

Executive Summary

Indo-US Biomaterials Center (November 2008 - May 2011)

Indo-US Public-Private Networked R&D Center on Biomaterials for Healthcare was established with Dr. Bikramjit Basu as Indian Principal Investigator and Dr. Thomas Webster as US Principal Investigator in November 2008. Prof. S. P. Mehrotra is the nodal co-ordinator of the center.

With the participation of two academic institutes from India (IIT Kanpur and IIT Mumbai) and three from USA (Brown University, University of Texas, San Antonio and University of Washington, Seattle) as well as two national research labs from India (National Metallurgical Laboratory (NML), Non-Ferrous Technology Development Centre (NFTDC)) and one private company from USA (Shaping Concepts, LLC), this centre is the largest of all the Indo-US research centers, currently being funded by Indo-US Science and Technology Forum. With twenty five (25) exchange visits of senior researchers and young PhD students between India and USA, this center has worked towards achieving the overall objective to combine the cutting edge technologies of fabrication and testing of materials science with the knowledge of biological sciences in order to come up with strategies to develop shaped implant materials in some of the emerging material systems for the purpose of the enhancement of public health. Over the span of two and half years, the center has demonstrated a synergistic flow and utilization of scientific concepts, technological ideas and expertise in an international team of recognized scientists from India and USA.

Some **notable achievements** include, a) understanding genotoxicity and gene profiling of osteoblast cells treated with nanobioceramic composites, b) development of Polymer based scaffold materials for cartilage and cardiovascular tissue engineering application; c) development of Ha-based electroconductive biocomposites for bone tissue engineering, d) PLGA-CNF based composites for synthetic heart patches, e) injection molding of polymer-ceramic biocomposites and f) CAD/CAM based manufacturing route as well as 3D printing (3DP) route to fabricate materials with uniform and gradient porosity.