# Heat sink based on layer-by-layer assembled carbon nanotubes composite

김윤영, 정수환†
경북대학교
(shjeong@knu.ac.kr†)

There are many studies of developing high performance-heat sink that cools a device by dissipating heat efficiently into the surrounding for thermal stability. For efficient cooling, heat sink composed of materials with high thermal conductivity and large surface area has been studied. Carbon nanotubes have been reported to possess outstanding thermal conductivity up to 7000 W/mK. Thus CNTs have attracted intensive attention in applying them to developing heat sink with high efficiency. But, there is problem such as not uniformly coating heat sink with CNTs. To increase adhesion between CNT films and heat sink, layer-by-layer deposition method have been introduced for CNT films fabrication on commercialized heat sink. We fabricated novel heat sink coated LBL-CNTs films composed of amine and carboxylic functionalized CNTs. To compare the heat dissipation effect, heat sinks with different thickness of films were prepared. Maximum difference of equilibrium temperature LBL-CNTs based heat sink and bare heat sink was 36 ℃, indicating the fabricated heat sink remarkably outperformed the commercialized heat sink. This excellent performance of our heat sink could be attributed to superior thermal conductivity of interconnected CNTs to that of Cu itself.