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Effect of multi-walled carbon nanotubes on polyacrylonitrile short carbon fibre polymer composites

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The present work deals with the characterization of multi-walled carbon nanotubes (MWCNTs) filled and unfilled short carbon fibre reinforced epoxy resin composites. Short carbon fibers (10 mm) were selected at various processing stages such as: 1) white colour polyacrylonitrile fibres (PAN), 2) pre-carbonized carbon (precarbonized CF), 3) oxidized carbon fibres (OPF), 4) fully carbonized carbon fibres (CF-low) and 5) sized carbon fibers (CF Sized). The investigated composites were characterized by three points bending test, hardness test, dynamic mechanical thermal analysis, electrical conductivity test, thermo gravimetric analysis and scanning electron microscopy. The results show that the mechanical and electrical properties of the investigated materials markedly depend on the type of short carbon fibers and on the presence of MWCNTs.

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The effect of preparation conditions on the ion-exchange properties of LTA zeolite prepared from local silica

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In this study LTA, zeolite was prepared from Saudi white silica as a main source of silica. The effect of ultrasonic irradiation on the crystal structure and ability to ion exchange of some heavy metals were studied. Many techniques was used to characterize the prepared zeolite includes XRD with crystal lattice analysis, EPR and finally ion exchange isotherm of some heavy metal ions. The results showed that the ultra-sonicated zeolite exhibits different behavior towards ion exchange with increasing its capacity. The ultra-sonicated zeolite showed little increase in the lattice parameters with increasing in the crystal size. Fitting adsorption isotherms on the metal adsorbed showed an observable change in the behavior of ultra-sonicated zeolite towards the metals exchanged.

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