

Rechargeable non-aqueous metal–oxygen batteries Faraday Discussion

Metal–oxygen batteries have the potential to exceed the stored energy of today's most advanced lithium-ion cells. However, their recharge and cyclability efficiency pose a major challenge to bringing this technology into practical application, as does improving our fundamental understanding of the electrochemistry and chemistry inside the cell. Li–O₂ and Na–O₂ are the most reported types of metal–oxygen cells but there has also been much recent work on K, Ca and Mg–O₂ systems in non-aqueous electrolytes, which present different challenges and opportunities in terms of the stability and safety of the metal electrode. A critical examination of the state-of-play of metal–oxygen batteries is required to identify the major obstacles that remain in developing practical systems.

This volume brings together the wide range of scientists working on metal–oxygen batteries to exchange ideas on the challenges and prospects in this field.

In this volume the topics covered include:

- Mechanism of ORR and OER in non-aqueous electrolytes
- Materials for stable metal–oxygen battery cathodes
- Metal anodes and protected interfaces
- Towards practical metal–oxygen batteries

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The papers presented are published in the Faraday Discussion volume together with a record of the discussion contributions made at the meeting. Faraday Discussions therefore provide an important record of current international knowledge and views in the field concerned.

Front cover image: Ubiquitous superoxide in Li-air cells reacts with CO₂ to form peroxycarbonate and singlet oxygen as shown by its optical emission.

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