

Dynamic mechanical properties of activated carbon–filled epoxy nanocomposites.

ABSTRACT

Nano-activated carbons obtained from oil palm empty fiber bunch (AC-EFB), bamboo stem (AC-BS), and coconut shells (AC-CNS) were reinforced in epoxy matrix to fabricate epoxy nanocomposites. The dynamic mechanical analysis of epoxy nanocomposites was carried out, and 5% AC-CNS treated with KOH-filled epoxy composites displayed the highest storage modulus of all the activated carbon–filled epoxy composites. The incorporation of a small amount of AC-BS, AC-EFB, and AC-CNS to the epoxy matrix enhanced the damping characteristics of the epoxy nanocomposites. The 5% AC-EFB treated with H₃PO₄ filled epoxy composites showed the highest glass transition temperature (T_g) in all temperature ranges.

Keyword: Activated carbon; Dynamic mechanical properties; Epoxy matrix; Nanocomposites.