

Engineering at the Nanoscale: A Strategy for Developing High Performance Functional Polymer Nanocomposites

SABU THOMAS

International and Inter University Centre for Nanoscience and Nanotechnology, School of Chemical Sciences, Mahatma Gandhi University, Priyadarshini Hills P. O. Kottayam, Kerala, India -686 560, e [mail:sabuchathukulam@yahoo.co.uk](mailto:sabuchathukulam@yahoo.co.uk)

Abstract

The talk will concentrate on various approaches being used to engineer materials at the nanoscale for various applications in future technologies. In particular, the case of clay, carbon nanostructures (e.g. nanotubes, graphene), and metal oxides, bionanomaterials (cellulose, starch and chitin) will be used to highlight the challenges and progress. Several biodegradable polymer systems will be considered such as rubbers, thermoplastics, thermosets and their blends for the fabrication of functional polymer nanocomposites. The interfacial activity of nanomaterials in compatibilising binary polymer blends will also be discussed. Various self-assembled architectures of hybrid nanostructures can be made using relatively simple processes. Some of these structures offer excellent opportunity to probe novel nanoscale behavior and can impart unusual macroscopic end properties. I will talk about various applications of these materials, taking into account their multifunctional properties. Some of the promising applications of clay, metal oxides, nano cellulose, chitin, carbon nanomaterials and their hybrids will be reviewed.

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Professional Biography (100-150 words)

Professor Sabu Thomas is currently Vice Chancellor of Mahatma Gandhi University and the Founder Director and Professor of the International and Interuniversity Centre for Nanoscience and

Nanotechnology. He is also a full professor of Polymer Science and Engineering at the School of Chemical Sciences of Mahatma Gandhi University, Kottayam, Kerala, India. Recently he is selected as Professor@ Lorraine in University of Lorraine, Nancy France. Professor Thomas has received a number of national and international awards .Professor Thomas has published over 100 peer reviewed research papers, reviews and book chapters. He has co-edited 125 books published by Royal Society, Wiley, Wood head, Elsevier, CRC Press, Springer, and Nova etc. He is the inventor of **5 patents**. The **H index** of Prof. Thomas is **97** and has more than **44,007 citations**. Prof. Thomas has delivered over 300 Plenary/Inaugural and Invited lectures in national/international meetings.

