Short Communication

Effect of Polymerization of Aniline on Thermal Stability, Electrical Conductivity and Band Gap of Graphene Oxide/Polyaniline Nanocomposites

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Effect of the polymerization of aniline on graphene oxide (GO) surface on the thermal stability, electrical and optical properties of GO has been studied through its chemical functionalization with aniline and polyaniline. GO obtained through liquid *ex-foliation* of graphite flakes was further covalently coupled with aniline and PANI through imidation protocol in order to extend its *pi*-conjugation and to study its effect on opto-electronic properties. Band gap of pristine as well as chemically modified GO was calculated through UV-Vis spectroscopy. It was found that after functionalization, band gap of GO decreased from 3.82 eV to 2.87eV. Furthermore, the conductivity of GO increased from 96.04 S/cm to 139.87 S/cm after modifying with PANI. XRD, FTIR, TGA and elemental analysis data have supported the difference in the properties of modified GO with aniline and PANI. Finally, TGA analysis showed that the thermal stability of GO was enhanced up to 20% due to the addition of PANI.

Keywords: 2D materials, Chemical synthesis, Electrochemical measurements, Polymerization, *ex-Foliation*.

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