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Synthesis of Reduced Graphene oxide/Silicate from Industrial Grade Graphite Flakes

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Graphene oxide (GO) is a chemical oxidized of graphite carbon material, including hydroxyl, carboxyl, carbonyls or epoxides functional groups [1, 2]. The presence of these groups on the GO surface provides reactive sites for the immobilization of electrical insulating materials (e.g./ SiO_2, Al_2O_3, SiC, $Al(OH)_3$ or nitrides) [3]. Herein, we report a simple synthesis procedure of GO from industrial grade graphite at room temperature. SiO_2 decorated with reduced GO (SiO_2@rGO) as thermally conductive electrically insulating composite was synthesized (Fig. 1). The prepared composite can act as a base material for the future various applications like electronic packaging, thermal management and the perfect functional additive for polymer composite preparation. The FTIR spectrum index bands of prepared GO and SiO_2@rGO were appeared at about 1725 and 1064 cm^{-1} respectively. SEM images and EDS analyses were employed to verification of surface morphology of product and chemical fluctuations of SiO_2 respectively.

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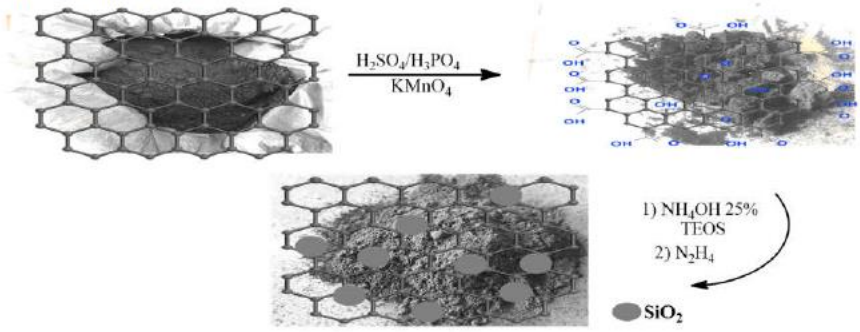

Fig. 1 Schematic pathway of SiO_2@rGO preparation

References

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