



DEPARTMENT OF PHYSICS  
THE UNIVERSITY OF HONG KONG

Physics  
Colloquium

Physics Colloquium

# Hot-carrier cooling and relaxation processes in perovskites and semiconductor quantum dots



**March 19, 2025 (Wednesday)**



**5:00 p.m.**



**MWT4, 1/F, Meng Wah Complex,  
Main Campus, HKU**



**Prof. Kam Sing WONG**

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## Abstract:

Understanding and controlling the hot-carrier cooling and relaxation processes in semiconductor materials are very important to improve their optoelectronic devices performance such as solar cells, particularly under high current/carrier density condition.

Herein, we will report our recent works on transient absorption measurements to reveal the mechanism affecting the dynamics of hot-carrier cooling and the intricate competition among various ultrafast relaxation processes such as Auger effect, bandgap renormalization and free-carrier Stark effect for the excited carriers in perovskite films and semiconductor quantum dots.

## Biography:

Kam Sing Wong joined the Physics Department of the Hong Kong University of Science and Technology (HKUST) in 1991 as the founding faculty and he is now a professor at the department. He received his B.Sc. degree (1983) from King's College, University of London. He completed his Ph.D. degree at the Clarendon Laboratory, University of Oxford in 1987. His current research is mainly focused on ultrafast laser spectroscopy, the nonlinear optical properties of semiconductors and polymers, as well as the photo-physics of organic and inorganic materials. He has published over 330 peer-reviewed publications with total citations over 23000 and h-index of 84.

Prof. Wong was the President of the Physical Society of Hong Kong (2007-2009). He has served as the Conference Chair for a number of international conferences and currently, he is serving in the conference committee of 'Ultrafast Phenomena and Nanophotonics', part of Photonics West conference.

Anyone interested is welcome to attend.

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