

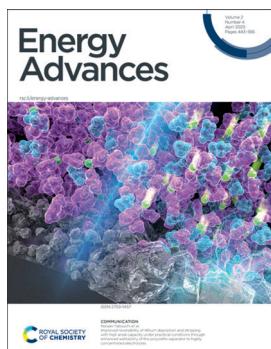
# Energy Advances

[rsc.li/energy-advances](https://rsc.li/energy-advances)

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

## IN THIS ISSUE

ISSN 2753-1457 CODEN EANDBJ 2(4) 443–566 (2023)



### Cover

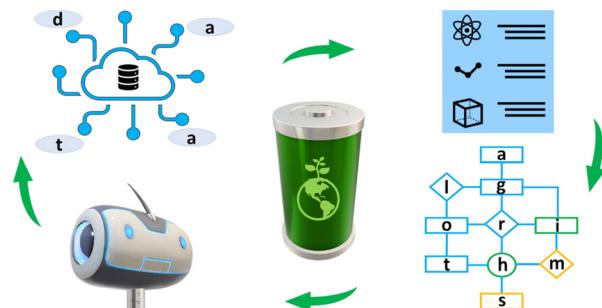
See Naoaki Yabuuchi et al., pp. 503–507.  
Image reproduced by permission of Naoaki Yabuuchi from *Energy Adv.*, 2023, 2, 503.

## REVIEWS

449

### Machine learning-inspired battery material innovation

Man-Fai Ng,\* Yongming Sun and Zhi Wei Seh\*



465

### A comprehensive review of cathode materials for Na-air batteries

Pengcheng Mao, Hamidreza Arandian,\* Sajjad S. Mofarah, Pramod Koshy, Cristina Pozo-Gonzalo, Runguo Zheng, Zhiyuan Wang, Yuan Wang,\* Suresh K. Bhargava, Hongyu Sun,\* Zongping Shao and Yanguo Liu\*



**Executive Editor**  
Emma Eley

**Editorial Production Manager**  
Sarah Whitbread

**Deputy Editor**  
Jon Ferrier

**Editorial Assistant**  
Alex Holiday

**Publishing Assistant**  
Lee Colwill

**Assistant Editors**

Jamie Purcell, Aphra Murray, Alexander John, Emily Ellison, Jack Pitchers

**Publisher**  
Neil Hammond

For queries about submitted papers, please contact Sarah Whitbread, Editorial Production Manager in the first instance. E-mail: [energyadvances@rsc.org](mailto:energyadvances@rsc.org)

For pre-submission queries please contact

Emma Eley, Executive Editor.

E-mail: [energyadvances-rsc@rsc.org](mailto:energyadvances-rsc@rsc.org)

Energy Advances (electronic: ISSN 2753-1457) is published 12 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF.

Energy Advances is a Gold Open Access journal and all articles are free to read. Please email [orders@rsc.org](mailto:orders@rsc.org) to register your interest or contact Royal Society of Chemistry Order Department, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK Tel +44 (0)1223 432398; E-mail: [orders@rsc.org](mailto:orders@rsc.org)

Whilst this material has been produced with all due care, the Royal Society of Chemistry cannot be held responsible or liable for its accuracy and completeness, nor for any consequences arising from any errors or the use of the information contained in this publication. The publication of advertisements does not constitute any endorsement by the Royal Society of Chemistry or Authors of any products advertised. The views and opinions advanced by contributors do not necessarily reflect those of the Royal Society of Chemistry which shall not be liable for any resulting loss or damage arising as a result of reliance upon this material. The Royal Society of Chemistry is a charity, registered in England and Wales, Number 207890, and a company incorporated in England by Royal Charter (Registered No. RC000524), registered office: Burlington House, Piccadilly, London W1J 0BA, UK, Telephone: +44 (0) 207 4378 6556.

**Advertisement sales:**  
Tel +44 (0) 1223 432246; Fax +44 (0) 1223 426017;  
E-mail [advertising@rsc.org](mailto:advertising@rsc.org)

For marketing opportunities relating to this journal, contact [marketing@rsc.org](mailto:marketing@rsc.org)

# Energy Advances

[rsc.li/energy-advances](http://rsc.li/energy-advances)

Energy Advances is a multidisciplinary journal that publishes research across a broad scope of topics, and welcomes work that contributes to developments throughout energy science and related fields. We offer an inclusive home to advances across the spectrum of energy science – from central concepts to exciting research at the nexus of subdisciplines.

## Editorial Board

### Editor-in-Chief

Volker Presser, Leibniz Institute for New Materials, Germany

### Associate Editors

B. Layla Mehdi, University of Liverpool, UK

Michael Naguib, Tulane University, USA  
Guang Feng, Huazhong University of Science

and Technology (HUST), China  
Matthew Suss, Israel Institute of Technology, Israel

Anita Ho-Baillie, University of Sydney, Australia

You Han, Tianjin University, China

## Advisory Board

Sarbanjit Banerjee, Texas A&M University, USA	Dattaray Late, CSIR-National Chemical Laboratory, India	USA, and Lawrence Berkeley National Laboratory, USA
Sudip Chakraborty, Harish-Chandra Research Institute (HRI) Allahabad, India	Yan Lu, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Germany	Jenny Pringle, Deakin University, Australia
Graeme Cooke, University of Glasgow, UK	Heather MacLean, University of Toronto, Canada	Jürgen Steinle, Universität des Saarlandes, Germany
Benjamin Dietzek, Friedrich Schiller University Jena, Germany	Hoi Ri Moon, Ulsan National Institute of Science and Technology, Korea	Valeska Ting, University of Bristol, UK
Liming Ding, National Center for Nanoscience and Technology, China	Thuc-Quyen Nguyen, University of California Santa Barbara, USA	Ajayan Vinu, The University of Newcastle, Australia
Baizeng Fang, The University of British Columbia, Canada	Petr Nikrityuk, University of Alberta, Canada	Naoaki Yabuuchi, Yokohama National University, Japan
John Gordon, Brookhaven National Laboratory, USA	Kenneth Ozoemena, University of the Witwatersrand, South Africa	Aldo José Gorgatti Zarbin, Universidade Federal do Paraná (UFPR), Brazil
Shaojun Guo, Peking University, China	Kristin Persson, University of California, Hongpei Zhou, Texas A&M University, USA	Qiang Zhang, Tsinghua University, China
Kui Jiao, Tianjin University, China		

## Information for Authors

Full details on how to submit material for publication in Energy Advances are given in the Instructions for Authors (available from <http://www.rsc.org/authors>).

Submissions should be made via the journal's homepage:

[rsc.li/energy-advances](http://rsc.li/energy-advances)

Authors may reproduce/republish portions of their published contribution without seeking permission from the Royal Society of Chemistry, provided that any such republication is accompanied by an acknowledgement in the form: (Original Citation)– Reproduced by permission of the Royal Society of Chemistry.

This journal is © The Royal Society of Chemistry 2023.

Apart from fair dealing for the purposes of research or private study for non-commercial purposes, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulation 2003, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publishers or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency in the UK. US copyright law is applicable to users in the USA.

Registered charity number: 207890

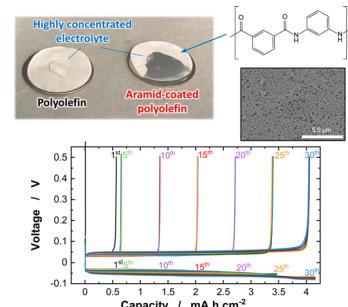


## COMMUNICATIONS

503

**Improved reversibility of lithium deposition and stripping with high areal capacity under practical conditions through enhanced wettability of the polyolefin separator to highly concentrated electrolytes**

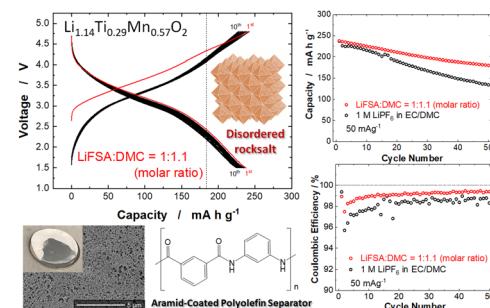
Yosuke Ugata, Chihaya Motoki, Satoshi Nishikawa and Naoaki Yabuuchi\*



508

**Improved electrode reversibility of anionic redox with highly concentrated electrolyte solution and aramid-coated polyolefin separator**

Nanaka Shimada, Yosuke Ugata, Satoshi Nishikawa, Daisuke Shibata, Toshiaki Ohta and Naoaki Yabuuchi\*

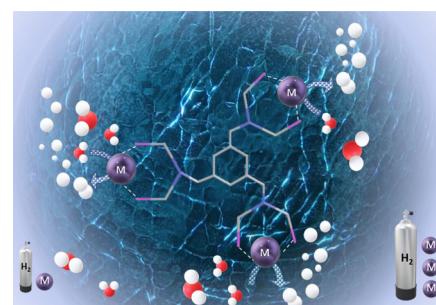


## PAPERS

513

**The influence of trinuclear complexes on light-induced hydrogen production**

Helena Roithmeyer, Richard Pehn, Johann Pann, Wolfgang Viertl, Benedikt Trübenbacher, Julian Dutzler, Holger Kopacka, Thomas Müller and Peter Brüggeller\*

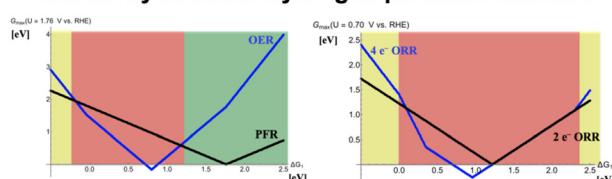


522

**On the concept of metal–hydrogen peroxide batteries: improvement over metal–air batteries?**

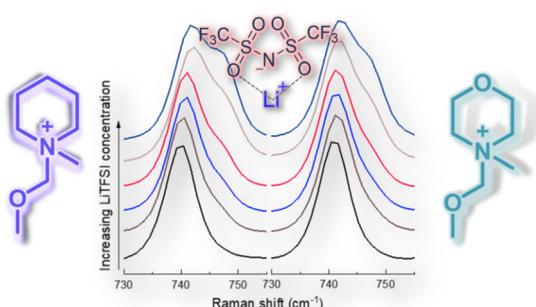
Kai S. Exner

**Selectivity in metal–hydrogen peroxide batteries**



## PAPERS

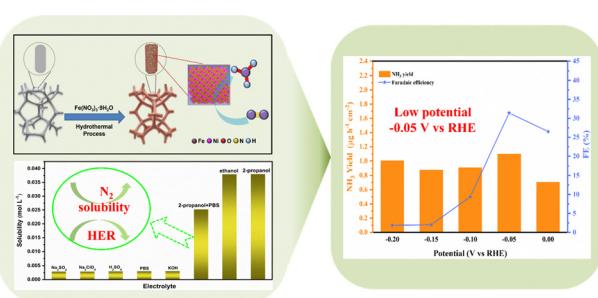
530



### Structure and interactions of novel ether-functionalised morpholinium and piperidinium ionic liquids with lithium salts

Anna Warrington, Luke A. O'Dell, Oliver E. Hutt, Maria Forsyth and Jennifer M. Pringle\*

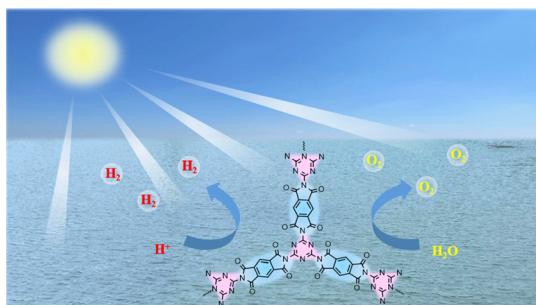
547



### Efficient N<sub>2</sub> electroreduction to ammonia in an isopropanol-PBS electrolyte using NiFe<sub>2</sub>O<sub>4</sub> *in situ* grown on nickel foam

Chang Chen, Min Cui, Qian Wang,\* Penglei Cui, Cong Zhang, Qian Yang and Jujie Ren\*

556



### Band structure engineering of a polyimide photocatalyst towards enhanced water splitting

Sheng Chu, Xintie Wang, Liu Yang, Huiyan Zhang,\* Rui Xiao, Ying Wang\* and Zhigang Zou

