

# Sustainable Energy & Fuels

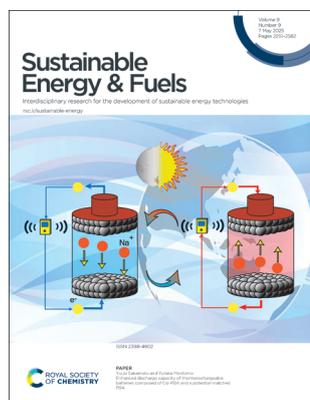
Interdisciplinary research for the development of sustainable energy technologies

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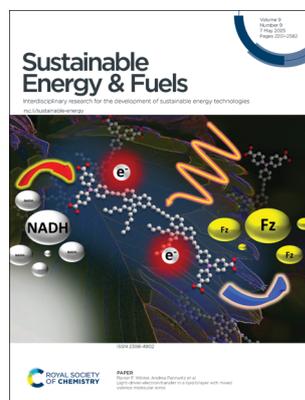
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## IN THIS ISSUE

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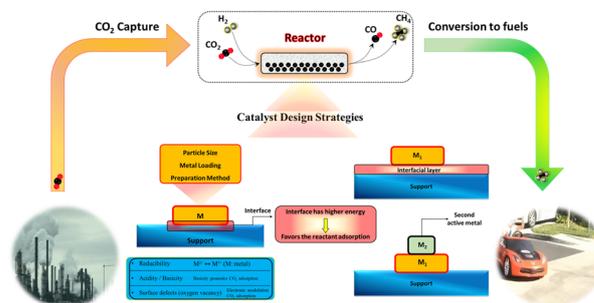
**Inside cover**  
See Rainer F. Winter, Andrea Pannwitz *et al.*, pp. 2302–2315. Image reproduced by permission of Novitasari Sinambela from *Sustainable Energy Fuels*, 2025, 9, 2302.

## REVIEW

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### Advancements in CO<sub>2</sub> conversion technologies: a comprehensive review on catalyst design strategies for high-performance CO<sub>2</sub> methanation

Amisha Beniwal, Ashima Bagaria, Tsan-Yao Chen\* and Dinesh Bhalothia\*

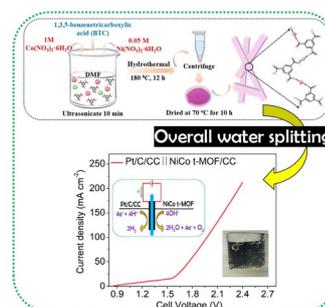


## COMMUNICATION

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### A ligand-specific bimetallic electrocatalyst for efficient oxygen evolution reaction at higher current density

Varsha K., Kiran G. K., Sutar Rani Ananda, Lokesh Koodlur Sannegowda\* and Shambhulinga Aralekallu\*



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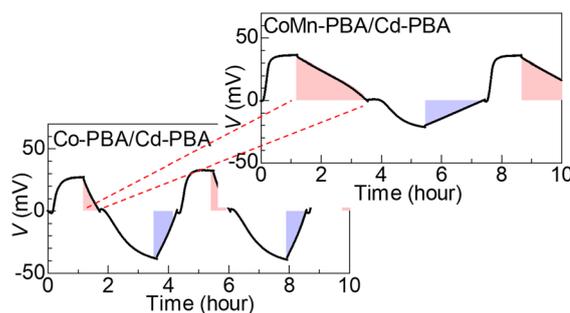
Fundamental questions  
Elemental answers



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## Enhanced discharge capacity of thermorechargeable batteries composed of Cd-PBA and a potential-matched PBA

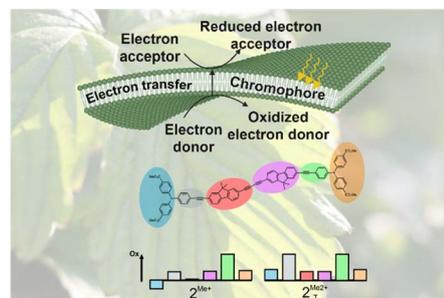
Yuuki Sakamoto and Yutaka Moritomo\*



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## Light-driven electron transfer in a lipid bilayer with mixed valence molecular wires

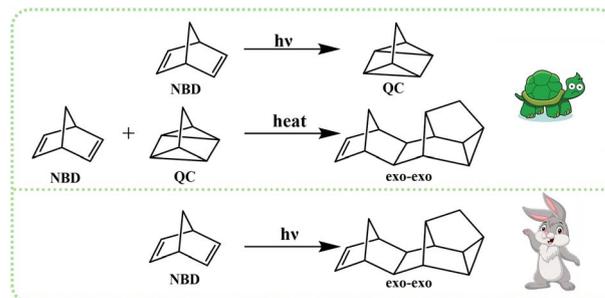
Novitasari Sinambela, Moritz Nau, Gernot Haug, Michael Linseis, Philip Koblischek, Rainer F. Winter\* and Andrea Pannwitz\*



2316

## Photo-promoted one-pot coupling isomerization-codimerization of norbornadiene for the efficient synthesis of liquid fuel with a density higher than 1 g mL<sup>-1</sup>

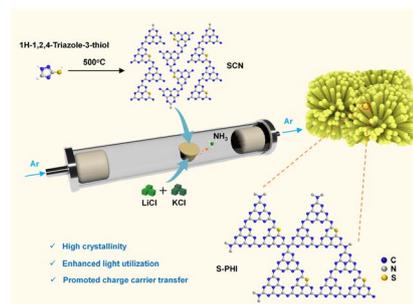
Pei Li, Ruichen Liu, Cong Li, Li Wang, Xiangwen Zhang and Guozhu Li\*



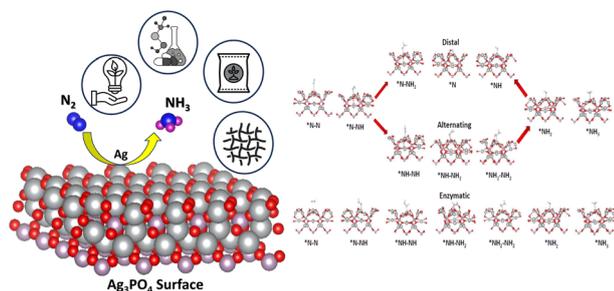
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## Crystalline sulfur-doped poly(heptazine imide) for enhanced photocatalytic H<sub>2</sub> evolution under visible-light irradiation

Cheng Cheng, Wenze Luo, Binjiang Zhai, Li Tian, Jinwen Shi, Zhifu Zhou, Fei Chen\* and Xiangjiu Guan\*



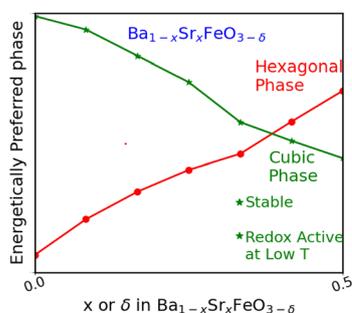
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### Charge transfer and reaction coordinate construction based theoretical investigation of the eNRR and HER on cuboidal silver phosphate: a tale of two competing mechanisms

Prajna Parimita Mohanty, Tisita Das, Rajeev Ahuja\* and Sudip Chakraborty\*

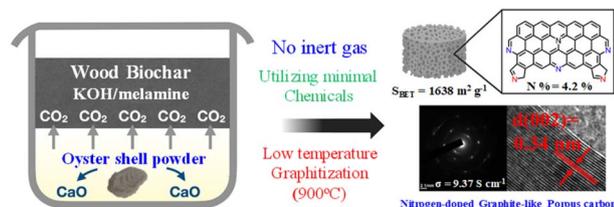
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### $\text{Ba}_{1-x}\text{Sr}_x\text{FeO}_{3-\delta}$ as an improved oxygen storage material for chemical looping air separation: a computational and experimental study

Shree Ram Acharya,\* Eric J. Popczun, Hari P. Paudel, Sittichai Natesakhawat, Jonathan W. Lekse and Yuhua Duan

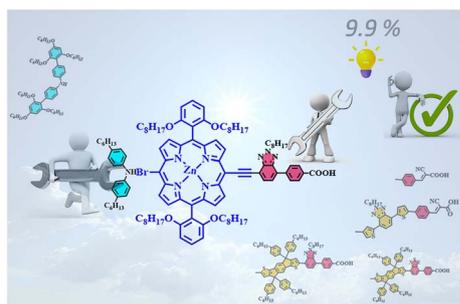
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### Conversion of wood waste into nitrogen-doped graphite-like multiporous carbon with high specific surface area and electrical conductivity for high-voltage supercapacitors

Shu-Sian Wang, Chun-Han Hsu, Cheng-Ta Tsai, Hong-Ping Lin,\* Che-Wei Yan, Jeng-Kuei Chang, Tzu-Hsien Hsieh, Cheng-Wei Huang and Cheng-Hsien Lee

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### Rational molecular engineering of porphyrins for enhanced performance in dye-sensitized solar cells

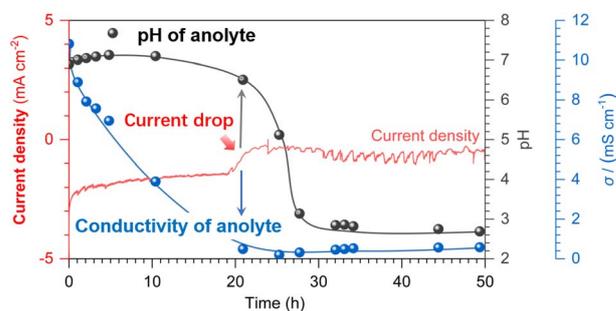
Faraghally A. Faraghally, Yu-Hsuan Chen, Tsung-Zu Lee, Yan-Da Chen, Tzu-Chien Wei\* and Chen-Yu Yeh\*



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### Cation transport phenomena during CO<sub>2</sub> electroreduction in an H-type cell with a Nafion membrane

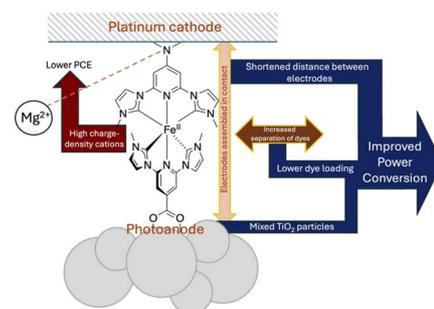
Liyuan Zeng, Xiaosen Cai, Guangxing Yang,\* Qiao Zhang, Zhiting Liu and Feng Peng\*



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### Push–pull amino-substituted heteroleptic iron N-heterocyclic carbene photosensitizers in dye-sensitized solar cells: optimization and characteristics

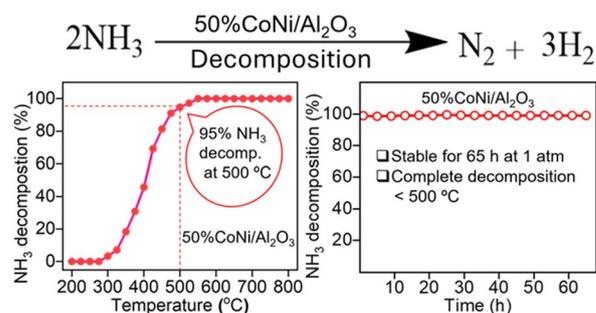
Samuel Persson, Iacopo Benesperi, Yogesh Goriya, Dnyaneshwar Kand, Suresh Rayavarapu, Timo Keller, Marina Freitag\* and Kenneth Wärnmark\*



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### Alumina-supported bimetallic catalysts with ruthenium and CoNi for enhanced ammonia decomposition

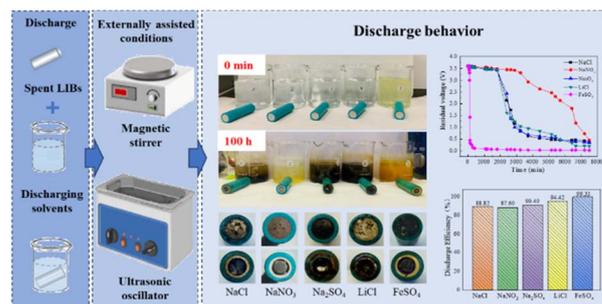
Afnan M. Ajeebi, Ahsan Ali, Omar Mohammad AlAmoudi, Mohammed A. Sanhoob, Mohammad Mozahar Hossain, Huda S. Alghamdi, Mohammad Usman, Md. Hasan Zahir and M. Nasiruzzaman Shaikh\*



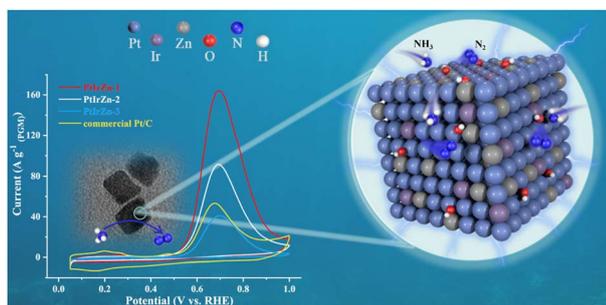
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### Study on the discharge behavior of spent lithium-ion batteries under externally assisted conditions

Qiao Yu and Rao Zhonghao\*



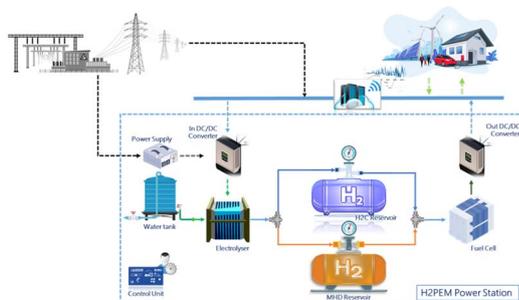
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### Dibenzyl ether-guided microstructural regulation of PtIrZn catalysts for ammonia electrocatalysis

Zilan Jiang, Sibin Zhu, Xufeng Tang, Haibo Tang, Xiaoming Zhu, Lun Yu, Letian Li, Yadong Wang,\*  
Haolin Tang\* and Xiaoling Liu\*

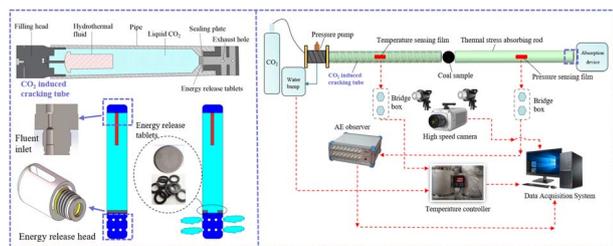
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### Energy-environmental analysis of an H2PEM power station assisted by a dynamic simulation tool

Orlando Corigliano\* and Petronilla Fragiaco

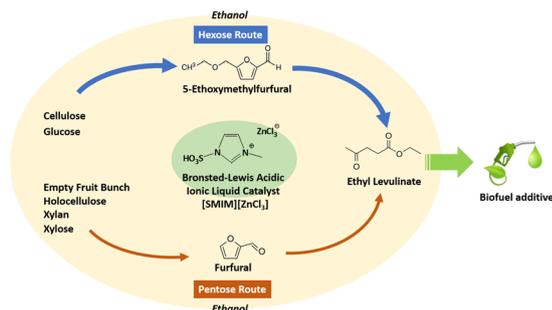
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### Fracture mechanism and multi-field interaction effects of supercritical CO<sub>2</sub>-water-coal rock coupling

Fei Yu,\* Guangzhe Deng and Chao Yuan

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### A Brønsted–Lewis acidic ionic liquid as a dual-acidity catalyst for direct cellulose liquefaction to ethyl levulinate

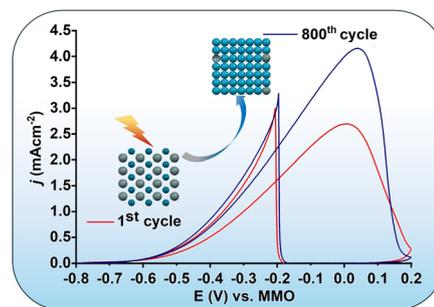
Kirrhana Krishnasamy, Mohd Asmadi,\* Muzakkir  
Mohammad Zainol, Nor Aishah Saidina Amin, Zaki  
Yamani Zakaria and Sureena Binti Abdullah



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### *In Situ* metal exsolution induced structural transformation enhances activity of the Pd–Sn catalyst for electrocatalytic ethanol oxidation

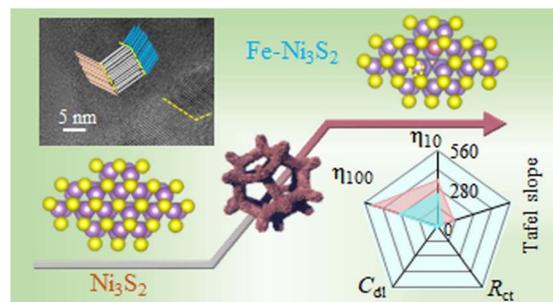
Ashly P. Chandran,\* Sundar Pavan, Soumi Mondal, Mahesh B. V and Anand B



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### Constructing a homojunction of Fe–Ni<sub>3</sub>S<sub>2</sub> as a highly efficient electrocatalyst for the oxygen evolution reaction

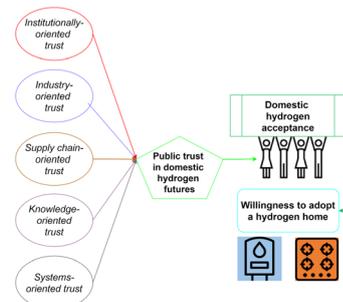
Mingyi Shi, Zihao Wan, Lu Liu, Xiaoguang Wang, Zizai Ma\* and Jianping Du\*



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### Fuelling hydrogen futures? A trust-based model of social acceptance

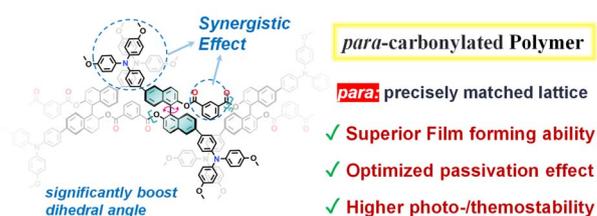
Joel A. Gordon,\* Nazmiye Balta-Ozkan, Anwar Ul Haq and Seyed Ali Nabavi

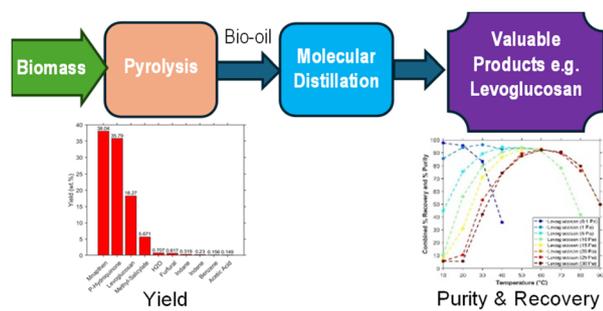


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### Optimized surface passivation via *para*-carbonylated polymers for durable MAPbI<sub>3</sub> perovskite solar cells

Jiali Kang, Zhaolong Ma, Fei Su,\* Yan Du, Xin Xiong, Peng Lin, Zhihui Wang and Xueping Zong\*





## Process simulation of the integration of molecular distillation with fast pyrolysis of biomass for sustainable fuel production

Pamela Iwube, Jun Li and Edward Brightman\*

