MoS_2-reduced graphene oxide composites materials for optoelectronics device

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Abstract (300 word limit)

Molybdenum di-sulphide (MoS2) thin films were prepared by the dip-coating technique at different baking temperatures (400˚C – 450˚C) using methanol solution of ammonium molybdate and ammonium thiocyanate and subsequently coated with the conventionally prepared Graphene oxide (GO) prepared by the Hummer's method. We have studied their different properties using UV-VIS spectroscopy, Photoluminescence (PL), X-ray photoelectron spectroscopy (XPS) and ultraviolet photoemission spectroscopy (UPS). XPS and UPS measurement shows formation of different phases of MoS2-GO thin films. The valence band maximums and their work function were obtained from the UPS spectra. It found that the MoS2-GO behaves different from MoS2 as well as GO. All measurements shows the materials is composite of MoS2-GO and very useful for the optoelectronics applications.

Recent Publications (minimum 5)

1. Sarma S, Ray SC,Strydom AM(2017) Electronic and magnetic properties of nitrogen functionalized grapheneoxide.Diamond & Related Materials 79:1-6.
2. Soin N,Ray SC,Sarma S,Mazumder D,Sharma S,Wang Yu-Fu,Pong W-F.,Roy SS,Strydom AM,(2017)Tuning the electronic and magnetic properties of nitrogen-functionalized few-layered graphene nanoflakes,The Journal of Physicsal Chemistry,DOI 10.1021/acs .jpcc. 7b01645.
3. Ray SC, Mukherjee D ,Sarma S , Bhattacharya G , Mathur A ,Roy SS,McLaughlin JA.(2017) Functional diamond like carbon (DLC) coatings on polymer for improved gas barrier performance, Diamond & Related Materials,80:59-63.
4. Ghosh B,Ray SC, Mbule P,Sarma S,Mishra DK,Wang YF,Pong WF,Strydom AM (2017) Defect induced room temperature ferromagnetism in single crystal, poly-crystal, and nanorod ZnO: A comparative study. Journal of Applied Physics 123, 161507 (2018); doi: 10.1063/1.4986606
5. Sarma S,Mothudi BM,Dhlamini MS (2016) Observed coexistence of memristive, memcapacitive and meminductive characteristics in polyvinyl alcohol/cadmium sulphide nanocomposites, Journal of Material Science: Materials in Electronics.27:4551-4558.
6 Sarma S, Mothudi BM,Dhlamini MS (2016) Unipolar resistive switching behaviour of copper doped polyvinyl alcohol/lead sulphide quantum dot devices, Journal of Material Science: Materials in Electronics.27:3785-3790.
7. Sarma S, (2016)Possible application of lead sulphide quantum dot in memory device, Journal of Polymer Engineering,36:293-297.
8. Sarma S,DattaP (2012) Undoped and doped Poly Vinyl Alcohol/lead sulphide quantum dots as photoconductors, Nanoscience and nanotechnology letters,4:86-89.
9. Sarma S,Datta P(2010),Characteristics of Poly(vinyl alcohol)/lead sulphide quantum dot device, Nanoscience and Nanotechnology Letters,2: 261-265



Biography (150 word limit)

Dr.Sweety Sarma is involve in extensive research and application of 2D- materials (GO and MoS_2) and also nanomaterials (CdS,PbS,ZnO) under National Research Foundation South Africa. She has contributed to the study and application of these materials into relevant fields of electronics viz., memristive systems and optolectronics devices.

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Notes/Comments: