Intercalation of Graphene Oxide in functionalized Bio-based composite Materials from Soybean oils

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The Bio based resin is renewable and inexpensive natural materials to replace the petroleum based polymers. Graphene has attracted significant attention recent years. Because Ideal structured graphene has better properties than conventional filler materials for polymer composites. Chemical oxidation is effective method for mass production of graphene. Graphene oxide(GO) is an useful intermediate in chemical oxidation method. GO contains several functional groups such as hydroxyl, carboxyl, and epoxy groups. Therefore, GO can be well dispersed in water due to its hydrophilic properties. Acrylated epoxided soybean oil was introduced hydrophilic functionality through malenization reaction. Maleization reaction was confirmed by FT-IR. It is important reaction for intercalation of GO in resin. The interlayer of GO was measured through X-ray diffraction (XRD). Graphene-filled polymer composites was confirmed by TEM. Mechanical property of Graphene-filled polymer composites was enhanced by increasing the interlayer of GO in resin.