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Graphite Nanoreinforcements for Aerospace Nanocomposites (Paperback)

By Lawrence T Drzal

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.New advances in the reinforcement of polymer matrix composite materials are critical for advancement of the aerospace industry. Reinforcements are required to have good mechanical and thermal properties, large aspect ratio, excellent adhesion to the matrix, and cost effectiveness. To fulfill the requirements, nanocomposites in which the matrix is filled with nanoscopic reinforcing phases having dimensions typically in the range of 1nm to 100 nm show considerably higher strength and modulus with far lower reinforcement content than their conventional counterparts. Graphite is a layered material whose layers have dimensions in the nanometer range and are held together by weak Van der Waals forces. Once these layers are exfoliated and dispersed in a polymer matrix as nano platelets, they have large aspect ratios. Graphite has an elastic modulus that is equal to the stiffest carbon fiber and 10-15 times that of other inorganic reinforcements, and it is also electrically and thermally conductive. If the appropriate surface treatment can be found for graphite, its exfoliation and dispersion in a polymer matrix will result in a composite with excellent mechanical properties,...



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