

Influence of Composition in Carbon Nanotube-Fuel composites on the exothermic reaction of fuels

엄조은, 김우재[†]

가천대학교

(wjkim@gachon.ac.kr[†])

We explored the exothermic chemical reaction of fuels, which are deposited on the surface of carbon nanotubes (CNTs) used as thermally conductive nanoconduits. We synthesized the CNTs with mono-nitrobenzene and/or di-nitrobenzene via diazonium chemistry as a means of increasing their energy density as well as uniformity and investigate their energy-releasing properties by differential scanning calorimetry. We demonstrated that CNTs can be uniformly functionalized with nitrobenzene energetic molecules via diazonium chemistry. The covalent functionalization was confirmed by Raman spectroscopy. Differential scanning calorimetry confirmed the energetically functionalized CNTs release heat when thermally excited, providing evidence for nanotube-guided chain reactions.