

# 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(2) 333-544 (2024)



### Cover

See Nageh K. Allam *et al.*, pp. 430–441. Image reproduced by permission of Mohamed Mahrous Abodouh from *Energy Adv.*, 2024, 3, 430.



### Inside cover

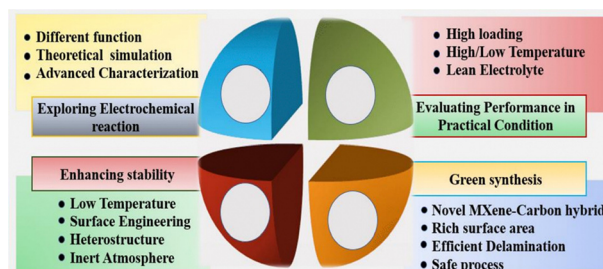
See Subhendu K. Panda *et al.*, pp. 442–450. Image reproduced by permission of Subhendu K. Panda from *Energy Adv.*, 2024, 3, 442.

## REVIEWS

341

### MXene–carbon based hybrid materials for supercapacitor applications

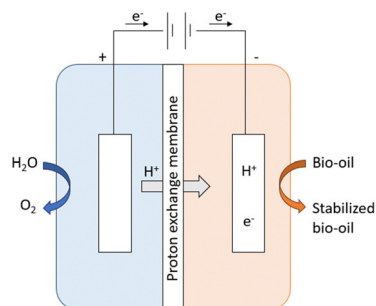
Pavithra Siddu N. K., Sang Mun Jeong\* and Chandra Sekhar Rout\*



366

### Improving plastic pyrolysis oil quality via an electrochemical process for polymer recycling: a review

César Catizane, Ying Jiang\* and Joy Sumner



# Advance your career in science

with professional recognition that showcases  
your **experience, expertise and dedication**

## Stand out from the crowd

Prove your commitment  
to attaining excellence in  
your field

## Gain the recognition you deserve

Achieve a professional  
qualification that inspires  
confidence and trust

## Unlock your career potential

Apply for our professional  
registers (RSci, RSciTech)  
or chartered status  
(CChem, CSci, CEnv)

## Apply now

[rsc.li/professional-development](https://rsc.li/professional-development)

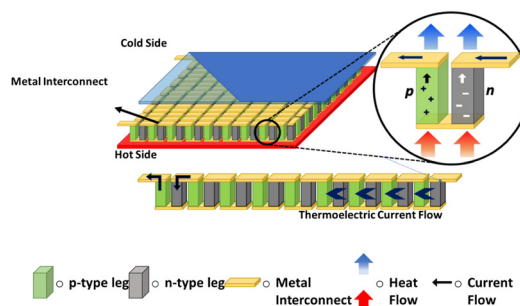


## REVIEWS

389

### Graphene-derived composites: a new Frontier in thermoelectric energy conversion

Vaishali Rathi,\* Ranjeet Brajpuriya,\* Rajeev Gupta, K. P. S. Parmar and Ashish Kumar\*

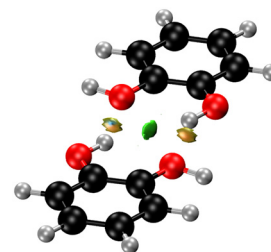


## COMMUNICATIONS

413

### Metastability and polymorphism in dihydroxybenzenes – implications for thermal energy storage

Tomas S. Northam de la Fuente, Mattia Gaboardi, Kalith M. Ismail, Valerio Di Lisio, Daniele Cangialosi, Alberto Otero-de-la-Roza, Pedro B. Coto\* and Felix Fernandez-Alonso\*

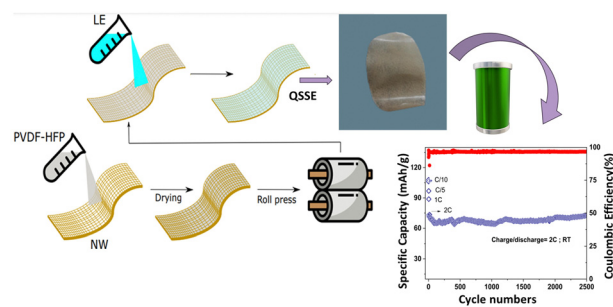


dihydroxybenzenes for thermal energy storage

419

### Tailored nonwoven supported non-flammable quasi-solid electrolyte enables an ultra-stable sodium metal battery

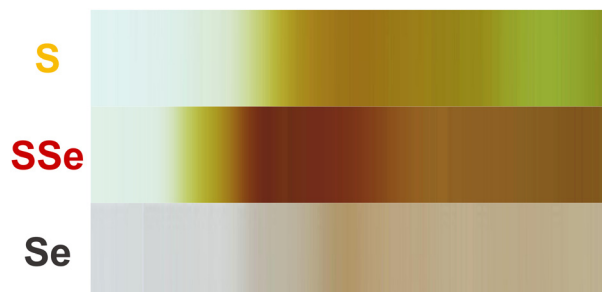
Sayan Das,\* Vilas G. Pol and Venimadhav Adyam



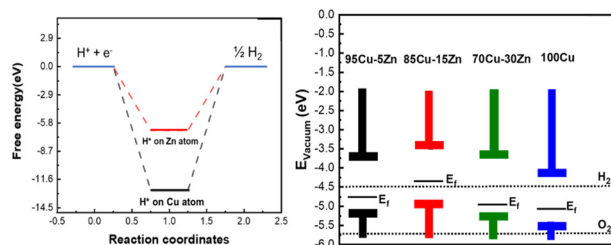
424

### Optical and X-ray absorption interrogation of selenium-based redox in Li-S<sub>x</sub>Se<sub>y</sub> batteries

Ryan H. DeBlock, Matthew J. Lefler, Zachary G. Neale, Corey T. Love, Jeffrey W. Long and Rachel Carter\*



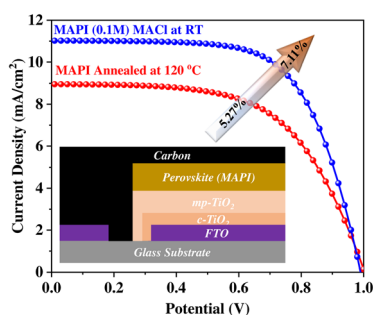
430



### Untapped potential of scrap brass alloy: a new frontier in the use of brass-based photocathodes for stable and durable photoelectrochemical water splitting

Rahma Leil, Mohamed Mahrous Abodouh, Nasir Javed, Sneha Sreekumar, Haydee Pacheco, Nada Tarek, Deirdre M. O'Carroll and Nageh K. Allam\*

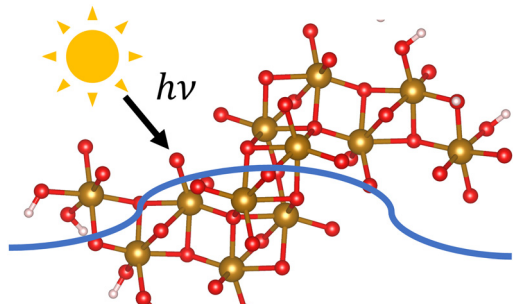
442



### An ambient process for hole transport layer-free highly stable MAPbI<sub>3</sub> by addition of MACl for efficient perovskite solar cells

Pardhasaradhi Nandigana, Bavatharini Saminathan, Sriram P., Sujatha D., Imthiaz Ahmed M., Ram Prasanth R., B. Subramanian and Subhendu K. Panda\*

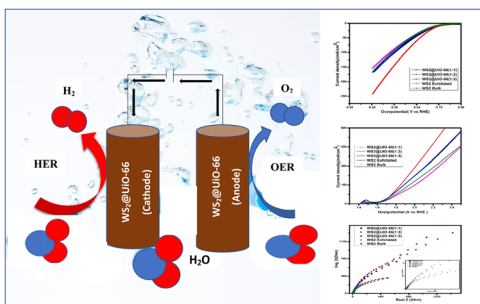
451



### Simulations for charge transfer and photocurrent calculations using hematite for green hydrogen production

Nadav Snir and Maytal Caspary Toroker\*

459



### 2D bifunctional tungsten disulfide-embedded UiO-66 (WS<sub>2</sub>@UiO-66) as a highly active electrocatalyst for water splitting

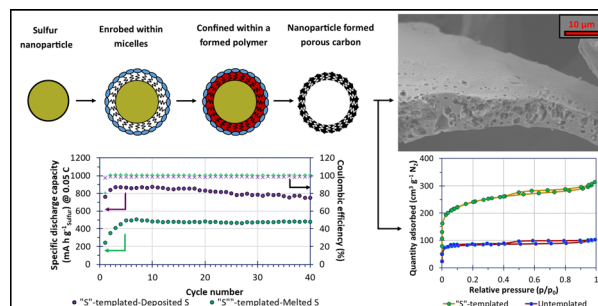
Muhabbat Shah, Uzair Abdullah, Erum Pervaiz\* and Maryum Ali



471

### Carbons derived from resole-type phenolic resins for use in lithium–sulfur batteries: templating the resins with sulfur leads to enhanced cell performance

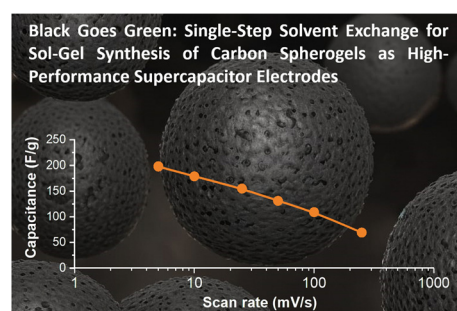
Luke D. J. Barter, Irshad Mohammad, Steven J. Hinder, John F. Watts, Robert C. T. Slade and Carol Crean\*



482

### Black goes green: single-step solvent exchange for sol-gel synthesis of carbon spherogels as high-performance supercapacitor electrodes

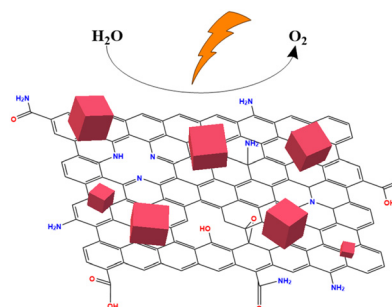
Miralem Salihovic, Emmanuel Pamet , Stefanie Arnold, Irena Sulejmani, Theresa Bartschmid, Nicola H sing, Gerhard Fritz-Popovski, Chaochao Dun, Jeffrey J. Urban, Volker Presser\* and Michael S. Elsaesser\*



495

### Co-Prussian blue analogue supported on graphene-based materials as an electrocatalyst for OER at neutral pH

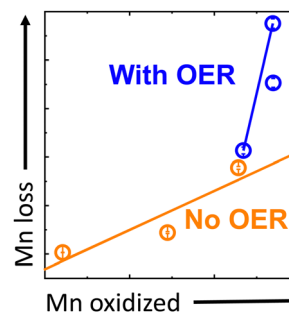
Rafael G. Yoshimura, Thiago V. de B. Ferraz, Priscilla J. Zambiasi and Juliano A. Bonacin\*



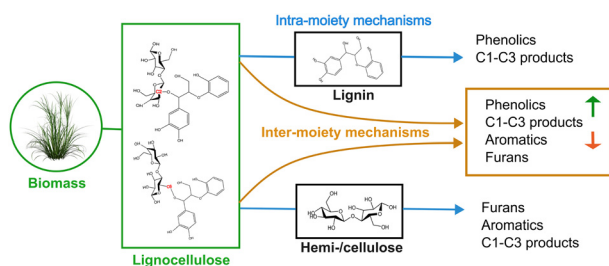
504

### Manganese dissolution in alkaline medium with and without concurrent oxygen evolution in LiMn<sub>2</sub>O<sub>4</sub>

Omeshwari Yadorao Bisen, Max Baumung, Michael Tatzel, Cynthia A. Volkert and Marcel Risch\*



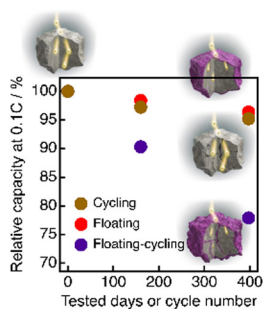
515



### Impact of lignin-carbohydrate complex (LCC) linkages on cellulose pyrolysis chemistry

Arul Mozhi Devan Padmanathan, Seth Beck, Khursheed B. Ansari and Samir H. Mushrif\*

529



### Combination of float charging and occasional discharging to cause serious LIB degradation analyzed by *operando* neutron diffraction

Tetsuya Omiya, Atsunori Ikezawa, Keita Takahashi, Keiichi Saito, Masao Yonemura, Takashi Saito, Takashi Kamiyama and Hajime Arai\*

