

# ADVANCES IN NA, LI-S AND ZN BATTERY SYSTEMS

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There is a great interest in developing alternative low cost, high energy solutions for EV and grid storage. This presentation will review progresses on the fundamental understanding of full battery reactions mechanisms and materials issues in non-lithium battery systems. Examples may include Na-ion, Li-S and Zn batteries. In Na-ion batteries we will discuss high capacity electrode materials, but will highlight the properties and influence of SEI layers in full battery cells. In Li-S batteries we will focusses on the electrochemical properties with high S loading and low electrolyte amount for high energy density considerations. Several key factors will be discussed: (1) electrode architecture, (2) surface modification of the electrode materials, (3) solubility of the polysulfides and their control, and (4) role of dual function binders. In Zinc batteries we will discuss a highly reversible aqueous system and the reaction mechanisms in the cathodes, anodes and electrolytes.