

**DEPARTMENT OF MECHANICAL ENGINEERING****SEMINAR****Online**

**Title:** Bilayer Photonic structure Formation in Soft-Matter Droplet Induced by Evaporation

**Speaker:** Mr. Li Chang (PhD candidate)  
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**Date:** 27 April, 2021 (Tuesday)

**Time:** 11:30 a.m.

**Zoom Link:** 1) Link to join the meeting:

<https://hku.zoom.com.cn/j/95558245160?pwd=UHhkc2FnS1psODhlRXh5U3krQVRTQT09>

2) Meeting ID: 955 5824 5160

3) Password: 114915

**Abstract:**

Evaporation of solutions consisting of colloidal particles, polymers, or their mixtures is a vital and fundamental phenomenon in chemistry, physics, and material science. The non-equilibrium evaporation involves many physicochemical processes, such as flow, diffusion, phase separation, crystallization, gelation and so on. The interplay between those different process determinates the final structure of the dried materials. In this presentation, a bilayer phonic structure that shows vivid structure color is prepared by drying a colloidal particles-polymer droplet. A colloidal skin layer is formed at the air-drop interface and finally deposits on the top of a layer of coffee-ring deposition, which is consisted of particles and polymer. The experimental results have demonstrated that the skin layer shows blue color because of the densely packed particles, while the bottom coffee-ring layer generates green color due to the co-assembly of polymer and particles. The fast evaporation rate and the solute-induced Marangoni flow are believed to be responsible for the formation of the bilayer structure. These dual-color spots can be potentially used in anti-counterfeiting labels, artificial allochroic skin and camouflage.

**ALL INTERESTED ARE WELCOME**

For further information, please contact Prof. A. Shum at 3917 7904.

**Research areas: Advanced Materials and Thermofluids**