

# Energy Advances

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 3(9) 2069-2418 (2024)



### Cover

See K. Neuhaus *et al.*, pp. 2175–2185. Image reproduced by permission of Andre Bar from *Energy Adv.*, 2024, 3, 2175.



### Inside cover

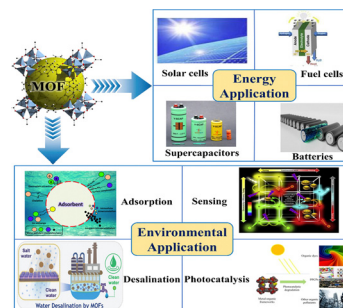
See Cody W. Schlenker *et al.*, pp. 2186–2199. Image reproduced by permission of Cody Schlenker from *Energy Adv.*, 2024, 3, 2186.

## REVIEWS

2079

### Trends in the energy and environmental applications of metal–organic framework-based materials

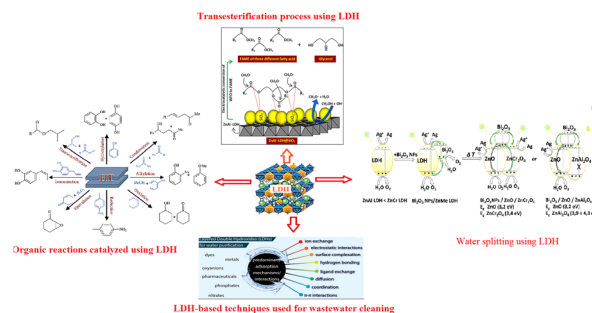
Mohammed Yusuf,\* Irina Kurzina, Gulnara Voronova, Md. Monjurul Islam, Salisu Danlami Mohammed and Nurudeen Abiola Oladoja\*



2136

### Recent advances in layered double hydroxide (LDH)-based materials: fabrication, modification strategies, characterization, promising environmental catalytic applications, and prospective aspects

Amal A. Altalhi, Eslam A. Mohamed\* and Nabel A. Negm\*



**GOLD  
OPEN  
ACCESS**

# EES Batteries

**Exceptional research on  
batteries and energy storage**

**Part of the EES family**



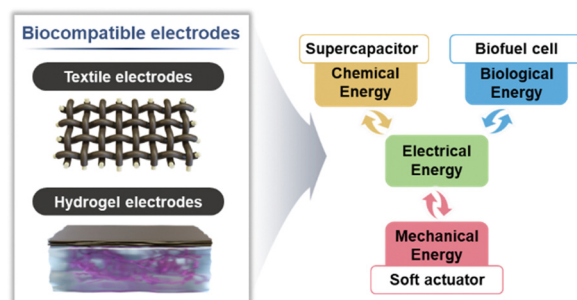
**Join  
in** | Publish with us  
[rsc.li/EESBatteries](https://rsc.li/EESBatteries)

## PERSPECTIVE

2152

### Unlocking high-efficiency energy storage and conversion with biocompatible electrodes: the key role of interfacial interaction assembly and structural design

Jeongyeon Ahn, Hyeseoung Lim, Jongkuk Ko\* and Jinhan Cho\*

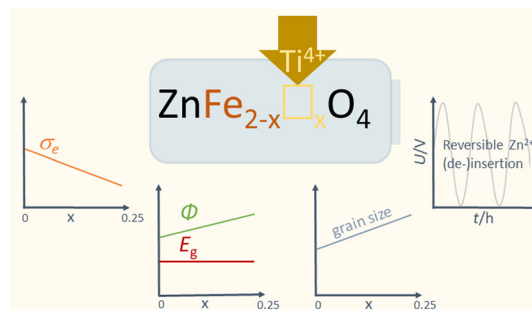


## PAPERS

2175

### Teaching an old dog new tricks: Ti-doped $\text{ZnFe}_2\text{O}_4$ as active material in zinc ion batteries – a proof of concept

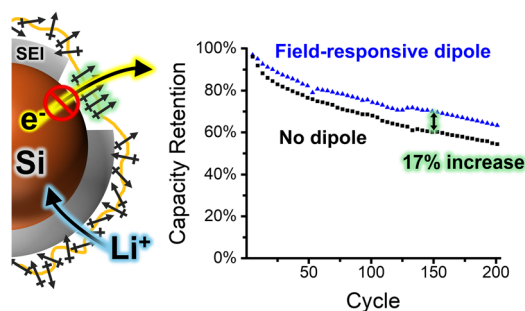
S. Krämer, J. Hopster, A. Windmüller, R.-A. Eichel, M. Grünebaum, T. Jüstel, M. Winter and K. Neuhaus\*



2186

### Selective kinetic control of interfacial charge transfer reactions in Si-composite anodes for Li-ion batteries

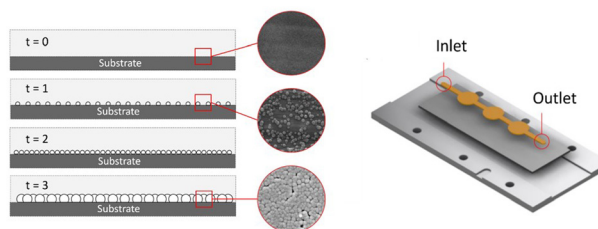
Emma A. Cave, Tyson A. Carr and Cody W. Schlenker\*



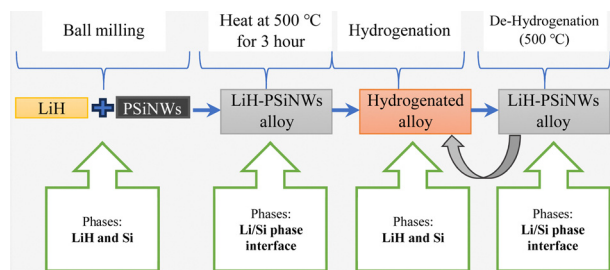
2200

### Micoreactor assisted soft lithography of nanostructured antimony sulfide thin film patterns: nucleation, growth and application in solid state batteries

Bryan Chun, V. Vinay K. Doddapaneni, Marcos Lucero, Changqing Pan, Zhongwei Gao, Zhenxing Feng, Rajiv Malhotra and Chih-hung Chang\*



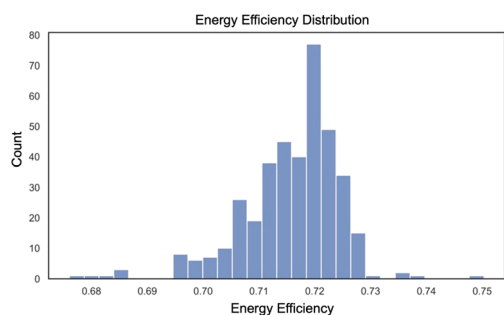
2212



### Enhancing the solid-state hydrogen storage properties of lithium hydride through thermodynamic tuning with porous silicon nanowires

Rama Chandra Muduli, Zhiwen Chen, Fangqin Guo,\* Ankur Jain, Hiroki Miyaoka, Takayuki Ichikawa and Paresh Kale\*

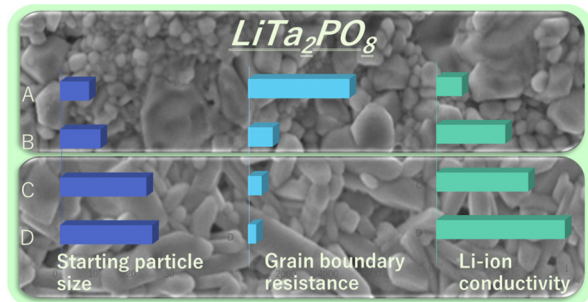
2220



### Optimization framework for redox flow battery electrodes with improved microstructural characteristics

Alina Berkowitz, Ashley A. Caiado, Sundar Rajan Aravamuthan, Aaron Roy, Ertan Agar\* and Murat Inalpolat\*

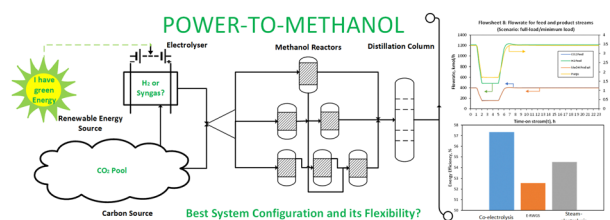
2238



### Effect of synthesis process on the Li-ion conductivity of $\text{LiTa}_2\text{PO}_8$ solid electrolyte materials for all-solid-state batteries

Hayami Takeda,\* Miki Shibasaki, Kento Murakami, Miki Tanaka, Keisuke Makino, Naoto Tanibata, Hirotaka Maeda and Masanobu Nakayama

2245



### Comparative evaluation of the power-to-methanol process configurations and assessment of process flexibility

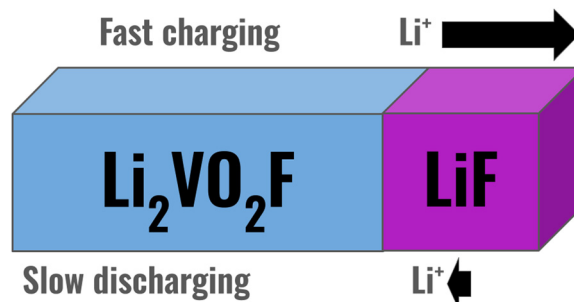
Siphesihle Mbatha,\* Xiaoti Cui, Payam G. Panah, Sébastien Thomas, Ksenia Parkhomenko, Anne-Cécile Roger, Benoit Louis, Ray Everson, Paulo Debiagi, Nicholas Musyoka and Henrietta Langmi



2271

### Modelling interfacial ionic transport in $\text{Li}_2\text{VO}_2\text{F}$ cathodes during battery operation

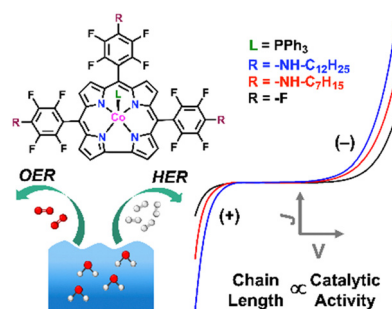
Jolla Kullgren,\* Jin Hyun Chang, Simon Loftager, Shweta Dhillon, Tejs Vegge and Daniel Brandell



2280

### Exploring the role of polymer interactions during water electrolysis under basic conditions with bifunctional cobalt corroles

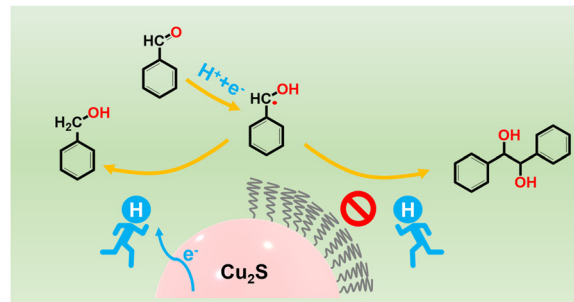
Sameeta Sahoo, Elizabeth K. Johnson, Xiangru Wei, Sen Zhang and Charles W. Machan\*



2287

### Influence of the catalyst surface chemistry on the electrochemical self-coupling of biomass-derived benzaldehyde into hydrobenzoin

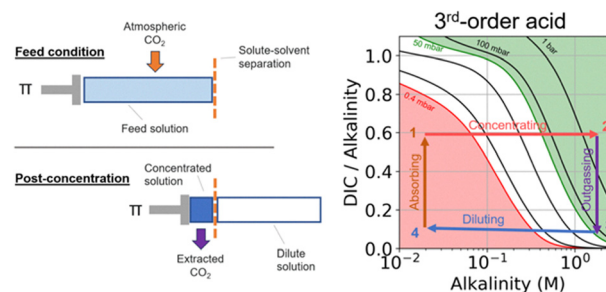
Li Gong, Shiling Zhao, Jing Yu, Junshan Li, Jordi Arbiol, Tanja Kallio, Mariano Calcabrini, Paulina R. Martínez-Alanis,\* Maria Ibáñez and Andreu Cabot\*



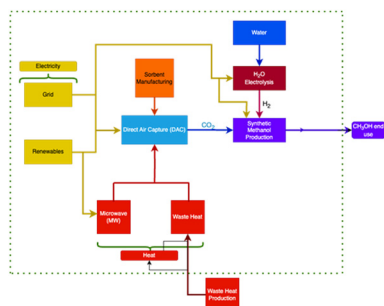
2295

### Acid–base concentration swing for direct air capture of carbon dioxide

Anatoly Rinberg\* and Michael J. Aziz



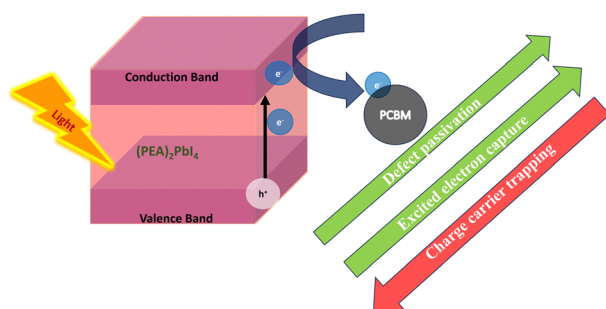
2311



### A cradle-to-gate life cycle assessment of green methanol production using direct air capture

Nicholas Badger,\* Rahim Boylu, Valentine Ilojianya, Mustafa Erguvan and Shahriar Amini\*

2328



### Effect of PCBM nanoparticles in lead-based layered (PEA)<sub>2</sub>PbI<sub>4</sub> perovskite thin films

Deepak Aloysius, Muskan Khan, Arindam Mondal and Satyajit Gupta\*

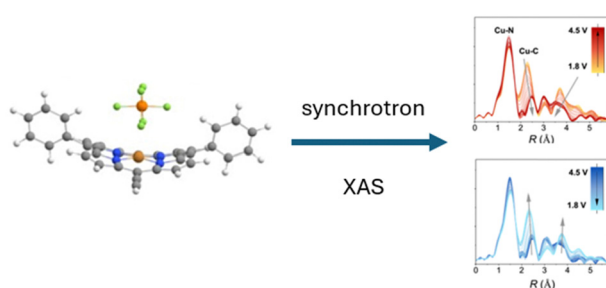
2335



### Effects of tuning decision trees in random forest regression on predicting porosity of a hydrocarbon reservoir. A case study: volve oil field, north sea

Kushan Sandunil,\* Ziad Bennour, Hisham Ben Mahmud and Ausama Giwelli

2348



### Exploring the chemical and structural change of copper porphyrins upon charging by means of synchrotron X-ray absorption spectroscopy

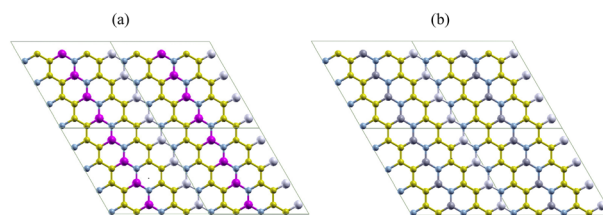
Thomas Smok,\* Yang Hu, Saibal Jana, Frank Pammer and Maximilian Fichtner\*



2358

### Novel 2D structural material design: carbon–aluminium–boron nitrides (CC–(Al–B)N) and carbon–aluminium–gallium nitrides (CC–(Al–Ga)N) for optical and optoelectronic system applications

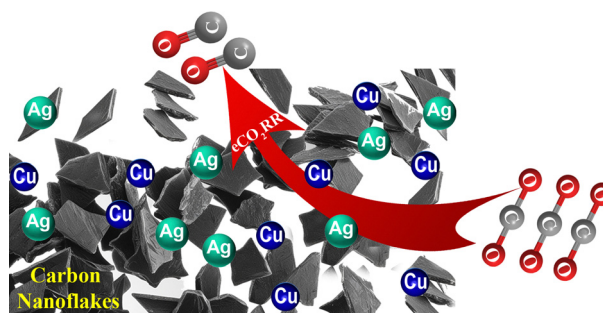
V. W. Elloh,\* D. E. Anderson, D. Abbeyquaye, D. F. Ofosuhene, I. Arhin, Edwin Okoampa Boadu, A. Yaya and Eric K. K. Abavare



2367

### Selective electroreduction of CO<sub>2</sub> into CO over Ag and Cu decorated carbon nanoflakes

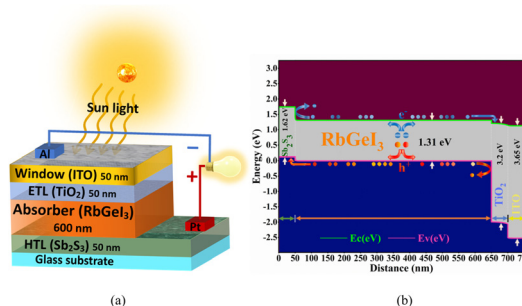
Ahmad Faraz, Waheed Iqbal, Shayan Gul, Fehmida K. Kanodarwala, Muhammad Nadeem Zafar, Guobao Xu\* and Muhammad Arif Nadeem\*



2377

### Numerical modeling and extensive analysis of an extremely efficient RbGeI<sub>3</sub>-based perovskite solar cell by incorporating a variety of ETL and HTL materials to enhance PV performance

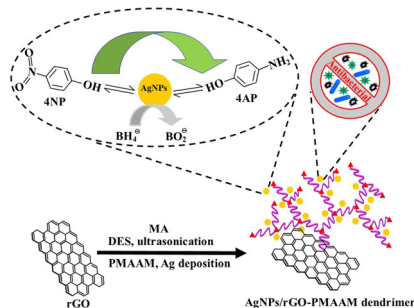
Md. Mojahidur Rahman, Md. Hasan Ali,\* Md. Dulal Haque and Abu Zafor Md. Touhidul Islam\*



2399

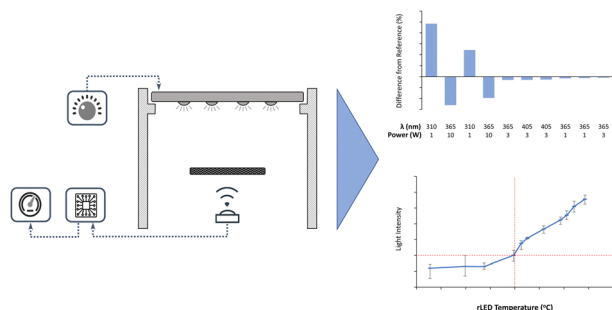
### Synthesis of dendrimer stabilized high-density silver nanoparticles on reduced graphene oxide for catalytic and antibacterial properties

Thi Nhat Thang Nguyen, Subodh Kumar\* and Xuan Thang Cao\*



## PAPERS

2407



## Feasibility study of UV intensity monitoring in water disinfection systems using reverse-biased LED photometers

D. Pousty,\* Y. Gerchman and H. Mamane

## CORRECTION

2416

## Correction: Acid–base concentration swing for direct air capture of carbon dioxide

Anatoly Rinberg\* and Michael J. Aziz

