学术报告

题 目: Materials for Batteries: what can we learn from soft X-ray spectroscopy?

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时 间: 4 月 24 日 (周四) 上午 9:00

地 点: 卢嘉锡楼报告厅（202）

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固体表面物理化学国家重点实验室
化学化工学院
4 月 18 日

Materials for Batteries: what can we learn from soft X-ray spectroscopy?
软 X 射线光谱学在锂离子电池材料研究中的应用

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报告时间：4 月 24 日（周四） 9:00am
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Abstract:

Improving the energy-density and safety of batteries remains a formidable challenge for sustainable energy applications, especially electric vehicles. The optimism is often based on modern material synthesis and advanced characterization tools. Synchrotron based soft x-ray spectroscopy is one of such incisive tools that probe the electronic states in the vicinity of the Fermi Level, which are directly related to battery operations.

This presentation will focus on a tutorial type of discussion. The main purpose is to explain and showcase what kind of valuable information could be obtained through soft x-ray absorption and emission spectroscopy for battery researches (10.1016/j.elspec.2013.03.008). The talk will start with general introductions of synchrotron facilities and soft x-ray spectroscopic tools. Both the strong and weak aspects of soft x-ray will be discussed. We will then discuss some recent spectroscopic results on how soft x-ray spectroscopy differentiates the chemical products in SEIs (10.1002/admi.201300115), measures electronic states that defines the electric property of battery binder (10.1002/adma.201102421), detects the transition-metal-3d (10.1021/ja303225e) and anion-2p state evolution at different electrochemical stages, and reveals the charge dynamics in operating battery electrodes through *in-situ* spectroscopy (doi:10.1038/ncomms3568).

This talk will NOT get into the technical details of the experiments and researches, but concepts related to possible scientific correlations will be explained.