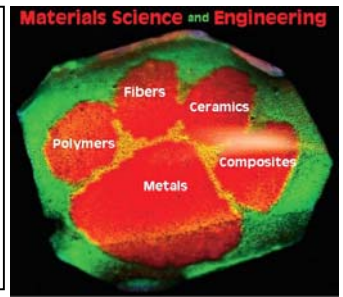


Seminar Series

Sponsored by
School of Materials Science and Engineering
Thursday, March 8, 2006
5:00 PM – Room 200 Olin Hall



STRUCTURE AND PROPERTIES OF NANOCLAY INCORPORATED POLYMER FILMS, FIBERS AND NONWOVENS

Gajanan Bhat, PhD, CText FTI

Professor, Department of Materials Science and Engineering,
Associate Director, TANDEC
The University of Tennessee, Knoxville TN, 37996
gghat@utk.edu

ABSTRACT:

There is continuing effort to take advantage of recent advances in nanotechnology, in the polymer and textile industry. Research on nano additives and nano composites has helped design and develop many advanced materials with unique combination of properties and performance. Nanoclay is one of the most affordable materials that has shown promising results in polymers. Effects of nanoclay on the morphology and properties of polypropylene fiber and spunbond fabrics are being investigated. Uniform dispersion of clay in the polymer and its exfoliation are important in exploiting the full potential of these additives. Polyethylene and Nylon 6 films are produced with varying levels of clay additives. Effects of different types of dispersion aids and melt intercalation processes on the structure and ultimate properties of these films are being investigated. Combination of different characterization techniques such as x-ray diffraction and thermal analyses are use to understand changes in crystallization behavior and intercalation. The samples showing exfoliation are further analyzed with TEM. Better exfoliation can be achieved with proper combination of additives and processing conditions. Results of this ongoing research will be presented.

BIO:

Gajanan received his PhD in Textile and Polymer Science from Georgia Tech in 1990 and joined UTK as a faculty. For a short period, he worked in a carpet company producing fibers from recycled polyesters. His research at UTK covers: (i) nonwovens - melt blown, spunbonded, and biodegradable, (ii) plastics recycling, and (iii) high performance fibers and composites. He has published more than 125 papers, and has two US Patents to his credit. He has been recognized as an Outstanding Young Engineering Alumni from Georgia Tech (1996) and has received the Distinguished Achievement Award from the Fiber Society (1999). He is a Fellow of the Textile Institute.