ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΥΠΡΟΥ

Το **Τμήμα Φυσικής** του Πανεπιστημίου Κύπρου

διοργανώνει σεμινάριο την

Παρασκευή, 3 Φεβρουαρίου, Ώρα 11:00

στην αίθουσα Β223 (Κτίριο ΟΕΔ 01, επίπεδο -2 , Πανεπιστημιούπολη)

με ομιλητή τον:

Professor Michael Graetzel,
Ecole Polytechnique de Lausanne, EPFL

"The fascinating world and first applications of semiconductor quantum dots"

Abstract

Due to their extraordinary opto-electronic properties semiconductor quantum dots (QDs) have offered a fertile for research and continue to attract intense interest both in the fundamental as well as applied field. One of their most remarkable features is the quantum size effect allowing to tune the wavelength their band edge absorption and luminescence by changing the particle radius. Photoluminescence quantum yields in over 80% along with excellent stability have been achieved. These properties are presently being exploited in commercial LED displays where QDs of II-VI semiconductors such as CdTe and CdSe are used as light emitters. Quantum dots have also attracted wide attention due to the occurrence of multiple exciton generation from a single photon and the phonon bottlenecks allowing charge carriers to be maintained in a hot state. This has spurred research on using QDs as light harvesters in mesoscopic solar cells where external quantum efficiencies for electric current generation of over 100 % have been achieved. My lecture will discuss the latest developments and applications of this exciting field of quantum research.

Biography of Prof. Michael Graetzel

Professor at the Ecole Polytechnique de Lausanne, Michael Graetzel directs there the Laboratory of Photonics and Interfaces. He pioneered research on energy and electron transfer reactions in mesoscopic-materials and their application in solar energy conversion systems, optoelectronic devices and lithium ion batteries. He discovered a new type of solar cell based on dye sensitized nanocrystalline semiconductor oxide particles. Author of over 800 peer-reviewed publications, two books and inventor of more than 50 patents, his work has obtained 60000 citations so far (h-index 114), ranking him amongst the 10 most highly cited chemists worldwide. He has received prestigious awards, including the Balzan Prize, the Galvani Medal, the Faraday Medal, the Harvey Prize, the Gerischer Award, the Dutch Havinga Award and Medal, the International Prize of the Japanese Society of Coordination Chemistry, the ENI-Italgas Energy-Prize and the year 2000 European Grand Prix of Innovation. He was selected by the Scientific American as one of the 50 top researchers in the world. He received a doctor's degree in Natural Science from the Technical University Berlin and honorary doctors degrees from the Universities of Hasselt, Delft, Uppsala and Turin. He has been the Mary Upton Visiting Professor at Cornell University and a Distinguished Visiting Professor at the National University of Singapore. He was an Invited Professor at the University of Berkeley, the Ecole Nationale de Chachan (Paris) and Delft University of Technology. In 2009 he was named Distinguished Honorary Professor by the Chinese Academy of Science (Changchun) and the Huazhong University of Science and Technology. He is a member of the Swiss Chemical Society as well as of the European Academy of Science, a Fellow of the Royal Society of Chemistry and was elected honorary member of the Société Vaudoise des Sciences Naturelles.

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