻¹, respectively. Figure 3 showed the contact angle value of reduced graphene oxide nanosheets was around 4.53°, which indicated the surface wettability of graphene oxide nanosheets exhibiting superhydrophilicity and could be used in many potential biodevices and biosensors [6].

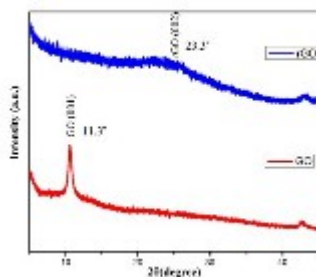


Fig. 1 XRD patterns of GO and rGO

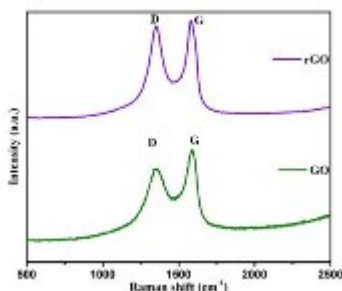


Fig. 2 Raman spectroscopy of GO and rGO



Fig. 3 Surface wettability of rGO

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