

Speaker: [Professor Daniel Lau](#)
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Date: Thursday 26 July 2018

Time: 11.00 am

Venue: QMNC Seminar Room (N74 1.08) Nathan Campus

Title: **Solution-processable Ultrathin Black Phosphorus and its Applications**

Abstract

Black phosphorus (BP) has recently attracted world-wide attention owing to its great potential in novel nanoelectronics, optoelectronics and electrochemical devices. Solution exfoliation of BP reveals superior advances when compared with mechanical exfoliation. Remarkably, liquid-phase exfoliated BP flakes and quantum dots (QDs) exhibit exciting properties in batteries, solar cells, electronic, and optical devices. The exfoliation of BP in diverse solvents have been demonstrated. The solution exfoliated BP flakes can be an effective electron transport layer in organic photovoltaics (OPVs). The BP QDs can be incorporated in the active layer of OPV to boost its power conversion efficiencies. Furthermore, it can also enhance the performance of Li-S batteries significantly. In addition, the BP flakes exhibit nonlinear optical properties which can be an excellent saturable absorber for high energy pulse generation in fiber laser.

Brief Biography

Shu Ping Lau is a full professor and Head of Department of Applied Physics at the Hong Kong Polytechnic University. He is also the Director of the University Research Facility on Materials Characterization and Device Fabrication. He obtained his Ph.D. degree in Materials Engineering from the University of Swansea. He has served as guest editor of 6 journals and published 4 invited book chapters, as well as over 300 international refereed papers. His current research interest includes strain engineering in two-dimensional materials such as MoS₂ and black phosphorous.

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