香港大學 機械工程系
Department of Mechanical Engineering
THE UNIVERSITY OF HONG KONG

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Sodium-Ion Batteries: From Research to Commercialization

Date: 29 April, 2026 (Wednesday)
Time: 7:30 p.m.
Venue: MWT7, Meng Wah Complex
HKU Main Campus

Speaker: Professor Xiaobo Ji
College of Chemistry and Chemical Engineering
Central South University
China

Abstract:
Sodium-ion batteries (SIBs) are promising technologies for large-scale renewable energy integration and grid storage. The cathode plays a decisive role in determining energy density and overall cost, yet current materials often suffer from rapid capacity fading and sluggish Na^+ diffusion kinetics. To address these challenges, we have developed strategies such as compositional heterogeneity engineering and high-entropy design. In parallel, we have pioneered the direct synthesis of cathode materials from natural ores, offering a sustainable and low-cost pathway for large-scale production. These advances provide mechanistic insights and practical design principles for long-lifespan, economically viable SIB cathodes, paving the way for their commercialization and subsequent recycling.

Biography:
Xiaobo Ji is a Professor at Central South University, where he serves as Dean of the Changsha New Energy Innovation Institute and Associate Dean of the College of Chemistry and Chemical Engineering. He earned his PhD at the University of Oxford under the supervision of Prof. Richard G. Compton and undertook post-doctoral research at MIT with Prof. Donald Sadoway. He was awarded the National Science Fund for Distinguished Young Scholars (2023), Young Yangtze River Scholar (2018), and NSFC Excellent Young Scientists Fund (2016). He is a Fellow of the Royal Society of Chemistry, Chairman of the Metallurgical Physical Chemistry Committee of the Nonferrous Metals Society of China, and an Associate Editor for Battery Energy (Wiley). He also served as Co-Chair of the 2023 International Conference of the Asian Battery Association (ABAA, Vietnam).

His research specializes in studying & developing critical materials for energy storage systems. He has published over 500 peer-reviewed papers, with an h-index of 125, and holds 3 international invention patents and more than 80 granted Chinese invention patents. Many of these technologies have been commercialized, generating a market value exceeding ten million RMB. Prof. Ji's contributions have been widely recognized through awards including IALB Research Award (2024), Clarivate Highly Cited Researcher (2021–2025), First Prize of the Hunan Provincial Natural Science Award (2021), Second Prize of the Hunan Higher Education Teaching Achievement Award (2023), and National Outstanding Young Scientist Award in Nonferrous Metals (2018).

ALL INTERESTED ARE WELCOME
For further information, please contact Prof. W.X. Song at 3917 7910.