Centre for Biosystems Science and Engineering

S E M I N A R

Engineered Biomaterials for Therapeutic Applications

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4:00 PM, Monday, 21st November 2016,
Seminar Hall, MRDG, Biological Sciences Building

Biomaterials are categorized on the basis of their different structural dimension, chemical structure and architecture. The talk will discuss on utilization of nano-biomaterials in combination with pulsed laser for targeted controlled delivery of different biomolecules in various cell lines. Nanographene functionalized with hydrophobic aromatic drugs and organic fluorophores delivery to living cells by using vapor nanobubbles for controlled targeted delivery and bioimaging applications. For macroscale drug delivery, injectable system have been developed to transport the nanocarrier loaded drug to the targeted site and control the release via laser pulse or by degradation of polymer backbone. Furthermore, in recent years, it has been observed that the bacterial resistance develops faster than invention of new antibiotics. There is an urgent need to design alternative anti-microbials to replace antibiotics for treating a whole spectrum of bacterial diseases. To overcome this problem worldwide bacteriophage based therapeutics appears to be a potential alternative. Bacteriophage functionalized with nanocarriers to explore the antibacterial and biofilm removal potential under laser irradiation will be discussed. The second part of talk will be focused on designing of the next generation bioactive hybrid polymeric biomaterials involving chitosan, gelatin, ulvan, silk and their relevant hybrid formulations will be highlighted. The development of cationic polymer systems for enhancing antimicrobial and mineralization ability for tissue engineering applications will be outlined.

About the Speaker

Sangram Keshari Samal received his PhD degree in “Biomaterials” from the School of Biomolecular Science, University of Pisa, Italy in 2009. During his PhD, he was a visiting fellow at BWH, HST-MIT, Harvard Medical School and Tufts University, USA. He undertook his first post-doctoral research on magnetic biomaterials for bone regeneration at Consiglio Nazionale delle Ricerche, Bologna, Italy. In 2011 he moved Ghent Department of Organic Chemistry, University of Ghent, Belgium. Again, in 2014 he pursued his research activity at Laboratory of General Biochemistry & Physical Pharmacy, Department of Pharmaceutical Science, University Ghent, Belgium. He has been the recipient of very prestigious Ramanujan Fellowship under engineering stream and pursing his research at Materials Research Centre, Indian Institute of Science, Bangalore.