

Interfacial Modification in Nanocomposites to Tailor Functionalities

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Abstract

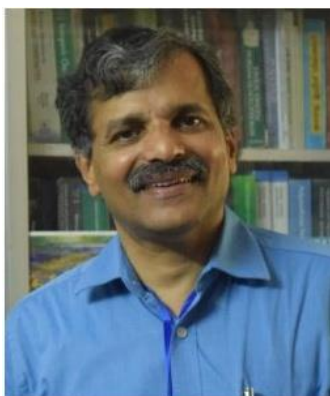
The talk will concentrate on various approaches being used to engineer materials at the nanoscale for diverse applications in future technologies. For instance, the case of clay, carbon nanostructures (e.g. nanotubes, graphene), metal oxides, bionanomaterials (cellulose, starch and chitin) will be used to highlight the challenges and progress. Several 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 considered. 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. The talk will comprise various applications of these materials, taking into account their multifunctional properties. Some of the promising applications of clay, metal oxides, nanocellulose, chitin, carbon nanomaterials and their hybrids will be reviewed. Finally, the effect of dewetting upon solvent rinsing of nanoscale thin films will also be discussed.

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Biography of Presenting Author



Sabu Thomas is currently Vice Chancellor of Mahatma Gandhi University. He is also a full professor of Polymer Science and Engineering at the School of Chemical Sciences of Mahatma Gandhi University, Kottayam, Kerala, India and the Founder Director and Professor of the International and Interuniversity Centre for Nanoscience and Nanotechnology. Prof. Thomas is an outstanding leader with sustained international acclaims for his work in Nanoscience, Polymer Science and Engineering, Polymer Nanocomposites, Elastomers, Polymer Blends, Interpenetrating Polymer Networks, Polymer Membranes, Green Composites and Nanocomposites, Nanomedicine and Green Nanotechnology. Professor Thomas has received a number of national and international awards which include: Fellowship of the Royal Society of Chemistry, London FRSC, Distinguished Professorship from Josef Stefan Institute, Slovenia, MRSI medal, Nano Tech Medal, CRSI medal, Distinguished Faculty Award, Dr. APJ Abdul Kalam Award for Scientific Excellence – 2016, Mahatma Gandhi University- Award for Outstanding Contribution – Nov. 2016, Lifetime Achievement Award of the Malaysian Polymer Group, Indian Nano Biologists award 2017 and Sukumar Maithy Award for the best polymer researcher in the country. He is in the list of most productive researchers in India and holds a position of No.5. Because of the outstanding contributions to the field of Nanoscience and Polymer Science and Engineering, Prof. Thomas has been conferred Honoris Causa (D.Sc) Doctorate by the University of South Brittany, Lorient, France and University of Lorraine, Nancy, France. Very recently, Prof. Thomas has been awarded Senior Fulbright Fellowship to visit 20 Universities in the US and most productive faculty award in the domain Materials Sciences. Very recently he was also awarded with National Education Leadership Award – 2017 for Excellence in Education. Prof Thomas also won 6th contest of “mega-grants” in the grant competition of the Government of the Russian Federation (Ministry of Education and Science of the Russian Federation) designed to support research projects implemented under the supervision of the world’s leading scientists. He has been honoured with Faculty Research Award of India’s brightest minds in the field of academic research in May 2018. Professor Thomas was awarded with Trila – Academician of The Year in June 2018 acknowledging his contribution to tyre industry. In 2019 Professor Thomas has been selected as a member of Prestigious European Academy of Sciences. Last year he was honoured with C.N.R. Rao Award Prize Lecture In Advanced Materials” by Materials Research Society of India (MRSI). In 2019 Professor Thomas has been selected as a Member of Prestigious European Academy of Sciences. He was also selected as the Fellow of International Academy of Physical Sciences and was honoured with Life Time Achievement award from Indian Association of Solid-State Chemists and Allied Scientists (ISCAS). This year he was selected for the DST Nanomission award and very recently in May 25th 2020 he

was selected for the Honorary title of Honoured Professor of Siberian Federal University”. Professor Thomas has published over 1000 peer reviewed research papers, reviews and book chapters. He has co-edited and written 137 books published by Royal Society, Wiley, Wood head, Elsevier, CRC Press, Springer, and Nova etc. He is the inventor of 15 patents. Prof Thomas has guided nearly 112 Ph.D scholars in India and abroad. The H index of Prof. Thomas is 101 and has more than 50356 citations. Prof. Thomas has delivered over 350 Plenary/Inaugural and Invited lectures in national/international meetings over 30 countries.

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