

다기능성 폴리이미드/그래핀 복합소재 개발(Multifunctional Polyimide Nanocomposites Using Chemically Functionalized Graphene Nanosheets)

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Aromatic polyimides (PIs) are one of the most important classes of advanced materials which possess various outstanding properties such as high thermal stability, chemical resistance, good mechanical and electric properties. Therefore, much attention has been devoted to aerospace, microelectronics, and optical device applications of PIs. Chemically functionalized graphene (CFG) have great potential for improving the properties of polymers because of their extremely high electrical and mechanical properties. However, typical composite processing such as solution casting and blending with high content of graphene has not been successful to achieve high mechanical and electrical properties flexible due to the low dispersibility in polymer matrix.

We will report an effective approach to prepare chemically functionalized graphene CFG/PI composite films by in-situ polymerization with CFG content. CFG provide high electrical conductivity for the in situ fabrication of composite films by grafting amic-acid (PAA) at the reactive site of CFG. The mechanical and electrical properties will be discussed.