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*Polyimide Nano-Hybrid : Enhance Mechanical-Thermal Performance

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ABSTRACT

Polyimide (PI) hybrids were synthesized from PI and inorganics like silica (1%) and polydimethylsiloxane (PDMS) (3%) through in-situ sol-gel process of inorganics. PI was prepared from 3, 3′, 4, 4′-biphenyltetracarboxylic dianhydride (BPDA), p-phenylenediamine (PDA) (95%) and small amount of 4, 4'-Diamino-3, 3'dihydroxybiphenyl (HAB) (5%) to introduce poly(imide benzoxazole) unit in PI. These hybrids provided us higher performance in thermal properties like 5 and 10% degradation temperature, weight residue % at 800˚C, glass transition temperature and mechanical properties like tensile modulus, strength, elongation at break (%) than pristine PI from BPDA, PDA. All the hybrids are also transparent.

Key words: Polyimide, Silica, Polydimethylsiloxane, sol-gel process.

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