Cross-disciplinary Celsius-Linnaeus symposium 2020

PROFESSOR RICHARD NEUTZE

Department of Chemistry & Molecular Biology, University of Gothenburg, Sweden.

"Time-resolved diffraction experiments at X-ray free electron lasers reveal ultrafast structural changes in photosynthetic reaction centres"

X-ray free electron lasers (XFEL) have led to completely new X-ray diffraction approaches for understanding protein structural dynamics. We have used time-resolved diffraction at an XFEL to follow light induced structural changes in bacterial photosynthetic reaction centres. These integral membrane proteins harvest the energy content of sunlight in order to drive charge separation reactions. Our structural results provide novel insight into how protein structural dynamics are able to help to stabilize the charge separated state.

DISTINGUISHED PROFESSOR YLVA IVARSSON

Department of Chemistry – BMC, Uppsala University

"Mapping the missing connections"

Cellular function relies on protein-protein interactions. These days, large-scale studies are providing unprecedented data on protein interactions. Based on the information, efforts are made to generate reference maps of the human interactome that can be used to explain the effects of mutations or the hostile take-over by viral proteins. I will describe our contribution to mapping the missing connections of a largely unexplored part the interactome.

DISTINGUISHED PROFESSOR MARIA TENJE

Department of Material Science and Engineering, Uppsala University

"Microengineering for life science applications"

Fabrication tools developed for the microsystems technology field finds many applications also in life science. I will discuss how classical methods, such as UV lithography can be used to control material topology and surface chemistry properties for controlled cell adhesion and 3D cell cultures.

PROFESSOR YOGENDRA KUMAR MISHRA

Mads Clausen Institute, NanoSYD, University of Southern Denmark

"Complex shaped metal oxide nanostructures-based hybrid materials for advanced energy technologies"

Complex shaped nanostructures from metal oxides have demonstrated immense interest towards materials and energy technologies. Especially from zinc oxide, which exhibits piezoelectric behavior in addition to unique nanostructure synthesis abilities, 1D based complex ZnO structure have been of great interest for micro and nanostructuring as well as in smart technologies, especially in the direction of piezoelectric nanowires based energy harvesting technologies.[1] This talk will give a brief overview about the development of ZnO tetrapod based 3D nanomaterials by flame based approach and their multifunctional applications in various directions, such as optics, electronics, sensing, energy harvesting, biomedical as well as in many other directions including using them as template for developing new forms of tetrapodal materials