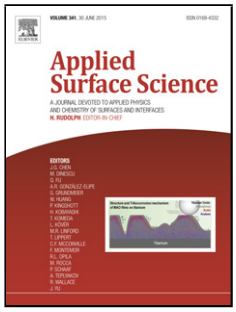

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Decoration of Crumpled rGO Sheets with Ag Nanoparticles by Spray Pyrolysis

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Abstract

In this work, crumpled reduced graphene oxide (rGO) nanostructures were produced using spray pyrolysis technique. Graphite oxide (GtO) prepared through a modified Hummers method was used as starting material. Water dispersions of graphene oxide (GO) were prepared and sprayed in a tube furnace at 300 ^{o}C, 500 ^{o}C and 700 ^{o}C using Argon (Ar) as carrier gas. Also, precursor dispersions with different $AgNO_3$ concentrations were processed at the same conditions. During the treatment, the sprayed droplets underwent rapid heating and then gradual cooling until the exit of the oven, where crumpled rGOand Ag/rGO powders were collected. The prepared materials were characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM), Raman and FT-IR spectroscopy. It was established that the crumpling of the nanosheets was slightly