Special Issue

Energy-Dense Metal–Sulfur Batteries

Message from the Guest Editors

Lithium–sulfur (Li–S) batteries, bearing a high energy density (2600 Wh kg−1) and low cost, are one of the most attractive next-generation battery technologies used for electric vehicles and stationary energy storage. However, the polysulfide dissolution problem greatly restricts the energy density and cycle life of Li-S batteries. Novel strategies are urgently needed to tackle this challenge. All-solid-state Li-S batteries with no polysulfide dissolution have recently emerged as promising technologies. Nevertheless, the degradation mechanism, particularly the mechanochemical evolution of the cell, remains unclear. In this Special Issue, we are looking for contributions that:

- Develop conductive hosts to mediate polysulfide dissolution and migration;
- Synthesize polymeric sulfur active materials with restricted polysulfide dissolution;
- Promote conversion reaction kinetics using electrocatalysts;
- Fabricate Li-S cells with high mass loading and a low electrolyte-to-sulfur ratio;
- Develop new liquid/semi-solid/solid-state electrolytes to restrict or fundamentally prevent polysulfide dissolution;
- .....

Guest Editors

Dr. Daiwei Wang

Department of Mechanical Engineering, The Pennsylvania State University, University Park, PA 16801, USA

Dr. Meng Liao

Department of Mechanical Engineering, The Pennsylvania State University, University Park, PA 16801, USA

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Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
batteries@mdpi.com

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Editor-in-Chief

Prof. Dr. Karim Zaghib
Department of Chemical and Materials Engineering, Concordia University, Montréal, QC H3G 1M8, Canada

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