

Abstract Submitted
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Boron Nitride Coated Carbon Nanotube Arrays with Enhanced Compressive Mechanical Property LIN JING, ROLAND YINGJIE TAY, HONGLING LI, Nanyang Tech Univ, SIU HON TSANG, Temasek Laboratory@NTU, DUNLIN TAN, BOWEI ZHANG, ALFRED IING YOONG TOK, EDWIN HANG TONG TEO, Nanyang Tech Univ — Vertically aligned carbon nanotube (CNT) array is one of the most promising energy dissipating materials due to its excellent temperature invariant mechanical property. However, the CNT arrays with desirable recoverability after compression is still a challenge. Here, we report on the mechanical enhancement of the CNT arrays reinforced by coating with boron nitride (BN) layers. These BN coated CNT (BN/CNT) arrays exhibit excellent compressive strength and recoverability as compared to those of the as-prepared CNT arrays which totally collapsed after compression. In addition, the BN coating also provides better resistance to oxidation due to its intrinsic thermal stability. This work presented here opens a new pathway towards tuning mechanical behavior of any arbitrary CNT arrays for promising potential such as damper, vibration isolator and shock absorber applications.

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