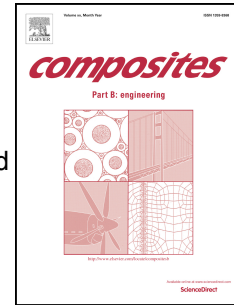


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**Aminated aligned carbon nanotube bundles/polybenzimidazole hybrid film
interleaved thermosetting composites with interface strengthening action**

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Abstract: It is always a big challenge to effectively enhance the impact resistance without sacrificing the processability and thermal stability of thermosetting composites. High performance diallyl bisphenol A modified bismaleimide (BD) thermosetting composites are fabricated by interleaving aminated aligned carbon nanotubes bundle (ACNTB-NH₂)/polybenzimidazole (PBI) hybrid films. Because the hybrid film contains -NH₂ and -NH- and ACNTB-NH₂ protrudes from the film surface, the chemical interface interaction can be formed at hybrid film/matrix resulting from the reaction of -NH₂ and -NH- in hybrid film and C=C in BD system, and the interface is strengthened by ACNTB-NH₂ that can join the polymers together at the bimaterial interface like a rivet. The resultant BD/[5%ACNTB-NH₂@PBI]_n composites show greatly improved thermal stability and mechanical properties without sacrificing good dielectric property of BD, which can be attributed to the high inherent integrated properties of PBI hybrid films and the interface strengthening action between PBI hybrid film and BD matrix. The carbon fiber reinforced BD composites with PBI hybrid film interleaves are also fabricated, the mechanical properties of resultant composites show increasing trends with the increase of PBI hybrid film layer. Eventually, the flexural strength, impact strength and interlaminar

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