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Sustainable Energy & Fuels

Interdisciplinary research for the development of sustainable energy technologies

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IN THIS ISSUE

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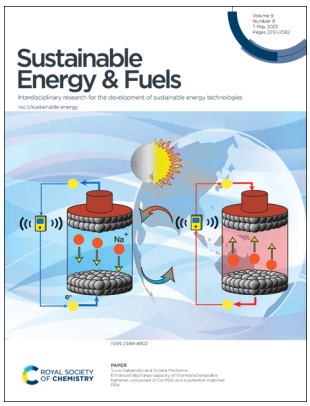

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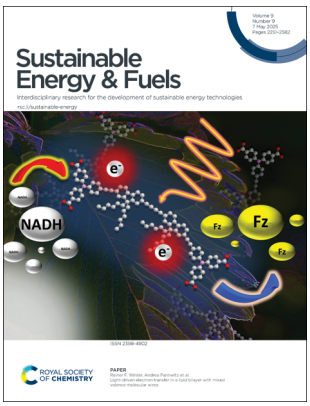
See Yuuki Sakamoto and Yutaka Moritomo, pp. 2294–2301. Image reproduced by permission of Yutaka Moritomo from *Sustainable Energy Fuels*, 2025, **9**, 2294.



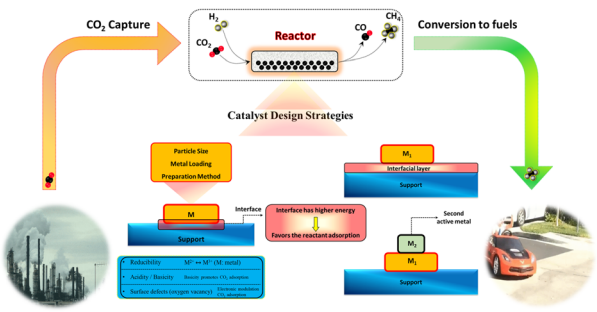
Inside cover
See Rainer F. Winter, Andrea Pannwitz *et al.*, pp. 2302–2315. Image reproduced by permission of Novitasari Sinambela from *Sustainable Energy Fuels*, 2025, **9**, 2302.

REVIEW

2261

Advancements in CO_2 conversion technologies: a comprehensive review on catalyst design strategies for high-performance CO_2 methanation

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

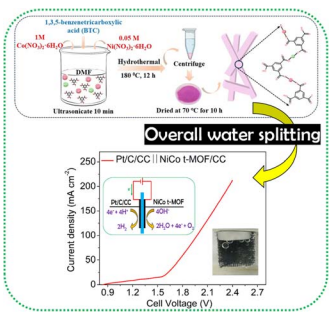


COMMUNICATION

2287

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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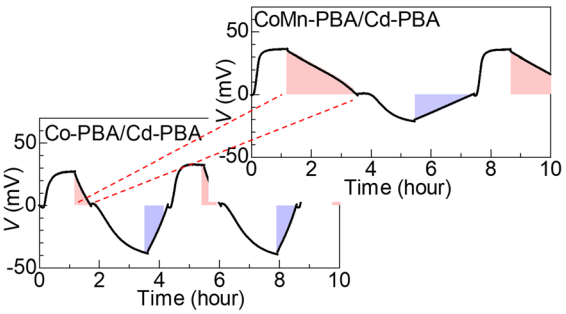
PAPERS

2294

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

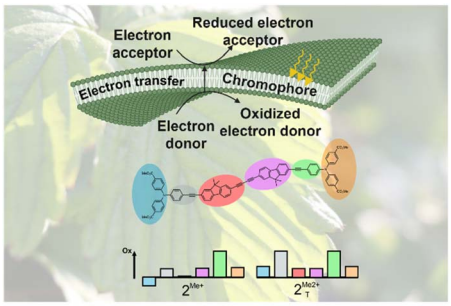
Yuuki Sakamoto and Yutaka Moritomo*



2302

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

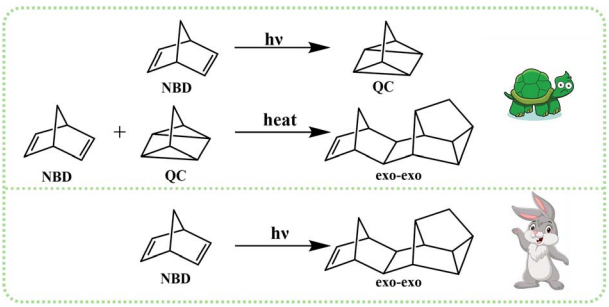
Novitasari Sinambela, Moritz Nau, Gernot Haug, Michael Linseis, Philip Koblischek, Rainer F. Winter* and Andrea Pannwitz*



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^{-1}

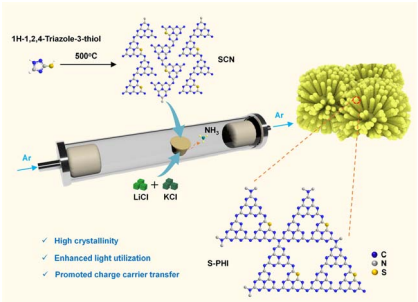
Pei Li, Ruichen Liu, Cong Li, Li Wang, Xiangwen Zhang and Guozhu Li*



2327

Crystalline sulfur-doped poly(heptazine imide) for enhanced photocatalytic H_2 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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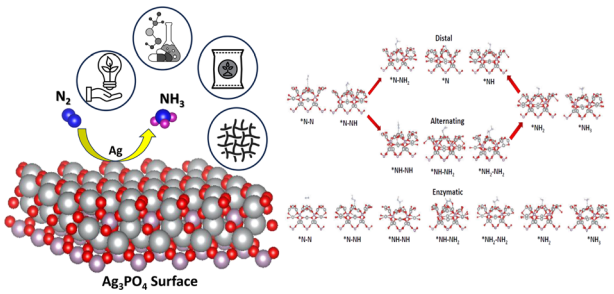
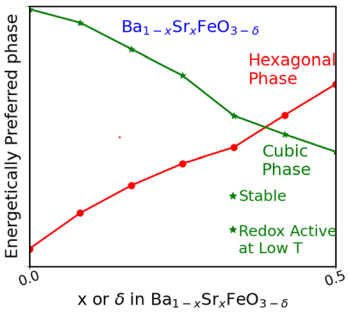


Charge transfer and reaction coordinate construction based theoretical investigation of the eNRR and HER on cuboidal silver phosphate: a tale of two competing mechanisms

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

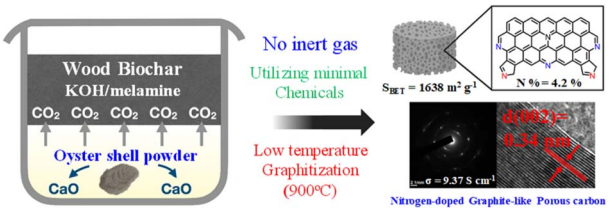
2340



$Ba_{1-x}Sr_xFeO_{3-\delta}$ 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

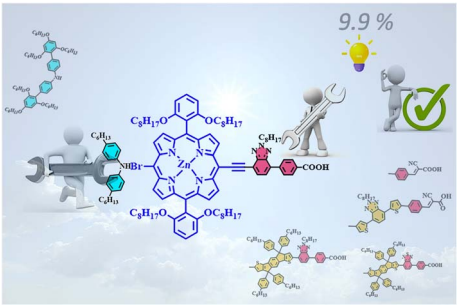
2355



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

2369



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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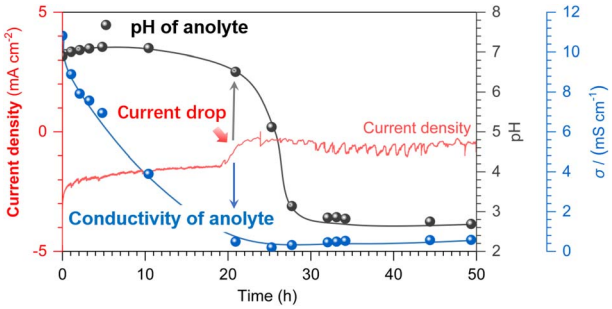
2380

Cation transport phenomena during CO_2 electroreduction in an H-type cell with a Nafion membrane

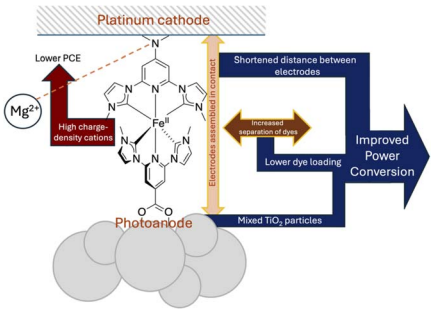
Liyuan Zeng, Xiaosen Cai, Guangxing Yang,* Qiao Zhang, Zhiting Liu and Feng Peng*



2389

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

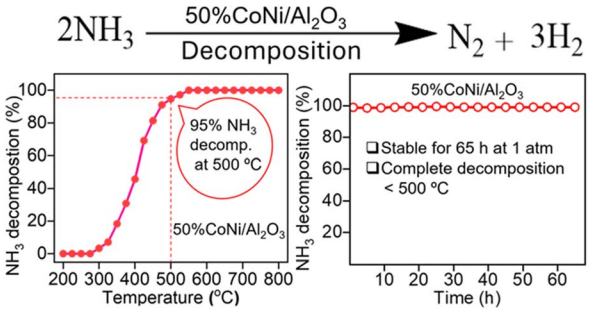
Samuel Persson, Iacopo Benesperi, Yogesh Goriya, Dnyaneshwar Kand, Suresh Rayavarapu, Timo Keller, Marina Freitag* and Kenneth Wärnmark*



2396

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

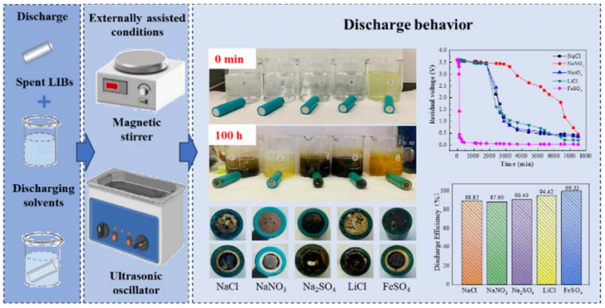
Afnan M. Ajeebi, Ahsan Ali, Omar Mohammad AlAmoudi, Mohammed A. Sanhoob, Mohammad Mozahar Hossain, Huda S. Alghamdi, Mohammad Usman, Md. Hasan Zahir and M. Nasiruzzaman Shaikh*



2410

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

Qiao Yu and Rao Zhonghao*



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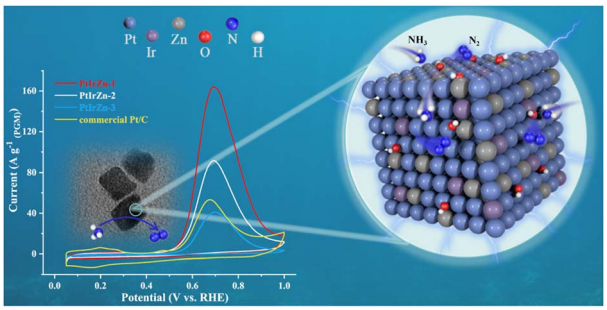
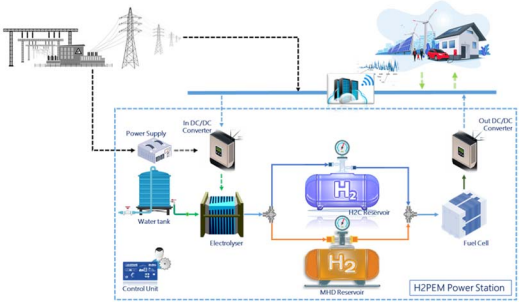


Dibenzyl ether-guided microstructural regulation of PtIrZn catalysts for ammonia electrocatalysis

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

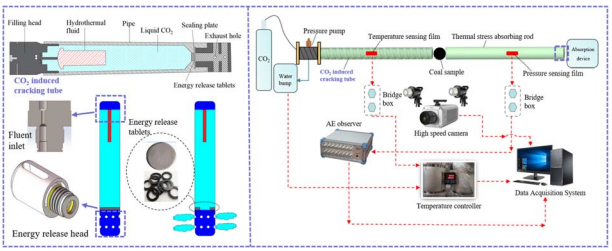
2433



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

Orlando Corigliano* and Petronilla Fragiacomo

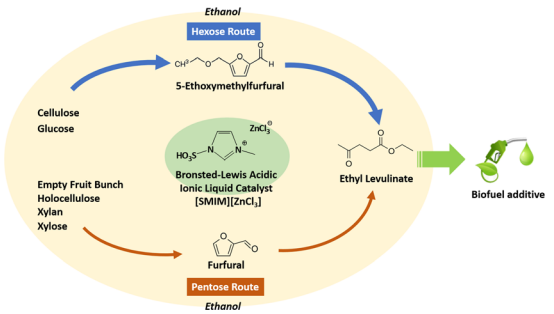
2466



Fracture mechanism and multi-field interaction effects of supercritical CO_2–water–coal rock coupling

Fei Yu,* Guangzhe Deng and Chao Yuan

2478



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

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

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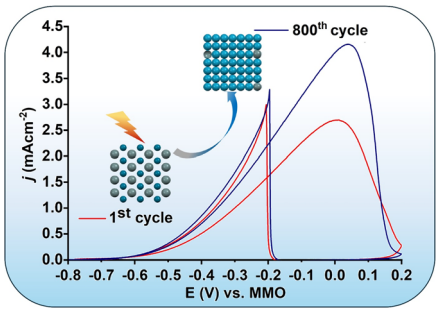
PAPERS

2491

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

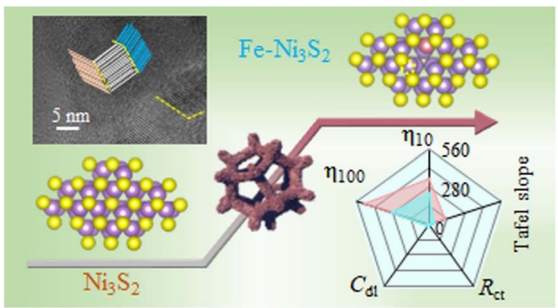
Ashly P. Chandran,* Sundar Pavan, Soumi Mondal, Mahesh B. V and Anand B



2500

Constructing a homojunction of Fe–Ni_3S_2 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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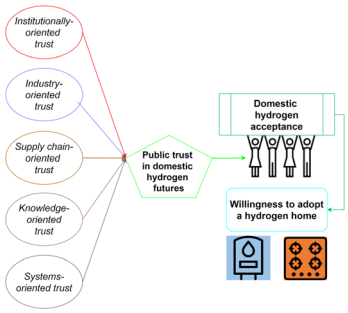
Fuelling hydrogen futures? A trust-based model of social acceptance

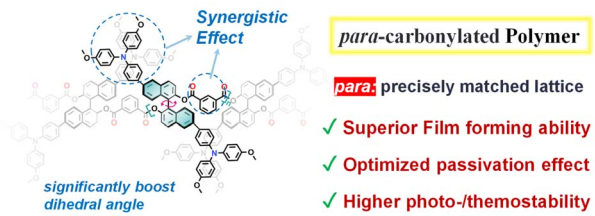
Joel A. Gordon,* Nazmiye Balta-Ozkan, Anwar Ul Haq and Seyed Ali Nabavi



2556

Optimized surface passivation _via para_-carbonylated polymers for durable $MAPbI_3$ perovskite solar cells

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



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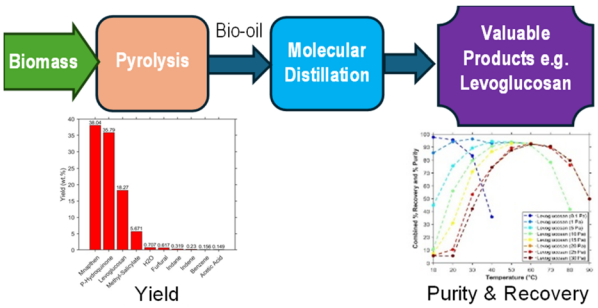

Process simulation of the integration of molecular distillation with fast pyrolysis of biomass for sustainable fuel production

Pamela Iwube, Jun Li and Edward Brightman*

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