THE CHINESE UNIVERSITY OF HONG KONG

Department of Physics

COLLOQUIUM

Nature and Ultrafast Dynamics of Elementary Excitations in Solar Materials

by

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Date: *October 18, 2019 (Friday)*
Time: *4:00 - 5:00 p.m.*
Place: *L2, Science Centre, CUHK*

(Light refreshments will be served at SCNB 1/F lobby from 3:30 to 3:50 p.m.)

ALL INTERESTED ARE WELCOME
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Abstract

In materials of interest for solar energy conversion, the most fundamental event is the absorption of light and the generation of charge carriers (electrons and holes). Using a wide variety of steady-state experimental, we have addressed the nature and ensuing dynamics of elementary excitations is materials such as Titanium dioxide, zinc oxide, as well as lead-halide perovskites. The experimental tools include, deep-ultraviolet spectroscopy (<350 nm), hard X-ray spectroscopy, angle-resolved photoelectron spectroscopy (ARPES), which have been implemented in our labs. As far as transition metal oxides are concerned, I will present our recent findings and show how these can be used to monitor charge injection from sensitizers into such materials. I will also present a recent study of inorganic lead-halide perovskites identifying large hole polarons, with a direct consequence on charge mobility. All these results are supported by cutting-edge theoretical models.

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