THE UNIVERSITY OF HONG KONG

DEPARTMENT OF MECHANICAL ENGINEERING

# SEMINAR

Online

**Title:** Strategies of tuning the mechanical properties of high-entropy alloys

**Speaker:** Mr. Xia Yuanhang (PhD candidate)
Department of Mechanical Engineering
The University of Hong Kong
Hong Kong

**Date:** 28 April, 2022 (Thursday)

**Time:** 10:00 a.m. (Hong Kong Time)

**Zoom meeting:**

1) Link to join the meeting:

https://us05web.zoom.us/j/3334549053?pwd=d0NBMW51Zi9KQkI3WCs5S2tSRmJQUT09

2) Meeting ID: 333 454 9053

3) Password: 111222

**Abstract:**
High-entropy alloys (HEAs) as a solid solution composed of multiple kinds of elements demonstrate excellent mechanical properties and irradiation resistance compared with traditional alloys. While, how to promote applications of HEAs with different microstructure or produced by automated process like 3D-printing is challenging because of their limited mechanical properties such as low elongation, low ultimate tensile strength and uneven stress distribution. In this seminar, we will introduce our strategies for solving these problems from three aspects. The first one is to design unique materials system by calculating valence electron concentration (VEC), mixing enthalpy and entropy. Besides, short-range-ordering(SRO) microstructure was found to have a positive effect on HEAs in experiments while a lot of questions remained to be solved like how the SRO interact with defects and how we can introduce short-range-ordering in samples for experiments. The last task is to tune the stress distribution in HEAs produced by 3D-printing to avoid stress corrosion or defects formation. In our previous investigations, deep cryogenic treatment (DCT) performed good effect so we will continue to study that. Overall, our study combined experiments with multiscale simulation to acquire HEAs with high performance.

**ALL INTERESTED ARE WELCOME**
**For further information, please contact Prof. A.H.W. Ngan at 3917 7900.**

**Research area: Advanced Materials**