



Indian Institute of Science
Centre for BioSystems Science and Engineering
BSSE Seminar



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Understanding the Regenerative Response Induced by Biomaterials Systems: Insight into the Role of Glycosylation

Prof. Abhay Pandit,
National University of Ireland and Scientific Director,
CÚRAM.

About the speaker:

Professor Abhay Pandit is the Established Professor in Biomaterials and Scientific Director of CÚRAM, a Science Foundation Ireland (SFI) funded Centre for Research in Medical Devices at the National University of Ireland, Galway. Prof Pandit has over thirty years of experience in the field of biomaterials. After a seven-year stint in the industry, he has worked in academia for the last 18 years. Prof. Pandit's research is funded by Science Foundation Ireland, the 7th EU Framework programme, Enterprise Ireland, Health Research Board, the AO Foundation and industry sources above €150 million. Prof. Pandit was elected to the American Institute of Medical and Biological Engineering (AIMBE) College of Fellows to recognise his outstanding contributions to the creation of a national centre to develop innovative device-based solutions for the treatment of global chronic diseases. He is the first Irish academic to earn this distinction. He is also a fellow of the Irish Academy of Engineering, Tissue Engineering and Regenerative Medicine International Society and International Union of Biomaterials Science and Engineering. He is the author of 27 patents and has licensed three technologies to medical device companies. Prof Pandit has published >300 papers in peer-reviewed high impact journals, >700 conference abstracts with an h-index of 62 and ~15,000 citations. Prof. Pandit has successfully supervised 36 PhD students, 24 postdoctoral researchers with a current cohort of eight Postdoctoral researchers, 20 PhD students and three research associates.

Abstract:

Biomaterials are no longer considered innate structures and using functionalisation and biofabrication strategies to modulate a desired response whether it is a host or implant is currently an important focus in current research paradigms. Fundamentally, a thorough understanding of the host response will enable us to design appropriate strategies. The input from the host response needs to be weighed in depending on the host disease condition. Our current inputs have been through a thorough understanding of glyco-proteomics based tools which we are developing in our laboratory. In addition, biomaterials themselves provide immense therapeutic benefits which needs to be accounted in the design paradigm. Using functionalisation strategies such as enzymatic and hyperbranched linking systems, we have

been able to link biomolecules to different structural moieties. The programmed assembly of biomolecules into higher-order self-organized systems is central to innumerable biological processes and development of the next generation of biofabricated scaffolds. Recent design efforts have utilized a glycobiology and developmental biology approach toward both understanding and engineering supramolecular protein and sugar assemblies.