



SEMINAR

Li Metal Battery Technology

Date: 5 March, 2026 (Thursday)

Time: 11:30 a.m. – 12:30 p.m.

Venue: Room 7-34 & 7-35
Haking Wong Building
HKU

Speaker: Dr. Hansen Wang
Special Technology Officer for Advanced Metal Anodes
Contemporary Amperex Technology Co., Limited
China



Abstract:

Lithium metal battery is considered the ultimate chemistry to achieve high energy density to promote the permeation of electric vehicle and enable the emerging market of electric aviation and humanoid robots. This chemistry has been researched since the 1950s, but still remains pre-commercialized due to the interfacial reactions and the resulted capacity fade. It is urgent and critical to fully resolve its fundamental failure pathways and provide well-targeted innovative material solutions.

This presentation introduces three milestone works Dr. Wang performed during his exploration on Li metal battery technology during the past decade. In the first part, electrolyte molecule design will be introduced to finely tune the solvation environment of Li-ions and the interfacial stability of electrolyte toward Li metal anodes and high voltage cathodes. In the second part, new approaches will be introduced to quantify active Li and electrolyte component losses during the cycling of Li metal batteries so the root cause of their capacity failure can be completely illustrated. New electrolyte design protocols are also proposed bottom-up to prolong the cycle life. In the third part, gas evolution of Li metal batteries, especially under high-rate discharge and the resulted high temperature environments, is studied. The reduction pathway of ether solvents into methane, the dominant gas species, is elucidated. A new anode activation protocol will also be introduced to significantly suppress gas evolution, as well as prolong the high-temperature cycling performances of Li metal batteries to satisfy harsh use cases like electric aviation.

Biography:

Dr. Hansen Wang is Special Technology Officer for Advanced Metal Anodes at 21C LAB, CATL, the world's largest Li-ion battery manufacturer. He leads fundamental research, materials development and product design of high-energy lithium metal batteries and is in charge of exploring other metal-anode-based next generation battery systems. He was awarded his Ph.D. in materials science and engineering from Stanford University working with Prof. Yi Cui in 2021 and holds a B.E. in chemical engineering from Tsinghua University. He authored over 50 scientific publications, with citation over 12000 and an H-index of 39.

ALL INTERESTED ARE WELCOME

For further information, please contact Professor Weixin Song at 3917 7910.