

Thermal and tribological properties of Phenolic/CNT-Alumina Hybrid composites

Abstract

Carbon nanotube (CNT) reinforced polymer composites are of great interest, because their superior properties can produce composite materials with high strength, light weight, and multifunctional features. In this work, the thermal and tribological properties (wear) of Phenolic/CNT-Alumina Hybrid composites were studied. The CNT- alumina hybrid (chemically hybrid) was produced via Chemical Vapour Deposition (CVD). The Phenolic/CNT-Alumina Hybrid composites were fabricated using hot mounting moulding. The tribological properties were monitored using a Ducom TR-20 pin-on-disk tester, under dry sliding conditions. The thermal conductivity was measured using the Transient Plane Source (TPS) method, using a Hot-DiskTM Thermal Constant Analyzer. The results show that CNT-Alumina hybrid enhanced the thermal and tribological properties of the polymer composites.

Keywords — CNT, phenolic, polymer composite, thermal, tribology