

## **Redefining Identity of Disease, Tissues and Cells – A Biomaterials Paradigm**

Abhay Pandit

*Director, CÚRAM- SFI Research Centre for Medical Devices; National University of Ireland;  
Galway, Ireland*

### **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.

### **Biography**

Professor Abhay Pandit is the Established Professor in Biomaterials and the Director of a Science Foundation Ireland funded Centre for Research in Medical Devices (CÚRAM) at the National University of Ireland, Galway. Professor Pandit's research integrates material science and biological paradigms in developing solutions for chronic diseases including neural, musculoskeletal and cardiovascular clinical targets with numerous other targets currently under development. His research is funded by Science Foundation Ireland (SFI), EU Framework program, Enterprise Ireland, Health Research Board, the AO Foundation and industry sources, and in excess of €84 million. He has also established a critical mass of biomaterial expertise in Ireland by securing funding for an SFI funded Strategic Research Cluster. He is the author of 22 patents and has licensed three technologies to medical device companies and authored more than 260 manuscripts. Prof Pandit has successfully supervised 26 Ph.D. students, 17 Master's students and mentored 25 postdoctoral fellows. He is currently leading the team in the supervision of 15 Ph.D. students, 15 Post doctorates and three research associates.

