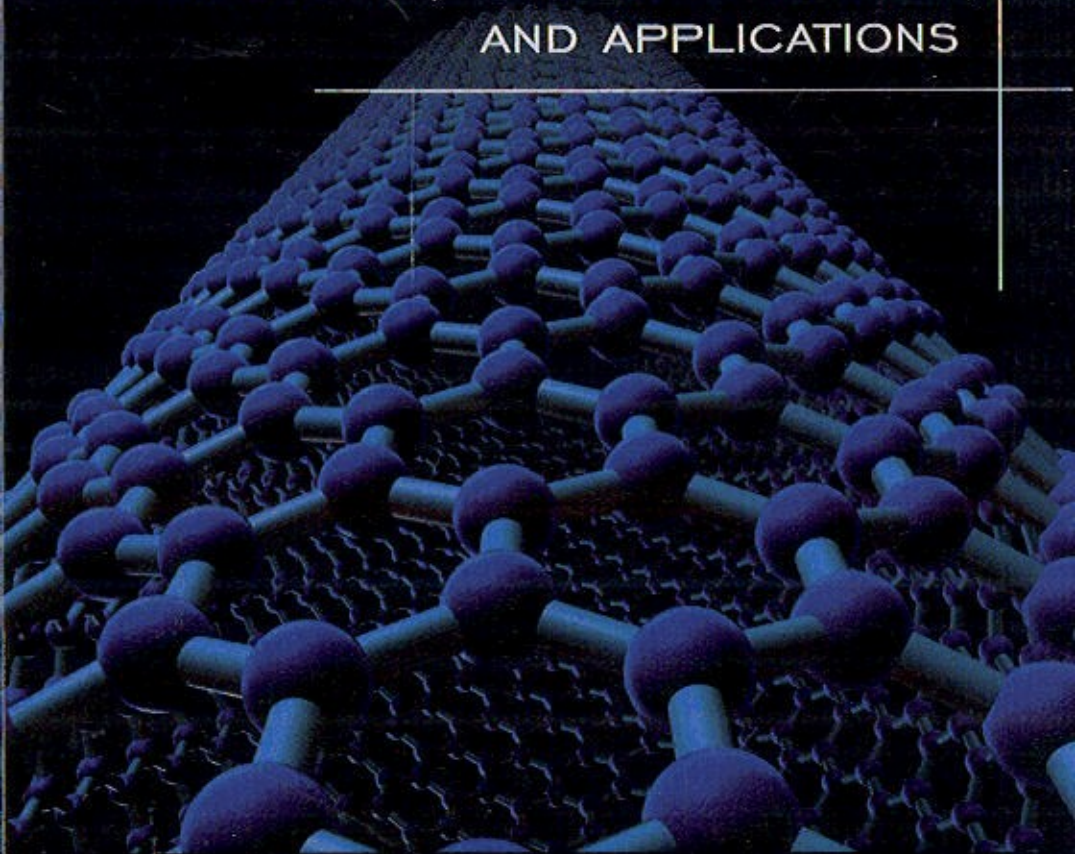


McGraw-Hill Nanoscience and Technology Series

POLYMER NANOCOMPOSITES

PROCESSING, CHARACTERIZATION,
AND APPLICATIONS



JOSEPH H. KOO

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Polymer nanotechnology: Nanocomposites. D.R. Paul, L.M. Robeson Volume 49, Issue 15, 07 July 2008, Pages 3187-3204. [View Article](#). [Return to Feature Articles - FREE ACCESS](#). [Polymer. Readers. View Articles](#). Polymer nanocomposites are materials in which nanoscopic inorganic particles, typically 10-100 Å in at least one dimension, are dispersed in an organic polymer matrix in order to dramatically improve the performance properties of the polymer. Systems in which the inorganic particles are the individual layers of a lamellar compound - most typically smectite clay or nanocomposites of a polymer (such as nylon) embedded among layers of silicates - exhibit dramatically altered physical properties relative to the pristine polymer. The development of polymer nanocomposites has been an area of high scientific and industrial interest in the recent years, due to several improvements achieved in these materials, as a result of the combination of a polymeric matrix and, usually, an inorganic nanomaterial. The improved performance of those materials can include mechanical strength, toughness and stiffness, electrical and thermal conductivity, superior flame retardancy and higher barrier to moisture and gases. Nanocomposites can also show