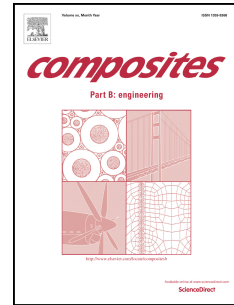


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Studied on mechanical, thermal and dielectric properties of BPh/PEN-OH copolymer

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Abstract:

The thermosetting 4,4'-bis(3,4-dicyanophenoxy)biphenyl (BPh) was modified with the hydroxy-terminated poly(aryl ether nitrile) (PEN-OH). Two different crosslinking reactions including the polymerization of the nitrile groups and the formation of triazines were coexisted in the BPh/PEN-OH system, which depended on the different curing temperature. Moreover, along with the processing of crosslinking, the microstructure changed to plastic fracture first and then became brittle fracture ($T > 320$ °C), which was observed from SEM. The copolymer system showed good mechanical properties, outstanding thermal stability (over 520 °C) and high char yield (86.1% at 600 °C). Furthermore, they exhibited excellent dielectric properties. Both the dielectric constant and dielectric loss were found to be relatively stable over a wide range of frequencies ranging from 100 Hz to 200 kHz. Moreover, the dielectric

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