

STRUCTURE/PROPERTY RELATIONS IN CARBON FIBRES

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ABSTRACTS

Compressional behaviour of various newly developed carbon fibres of polyacrylonitrile (PAN)- and mesophase pitch (MP)-based were studied in relation to their intrinsic structures.

It was revealed from scanning electron microscopy(SEM) of the fracture faces, result from tensile secoil failure, that PAN-based carbon fibres failed by buckling mechanism whereas MP-based fibres failed by a simple shear. Following X-ray Diffractometry and transmission electron microscopy(TEM) suggested that two types of disorder in fibre structure i.e. one type is an intercrystalline disorder, the other is interacrystalline disorder play an important role in determining compressive failure mechanisms and strength. It was found from this work that structural homogeneity and optimum crystallite sizes are very important factors in improving compressional performance of carbon fibres.