

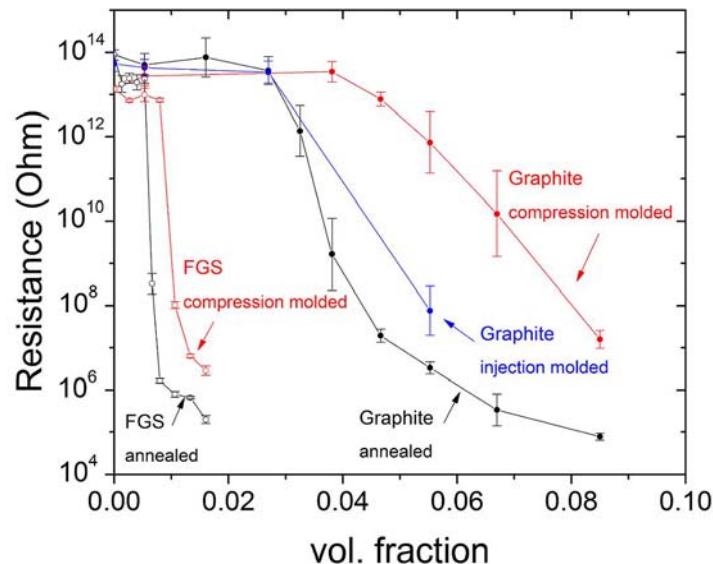
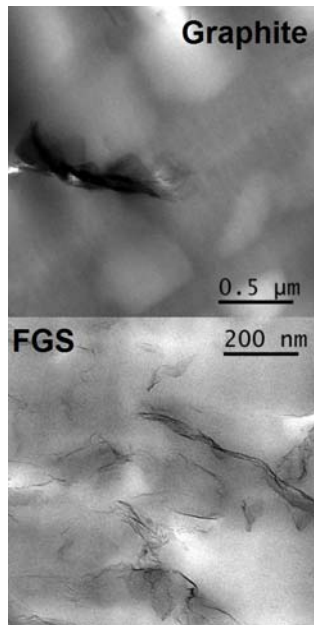
# Processing-property Relationships of Exfoliated Graphite/Polymer Nanocomposites

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NNIN Facility utilized: Characterization Facility

- Properties of polymers can be modified significantly by incorporation of graphitic reinforcements. We compared dispersion and property improvements of polycarbonate melt blended with untreated graphite and highly exfoliated graphite (functionalized graphite sheets, FGS). Electrical conductivity of polycarbonate was improved greatly at much smaller loading with FGS.



However, even at the same loading, resistance of compression or injection molded samples was substantially higher than that of long-term annealed ones indicating flow induced graphite orientation killed electrical conductivity. We are currently studying disorientation mechanisms for graphite platelets in polymer melts using in-line dielectric spectroscopy and melt rheology, and use of graphite oxide as a reinforcement for thermoplastic polyurethane.