CNT growth on 3D-rGO and N-doping using microwave for CO_2 adsorption

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The hybridization of CNT with graphene structure has been researched due to large specific surface area, fast mass transfer and mechanical·chemical stability. In addition, the performance has been further improved by nitrogen doping because N-doping can play a vital role in making strong polar interaction between the CO2 molecule and nitrogen doped site. These 3D architectures have been studied in various enviornmental applications because their adsorption capability. Recently, nitrogen doping carbon materials have shown better performance in environment adsorbent applications as reported in literature
In this work, we synthesize N-doped hybridization of CNT with rGO for applications into absorption. The hierarchical architecture consisting of the CNT growth on 3D rGO and N-doping was characterized by SEM and TEM images. The BET data show the presence of mesoporous structure with average pore diameter of nanosize with 400 m2/g surface area. The XPS data has indicated the existence of C, O and N. The narrrow range XPS has evidently confirmned the existence of different configuration of N doped and its percentage. The CO2 adsorption properties were characterized by BEL Japan