

# Tuning the Mechanical Properties of Materials by 3D Nanostructuring through PnP

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**Date : 13 December 2018 (Thursday)**

**Time : 10:30 - 11:30am**

**Venue : ST602 (4D Theatre), The Hong Kong Polytechnic University**



## Abstract

The realization of high resolution, large area nanopatterning has been demonstrated from numerous methods. Above all, Proximity field nanoPatterning (PnP) is a unique three-dimensional (3D) patterning methods using optical interference from conformal phase masks that contact directly on top of the surface of photosensitive materials. The contact allows incomparable stability in the size of patterning area, resolution, and reproducibility. Extending the thickness and structural degree of freedom of patterned structure are essential topics of current research in my group. In this presentation, I will briefly overview the physics and possible macroporous, inch-scale nanostructures with submicron lattice parameter. Equipped with PnP, current applications are stretchable electrode, interphase boundary nanocomposites, sensors, photocatalytic monolith, optical coatings, and many energy electrodes for thermoelectrics, fuel cell, and Li-ion battery. Those general applications of 3D nanostructures will prove the importance of fast, large area 3D nanopatterning technique to overcome intrinsic limit of material properties.

## Biography

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