

THE UNIVERSITY



OF HONG KONG

DEPARTMENT OF MECHANICAL ENGINEERING

SEMINAR

Online

**Title:** Using atomic force microscopy to study soft matter at surfaces/interfaces

**Speaker:** Dr. Yu Chai  
Department of Physics  
City University of Hong Kong  
Hong Kong

**Date:** 19 November, 2020 (Thursday)

**Time:** 11:00 a.m.

**Venue:** Room 7-34, Haking Wong Building, HKU  
(Due to the limited seat capacity, please register by clicking for link)

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

<https://hku.zoom.us/j/97660052437?pwd=Uy9UVmlaZXpJYnpSSGE4ZHIQTEZLZz09>

2) Meeting ID: 976 6005 2437

3) Password: 151145

Please reserve a seat at

[https://hkuems1.hku.hk/hkuems/ec\\_hdetail.aspx?guest=Y&ueid=72799](https://hkuems1.hku.hk/hkuems/ec_hdetail.aspx?guest=Y&ueid=72799)

**Abstract:**

Soft matter, including polymers, proteins, and colloidal particles, is a class of materials where thermal fluctuations strongly influence their structure and behavior. The variety of weak interactions in soft matter make its

properties challenging to study yet they crucially determine the suitability for technological applications. In order to precisely understand the behaviors of soft matter at surfaces/interfaces, Atomic force microscopy (AFM), a powerful technique with nanoscale spatial resolution, is used. In this seminar, I will first show the existence of a liquid-like layer on top of glassy polymers, which makes the surface of glassy polymers not so glassy. Combining experimental AFM measurements and theoretical fluid dynamics modeling, we obtained the surface mobility of glassy polymers and demonstrated that the surface of glassy polymers could flow while the bulk remains solid. Second, I will show our recent progress on the use of AFM to directly measure the self-assembly of nanoparticles at the water-oil interface, which is an important phenomenon involved in various natural and industrial processes.

**Biography:**

Dr. Yu Chai is an assistant professor in the physics department at the City University of Hong Kong. He joined CityU in April 2020. Before that, he worked as a postdoctoral researcher at the University of California, Berkeley, and Lawrence Berkeley National Laboratory with Prof. Thomas P. Russell and Dr. Paul D. Ashby. Dr. Yu Chai got his Ph.D. in physics at the University of Waterloo, Canada, in 2016 under the supervision of Prof. James A. Forrest. He has a long-term research interest in soft matter with a particular focus on surfaces and interfaces.

**ALL INTERESTED ARE WELCOME**

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

**Research area: Advanced Materials**