

A perspective on polymeric nanocomposite materials

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Abstract: A century ago, not only the field of polymers practically did not exist, but even the concept of polymer was not an accepted concept. Today, polymers and particularly synthetic polymers play an important role in our way of life. Now the question is, what concepts, materials, or material systems will have significant impact on our way of life in the coming decades. Nano materials are now converting passive polymers and fibers into active materials that have the potential to provide many functionalities to the material systems. Carbon nanotubes can act as nucleating agents for polymer crystallization and as template for polymer orientation. Carbon nanotubes can also make polymers, electrically and thermally conducting, and provide anisotropic optical properties. Similarly use of other nano materials can impart added functionality. Issues, challenges, and potential in the field of polymeric nano composites will be discussed with examples of research results from author's laboratory.

Biography: Satish Kumar, Professor, Materials Science and Engineering, Georgia Institute of Technology. He received his Ph.D. from Indian Institute of Technology, New Delhi, India and obtained his post-doctoral experience in Polymer Science and Engineering under the tutelage of Professor R. S. Stein (member NAE, NAS) at University of Massachusetts, Amherst. He conducted research as a foreign collaborator at C.E.N.G., Grenoble France. During 1984-89, he worked in the Polymer Branch at the Air Force Research Laboratory, WPAFB OH. He joined Georgia Institute of Technology in 1989. His current research and teaching interests are in the areas of structure, processing, and properties of polymers, fibers, and composites with a focus on carbon nanotubes and other nano materials. He has conducted fiber processing and structure-property studies on a broad range of polymers including synthetic and natural polymers, as well as carbon fibers.

