Preparation of Graphene Oxide-polymer composites by varying the Hydrophillic functionality of Soybean oils

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Ideal structured graphene is better properties than conventional filler materials for Polymer composites. With the depletion of petroleum and growing desire to move toward greener products, there is increased interest to replace petroleum materials with those made from natural resources, such as vegetable oils. Graphene Oxide(GO) in Chemical oxidation method is useful intermediate which is for mass production. GO contains several functional groups such as hydroxyl, carboxyl, and epoxy groups. therefore GO has hydrophilic properties. We introduce hydrophilic functionality in soy bean oil through Malenization reaction. MAESO(Malenized Acrylated epoxided soy bean oils) was synthesized by varying molar ratio between Arcylated epoxided soybean oils to maleic anhydride. Malenizied reaction was confirmed by FT-IR. Graphene Oxide(0.5wt) was equally loaded in the mixture. The interlayer of GO was increased thourgh X-ray diffraction(XRD). Graphene-filled polymer composites was measured by TEM. TEM sample was cryo-microtomed. Thermal analysis was carried out by DMA and TGA.