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Preparation and evaluation of mechanical properties of fibre reinforced thermoplastic prepregs and optimization of process parameters through mathematical modelling

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Fibre reinforced thermoplastic composites are lightweight materials for making semi-structural parts in automobile, aerospace and home appliances. Nowadays, on account of greater impact resistance, low weight, storage stability, recyclability, infinite shelf life (of prepreg) and shorter processing time, thermoplastics are becoming more popular than thermosetting plastics. Because of high melt viscosity and poor wettability of fibers with thermoplastics, proper impregnation of the thermoplastic matrix into reinforcing fibers is difficult. Development of a suitable process for fabrication

and characterization of resultant composites is essential for their usage. FRTP composites are fast gaining importance over fibre reinforced thermosetting composites mainly because of their higher fracture toughness. FRTP prepregs in sheet form produced by film stacking process are ideal for large products like automobile bumper, dashboard etc. The present work involves to preparation, characterization and evaluation of the mechanical properties of graphene-reinforced with Polypropylene thermoplastic by blend mixing method.

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