

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

**Title:** Development of solvent-free single lithium-ion conducting polymer electrolytes for Li metal battery applications as next-generation battery technology

**Speaker:** Miss Jingyi GAO (PhD candidate)  
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**Date:** 28 April, 2021(Wednesday)

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

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

<https://hku.zoom.com.cn/j/91705139393?pwd=dGhxeUJhZGVwMkE3ZSsyczlIMG5tUT09>

2) Meeting ID: 917 0513 9393

3) Password: 684699

**Abstract:**

As lithium-ion batteries have been the state-of-the-art electrochemical energy storage technology, overwhelming demands for energy storage on a larger scale have triggered the development of next-generation battery technologies possessing high energy density, longer cycle lives and enhanced safety. Especially, Li-metal is considerably emerging as one of the promising anodes in lithium batteries technology owing to its high specific capacity and low redox potential. However, there are still several issues to be resolved. An inherent highly reactive nature of Li-metal in

**contact with organic solvents results in the irregular metallic lithium electrodeposition during recharging, impeding the practical application of Li-metal batteries. In addition, the liquid electrolytes comprising organic solvents and lithium salts have been shown high flammability as well as instability at elevated temperature, limiting the cycling life of batteries. Recently, single ion-conducting polymer (SIC polymer) electrolytes have been receiving great attention as the implementation of SIC polymer into the batteries is expected to address the electrochemical instability issues caused by liquid electrolytes. In this talk, I give a brief introduction of SIC electrolytes, such as the definition, categories and challenges. Further, I will present the preliminary results of SIC polymer featuring tetraphenylborate anion nodes connected through flexible polyethylene linkers.**

**ALL INTERESTED ARE WELCOME**

**For further information, please contact Dr. D.M. Shin at 3917 8061.**

**Research area: Energy**