

Journal of Materials Chemistry A

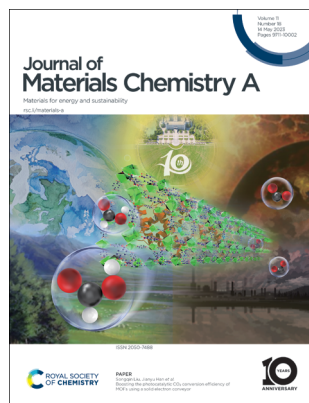
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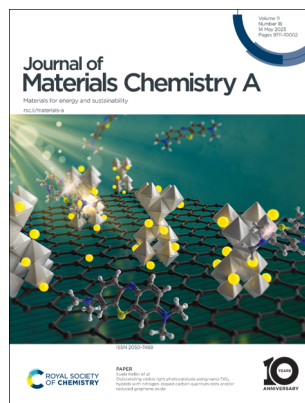
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ISSN 2050-7488 CODEN JMCAET 11(18) 9711–10002 (2023)



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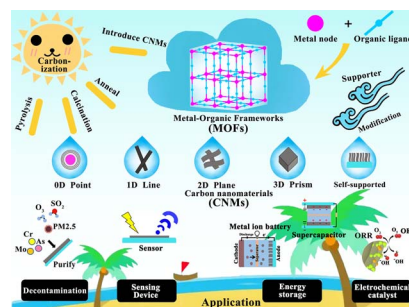
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REVIEW

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Multidimensional MOF-derived carbon nanomaterials for multifunctional applications

Shaojie Xu, Anrui Dong, Yue Hu, Zhi Yang, Shaoming Huang and Jinjie Qian*

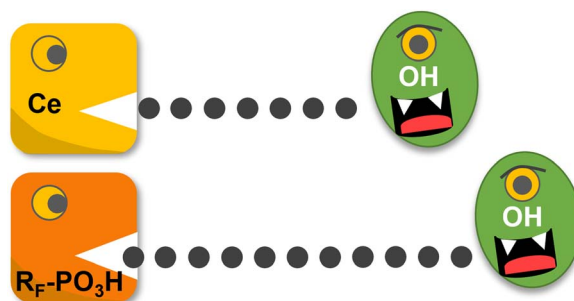


COMMUNICATIONS

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Fluoroalkyl phosphonic acid radical scavengers for proton exchange membrane fuel cells

Tanya Agarwal, Santosh Adhikari, Yu Seung Kim,* Siddharth Komini Babu, Ding Tian, Chulsung Bae, Nguyet N. T. Pham, Seung Geol Lee, Ajay K. Prasad, Suresh G. Advani, Allen Sievert, Wipula Priya Rasika Liyanage, Timothy E. Hopkins, Andrew Park and Rod Borup*



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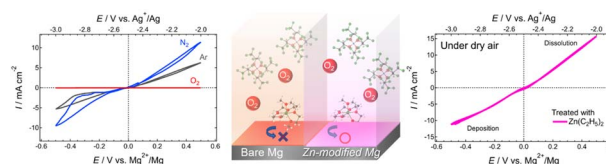


COMMUNICATIONS

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Oxygen – a fatal impurity for reversible magnesium deposition/dissolution

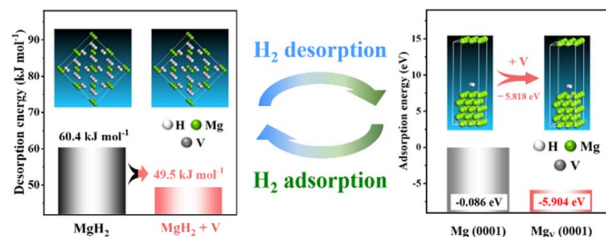
Toshihiko Mandai* and Mariko Watanabe



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Understanding and unlocking the role of V in boosting the reversible hydrogen storage performance of MgH_2

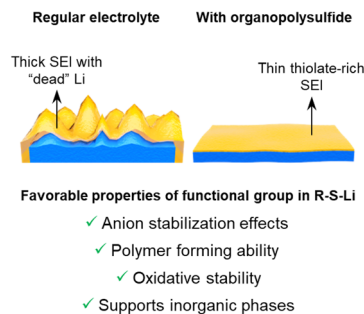
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Mechanistic understanding of lithium-anode protection by organosulfide-based solid-electrolyte interphases and its implications

Amruth Bhargav, Hooman Yaghoobnejad Asl and Arumugam Manthiram*

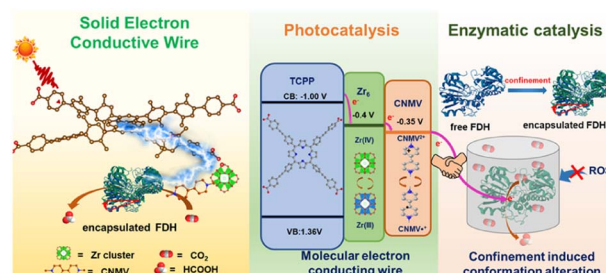


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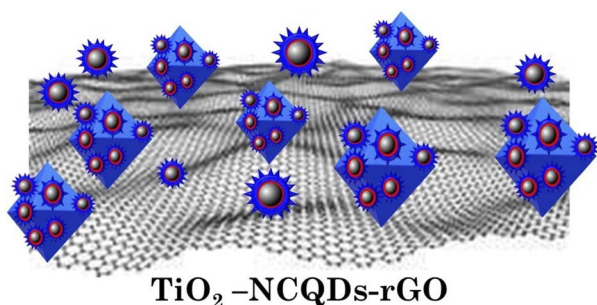
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Boosting the photocatalytic CO_2 conversion efficiency of MOFs using a solid electron conveyor

Xiaofei Gu, Tianyi Huang, Yixin Hong, Yafeng Wu, Zhi Wang, Yuanjian Zhang, Songqin Liu* and Jianyu Han*



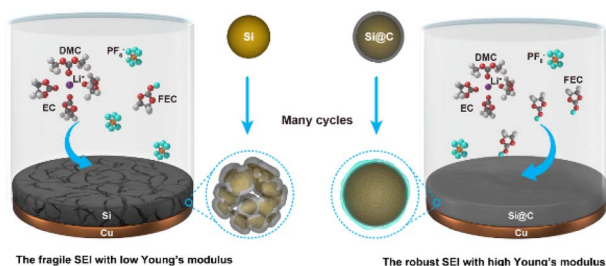
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Outstanding visible light photocatalysis using nano-TiO₂ hybrids with nitrogen-doped carbon quantum dots and/or reduced graphene oxide

Ioan-Alexandru Baragau, John Buckeridge, Kiem G. Nguyen, Tobias Heil, Muhammad Tariq Sajjad, Stuart A. J. Thomson, Alistair Rennie, David J. Morgan, Nicholas P. Power, Sabina Alexandra Nicolae, Maria-Magdalena Titirici, Steve Dunn and Suela Kellici*

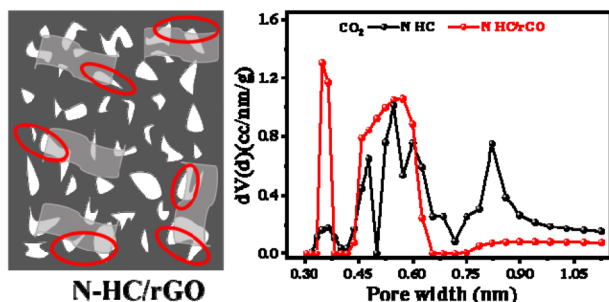
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Carbon-coating strengthens the solid electrolyte interphase to inhibit Si pulverization

Xuyang Wang, Yingzhi Li,* Xinyang Wang, Qingmeng Gan, Zhenyu Wang, Kemeng Liao, Sisi Wu, Hao Guo, Jiangyu Li, Boyuan Huang* and Zhonguang Lu*

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Sucrose-derived hard carbon wrapped with reduced graphene oxide as a high-performance anode for sodium-ion batteries

Shengyuan Li, Hong Yuan, Chuanren Ye, Yizhe Wang, Long Wang, Kun Ni* and Yanwu Zhu*

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Overall water electrolysis on a graphdiyne-iron oxyhydroxide heterostructure

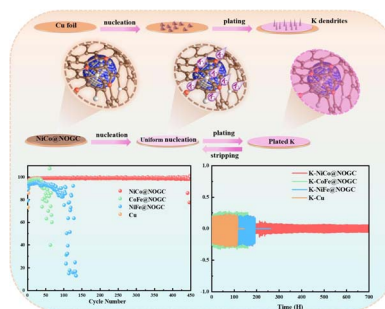
Xi Chen, Danyan Zhang, Xuchen Zheng, Chao Zhang, Yang Gao, Chengyu Xing, Siao Chen, Han Wu, Yurui Xue* and Yuliang Li*



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Biomass-derived two-dimensional N,O-doped carbon with embedded binary-metal nanoparticles enables dendrite-free potassium-metal anodes

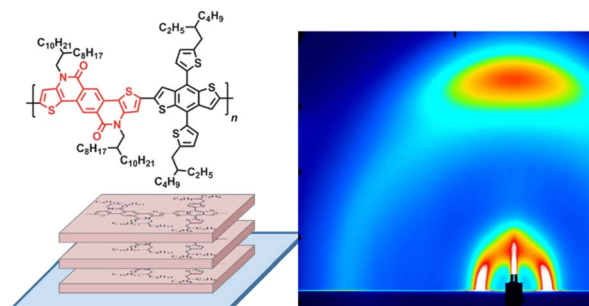
Qing Shen, Yibo He and Junjie Wang*



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Fused polycyclic lactam-based π -conjugated polymers for efficient nonfullerene organic solar cells

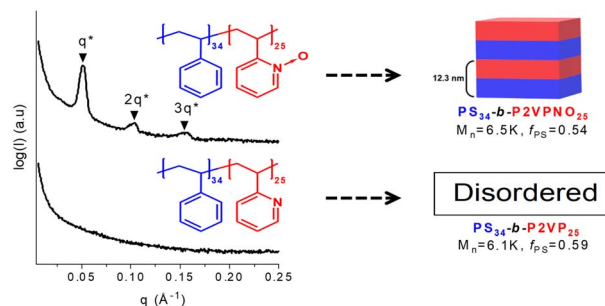
Narumi Sato, Sunbin Hwang, Yuichi Tsuchii and Takuma Yasuda*



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High- χ diblock copolymers containing poly(vinylpyridine-*N*-oxide) segments

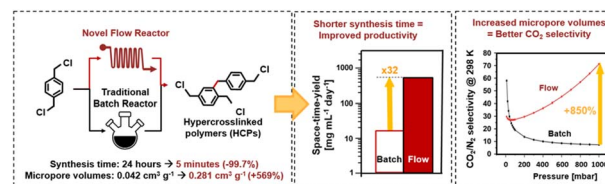
Polyxeni P. Angelopoulou, Logan T. Kearney, Jong K. Keum, Liam Collins, Rajeev Kumar, Georgios Sakellariou, Rigoberto C. Advincula, Jimmy W. Mays* and Kunlun Hong*



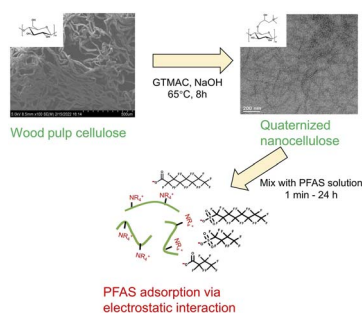
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Flow synthesis of hypercrosslinked polymers with additional microporosity that enhances CO₂/N₂ separation

Nadhita Chanchaona, Liang Ding, Shiliang Lin, Sulaiman Sarwar, Simone Dimartino, Ashleigh J. Fletcher, Daniel M. Dawson, Kristina Konstas, Matthew R. Hill and Cher Hon Lau*



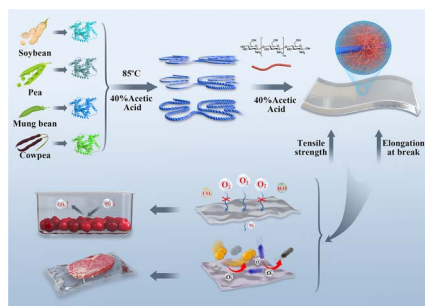
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Efficient removal of short-chain and long-chain PFAS by cationic nanocellulose

Duning Li, Cheng-Shiuan Lee, Yi Zhang, Rasel Das, Fahmida Akter, Arjun K. Venkatesan* and Benjamin S. Hsiao*

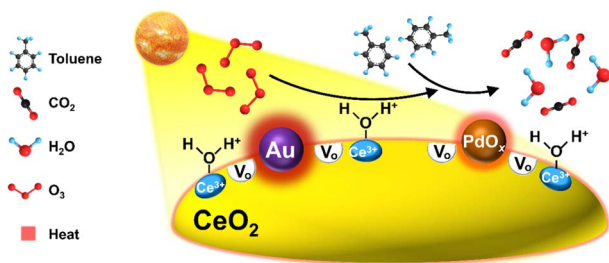
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Protein fibrillation and hybridization with polysaccharides enhance strength, toughness, and gas selectivity of bioplastic packaging

Yeyang Zhang, Yingqun Nian, Qixin Shi and Bing Hu*

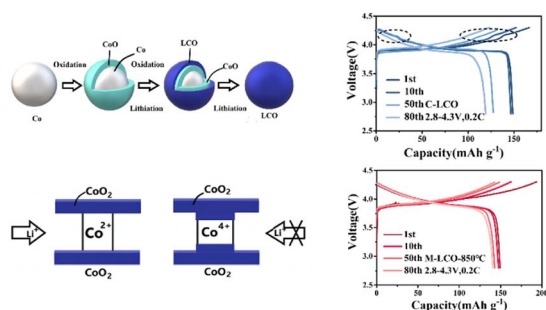
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Synergistic effects of Au and PdO_x on the solar-assisted catalytic ozonation of VOCs

Junxian Gao, Zhizhang Shen, Yuming Dong, Zhenyu Wang, Jinze Lyu,* Ji Li* and Han-Qing Yu*

9913



From metal to cathode material: *in situ* formation of LiCoO₂ with enhanced cycling performance and suppressed phase transition

Longhao Cao, Hui Wang, Ziyin Guo, Jing Zhang, Xiaosong Zhang, Cancan Peng, Jingxiong Yu, Ya-Jun Cheng* and Yonggao Xia*



Optimization of thermal exfoliation of graphitic carbon nitride for methylparaben photocatalytic degradation under simulated solar radiation

Flexible and interlocked quartz fibre reinforced dual polyimide network for high-temperature thermal protection

- ✓ Thermal stability
- ✓ Thermal insulation
- ✓ Flame retardancy
- ✓ Hydrophobicity
- ✓ Flexibility

FROM

Fibre-slice interlocked porous structure

Porous slice

Flexibility

Fireproof

Waterproof

Knotting

Bending

Construction of LaF₃ QD-modified SnS₂ nanorod composites for ultrasensitive detection of H₂S

Figure 1 consists of three parts. Part (a) is a line graph showing Resonance (MD) on the y-axis (0 to 100) versus Time (s) on the x-axis (0 to 1500). It displays a series of sawtooth-like curves for 10% La₂O₃-SiO₂ in SF₆, with each cycle showing a sharp increase in resonance followed by a gradual decrease. Part (b) is a line graph showing Resonance (%) on the y-axis (0 to 100) versus Time (s) on the x-axis (0 to 200). It shows four curves for different gas concentrations in H₂S: 10% (black), 20% (red), 30% (green), and 40% (blue). All curves show a rapid increase in resonance followed by a gradual decrease. Part (c) is a schematic diagram of the sensor structure, which is a cross-shaped silicon chip with four arms. The chip is covered with a layer of SiO₂ and a layer of La₂O₃. The diagram illustrates the adsorption of various gases (O₂, H₂S, SO₂, H₂O) onto the surface of the La₂O₃ layer.

Poly(2,6-anthraquinonyl disulfide) as a high-capacity and high-power cathode for rechargeable magnesium batteries: extra capacity provided by the disulfide group

Figure 1 consists of four panels (a, b, c, d) illustrating the synthesis, electrochemical properties, and molecular structure of 2,6-bis(phenylthio)benzoquinone (26PAGS).

(a) Synthesis: The chemical structure of 26PAGS is shown. The synthesis involves the reaction of 2,6-dibromobenzoquinone with phenylthiol groups, as indicated by the reaction scheme.

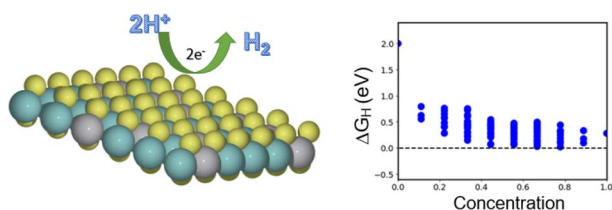
(b) Electrochemical properties: A plot of Specific Energy (Wh kg⁻¹) versus Specific Power (W kg⁻¹) is shown. The plot displays the Ragone plot for various materials, including 26PAGS (green circles), CO₂ (blue triangles), CO₂ (red squares), and others. The Ragone plot shows the relationship between specific energy and specific power for different materials, with 26PAGS showing high performance.

(c) Molecular structure: The molecular structure of 26PAGS is shown, highlighting the phenylthio groups and the benzoquinone core. The structure is shown in two different conformations, illustrating the flexibility of the molecule.

(d) Electrochemical properties: A plot of Capacity (mAh g⁻¹) versus Cycle number is shown. The plot displays the charge (green circles) and discharge (purple squares) capacities of 26PAGS over 500 cycles. The capacity remains stable, indicating good cycling performance. The inset shows the Coulombic efficiency (%) over 500 cycles, which is also stable.

PAPERS

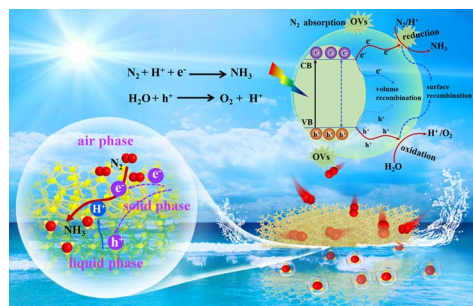
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Basal plane activation of two-dimensional transition metal dichalcogenides via alloying for the hydrogen evolution reaction: first-principles calculations and machine learning prediction

Yiqing Chen, Ying Zhao, Pengfei Ou* and Jun Song*

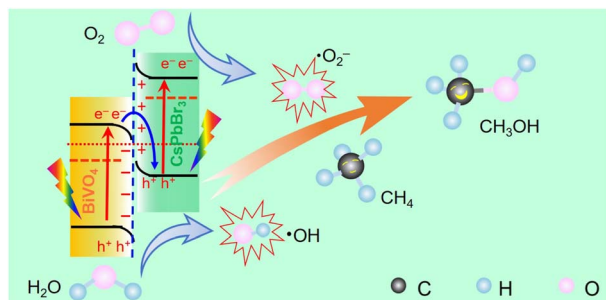
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A bioinspired floatable system with a 3D sandwich-type triphase interface for highly efficient nitrogen fixation

Xiuyan Wang, Xinjian Shi, Shengyan Yin, Ping She, Jiaqi Zheng, Yudong Song and Hang Sun*

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Visible-light-driven and selective methane conversion to oxygenates with air on a halide-perovskite-based photocatalyst under mild conditions

Guang-Xing Dong, Meng-Ran Zhang, Ke Su, Zhao-Lei Liu, Min Zhang* and Tong-Bu Lu*

