Dear All,

Nanoparticles by Design Unit (Sowwan Unit) would like to announce a seminar by Dr. Marshal, CSIR- Centre for Cellular and Molecular Biology, Uppal Road, Hyderabad, India

**Title**:

Micro-Nano Engineered Functional Materials for Biomedical and Energy Application

**Abstract:**

In this talk I will discuss about my research studies on effects of glycan surface density on carbohydrate-mediated binding events with proteins and pathogens using surface plasmon resonance (SPR), X-ray photoelectron spectroscopy and electrochemical analysis to develop micro array based biosensor. The use of electrochemical process for developing hybrid matrixes of conducting biopolymers and nanostructured materials for application in biosensors and high efficiency dye sensitized solar cell. In the later part of the talk, the use of low temperature plasmas to coat on micro/nano particles with controlled carboxyl and amine functionalities for biomedical uses will be disused. The effects of physicochemical nature of metal surfaces has been identified to tailor biological properties of different types of cells (Osteoblast and Mesenchymal stem cells) and assess their use in orthopedic implants or for in vitro cell biological studies. Functional materials (artificial surfaces can be designed similar to the surface of natural killer cells) were developed by combination of electrochemical processes and low temperature plasma which had showed very good potential for selective growth of different types of cells at in-vitro conditions.

**Bibliography (Dr Marshal Dhayal)**

Marshal Dhayal graduated with a B.Sc and M.Sc. degree from University of Rajasthan, Jaipur, India in 1996 and 1999, respectively and received his Ph.D. degree from UMIST, Manchester in 2004. After Ph.D. he joined Dongshing University, Naju, South Korea as a Research Professor and in 2006 he was moved to National Physical Laboratory, New Delhi. Before joined as a Scientist at Center for Cellular and Molecular Biology in 2009, he was a Senior Fellow in Department of Bioengineering, University of Washington, Seattle, USA. His current research is on to development nano-structures and electrochemical process for biosensors and solar cells.

Host: Mukhles Sowwan, Nanoparticles by Design Unit

We hope to see you many of you at the seminar.

Contact person: Dr. Vidya Dhar Singh ([vidya.singh@oist.jp](mailto:vidya.singh@oist.jp))

Sincerely,

Yumi Takahashi