

Journal of Materials Chemistry A

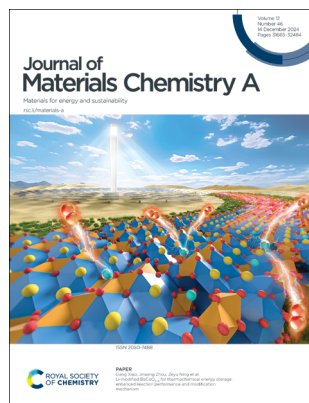
Materials for energy and sustainability

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Cover

See Gang Xiao, Jinsong Zhou, Zeyu Ning *et al.*, pp. 31833–31846. Image reproduced by permission of Gang Xiao from *J. Mater. Chem. A*, 2024, 12, 31833.

REVIEWS

31685

A holistic review on the direct recycling of lithium-ion batteries from electrolytes to electrodes

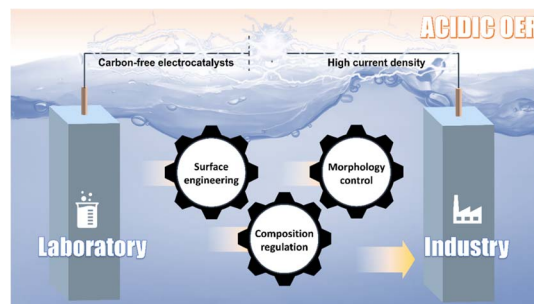
Neil Hayagan, Cyril Aymonier, Laurence Croguennec, Mathieu Morcrette, Rémi Dedryvère, Jacob Olchowka* and Gilles Philippot*



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Progress in carbon-free oxygen evolution electrocatalysts for high-current-density water electrolysis in acidic media

Haowen Xu, Ruochen Liu, Jinxiu Zhao,* Kaixin Tian, Hongyu Gong,* Linrui Hou* and Changzhou Yuan*



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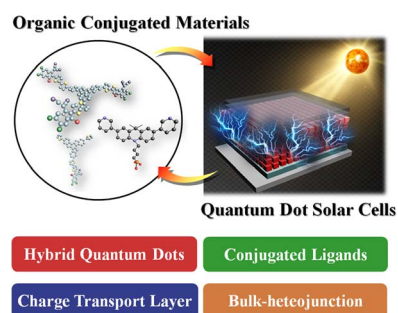
Fundamental questions
Elemental answers

REVIEWS

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Recent advances in the synergistic effects of organic conjugated materials and quantum dots on solar cells

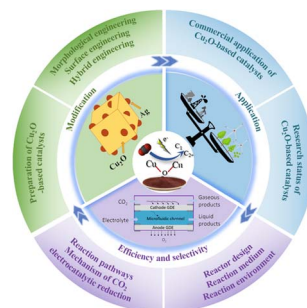
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31769

Cu₂O-based catalysts applied for electrocatalytic CO₂ reduction: a review

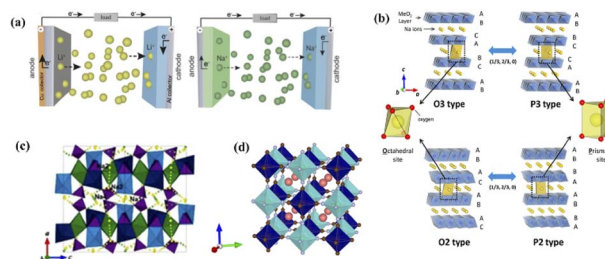
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Recent progress in layered oxide cathodes for sodium-ion batteries: stability, phase transition and solutions

Xiaoqin Chen, Chenkai Wang, Yu Zhao, Yongxin Wang, Xiaoju Yin* and Naiqing Zhang*

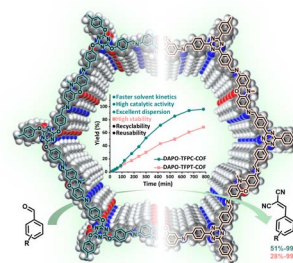


COMMUNICATIONS

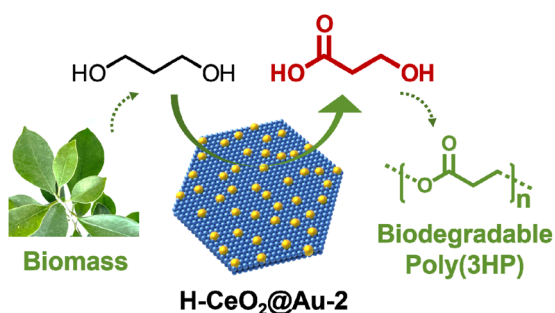
31818

Flexible vs. rigid covalent organic frameworks: catalytic performance in the Knoevenagel reaction

Zerong Jing, Xiaokun Shi, Xiaoqian Tao, Benhai Liu, Haishen Yang and Ya Du*



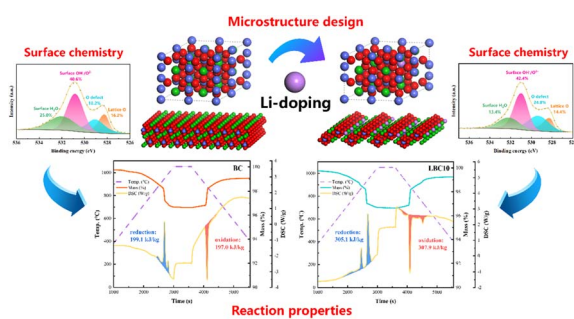
31825



Hexagonal CeO₂ nanoplate@Au catalysts for the selective oxidation of 1,3-propanediol to a polymer platform, 3-hydroxypropionic acid at room temperature

Yoon Kee Kim, Sang Lim Park, Jong Doo Lee and Seung Uk Son*

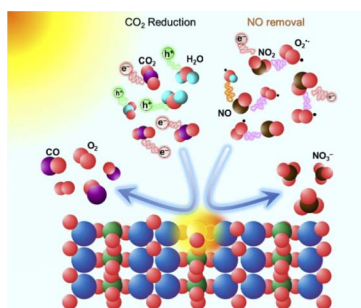
31833



Li-modified BaCoO_{3-δ} for thermochemical energy storage: enhanced reaction performance and modification mechanism

Zeyu Ning, Changdong Gu, Yibin He, Haoran Xu, Peiwang Zhu, Jinsong Zhou* and Gang Xiao*

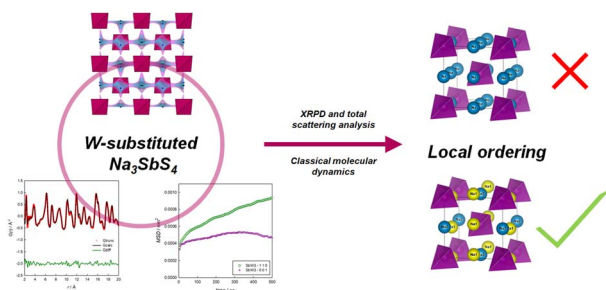
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Tailoring atomically dispersed Fe-induced oxygen vacancies for highly efficient gas-phase photocatalytic CO₂ reduction and NO removal with diminished noxious byproducts

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Unveiling the relationship between polymorphism and ionic conductivity in Na_{3-x}Sb_{1-x}W_xS₄ solid electrolyte for Na-ion batteries

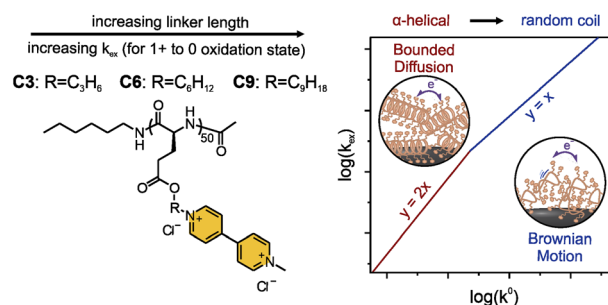
Marco Ravalli, Mehdi Soleimanzade, Marco Scavini, Serena Chiara Tarantino, Mariano Radaelli and Cristina Tealdi*



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Electron transport kinetics for viologen-containing polypeptides with varying side group linker spacing

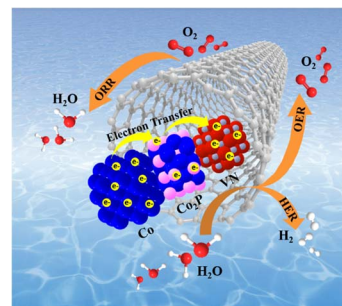
Alexandra D. Easley, Cheng-Han Li, Shih-Guo Li, Tan P. Nguyen, Kai-Hua Mick Kuo, Karen L. Wooley,* Daniel P. Tabor* and Jodie L. Lutkenhaus*



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Construction of Co/Co₂P/VN heterointerfaces enhances trifunctional hydrogen and oxygen catalytic reactions

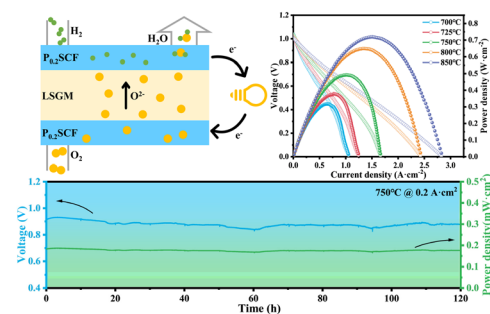
Yixuan Huang, Mengyao Li,* Zhenting Liu, Chun-Ho Lin, Peiyuan Guan, Zijian Feng, Yingze Zhou, Zekun Dong, Jinbo Wang, Chao Liu, Shihao Huang, Tao Wan, Xiaoyi Li,* Zhaojun Han* and Dewei Chu



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Enhanced electrocatalytic activity and stability of high performance symmetrical solid oxide fuel cells with praseodymium-doped SrCo_{0.2}Fe_{0.8}O_{3-δ} electrodes

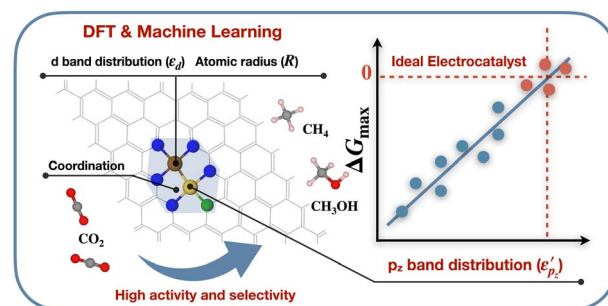
Peng Li, Bing Yang, Jing Chen,* Bo Li, Lushan Ma, Mengjia Wang, Xuzhuo Sun,* Yunfeng Tian* and Bo Chi



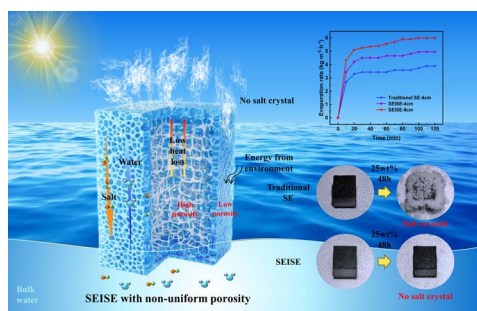
31902

p-d Orbital coupling in silicon-based dual-atom catalysts for enhanced CO₂ reduction: insight into electron regulation of active center and coordination atoms

Meijie Wang, Yaowei Xiang, Yuxing Lin, Yang Sun, Zi-zhong Zhu, Shunqing Wu and Xinrui Cao*



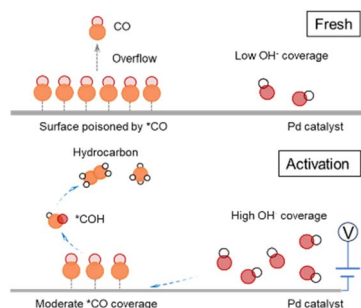
31914



A skin-effect-inspired 3D solar evaporator for simultaneously achieving highly efficient steam generation and ultra-high salt resistance

Renzhong Deng, Yunqi Li, Qing Li,* Yu Qiu, Haixiang Feng and Yangming Liu

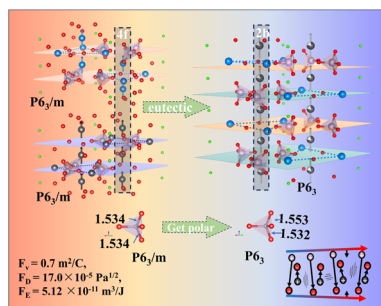
31925



Non-copper metals catalyzing deep CO₂ electroreduction to hydrocarbon

Chaojie Chen, Xiaowan Bai, Yan Jiao, Yao Zheng* and Shi-Zhang Qiao*

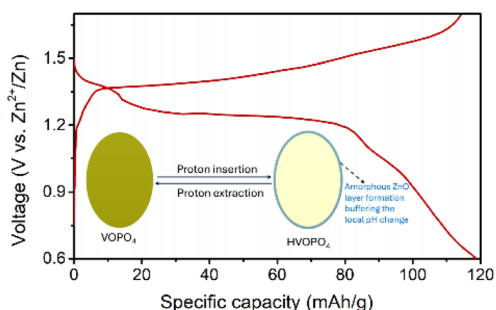
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Novel polar oxides with exceptional pyroelectric performance: doping-induced polar transition in Ba₆Pb_{3.2}(PO₄)₆Cl₂

Duo Zhang, Ruijin Sun,* Zhaolong Liu, Haodong Li, Munan Hao, Yuxin Ma, Ke Ma, Dezhong Meng, Zhiyuan Zheng, Yibo Xu, Xu Chen, Qiu Fang, Xuefeng Wang, Linjie Dai, Changchun Zhao* and Shifeng Jin

31942



An unconventional charge compensation mechanism for proton insertion in aqueous Zn-ion batteries

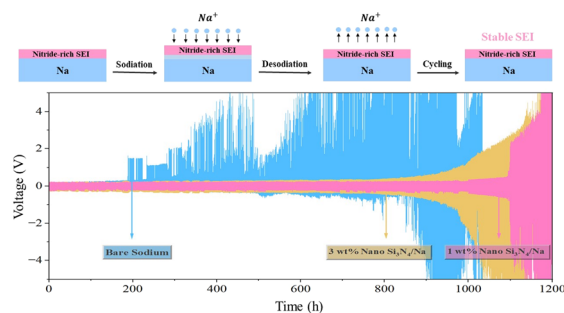
Jiwei Wang, Heran Huang, Linna Qiao, Haonan Wang, Krystal Lee, Guangwen Zhou and Hao Liu*



31949

Highly uniform nitride-rich artificial solid electrolyte interphase enabled by nano-silicon nitride for superior performance in advanced sodium metal batteries

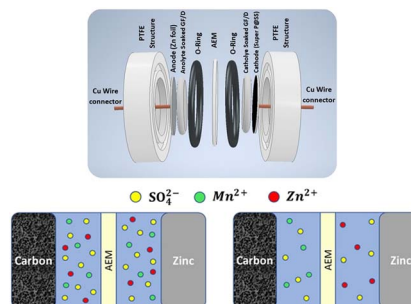
Roya Damircheli, Binh Hoang, Victoria Castagna Ferrari and Chuan-Fu Lin*



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Novel insights into aqueous Zn–MnO₂ batteries: a simple and robust approach to refute the Zn²⁺ intercalation mechanism

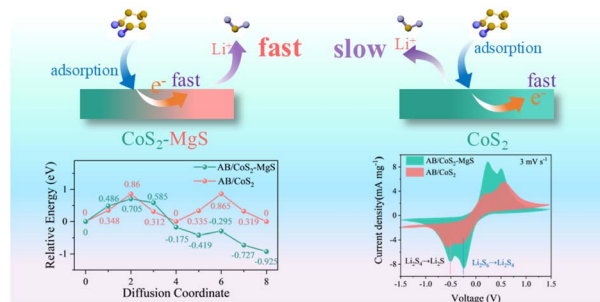
Amirali Valinejad, Mahmoud Ghafari, Zeinab Sanaee* and Mohammadreza Kolahdouz*



31972

Accelerating sulfur conversion kinetics via CoS₂–MgS heterostructure for lithium sulfur batteries

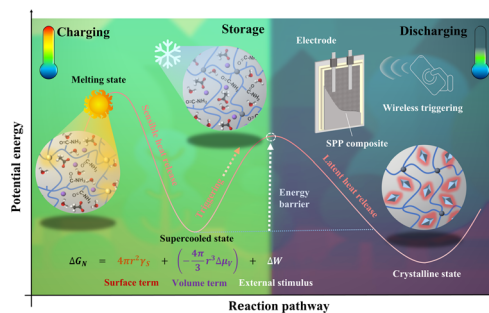
Xinliang Men, Teng Deng, Jiangxuan Che and Juan Wang*



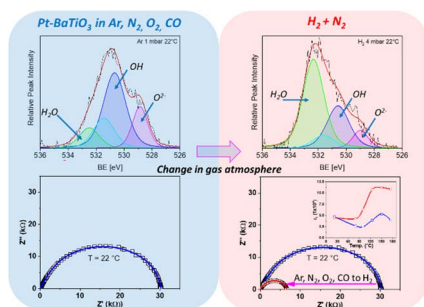
31982

Hydrogel-stabilized supercooled salt hydrates for seasonal storage and controlled release of solar-thermal energy

Yizhe Liu, Xiaoxiang Li, Yangzhe Xu, Benwei Fu, Chengyi Song, Wen Shang, Peng Tao* and Tao Deng*



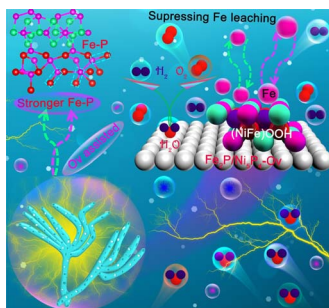
31993



Hydrogen spillover drives room temperature sensing on spark plasma sintered BaTiO₃ with Pt electrodes

Jon G. Bell,* Shangxiong Huangfu, Luca Artiglia, Thomas Graule and Michael Stuer

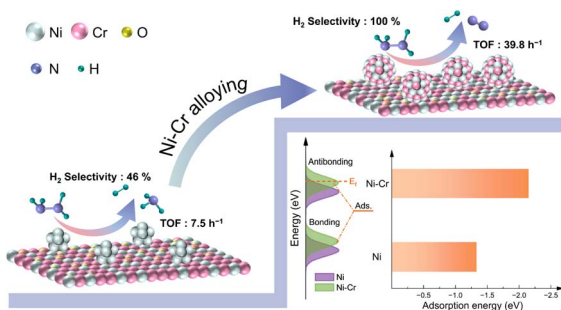
32014



Oxygen vacancy mediated and enhanced metal-P bonds for stabilizing reconstruction for alkaline freshwater and seawater electrolysis

Lei Jin, Hui Xu,* Kun Wang, Yang Liu, Xingyue Qian, Guangyu He* and Haiqun Chen*

32022



Design and synthesis of a nickel–chromium alloy catalyst for hydrogen generation from hydrazine monohydrate

Jing He, Yuping Qiu, Sihuan Qin and Ping Wang*

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Restriction of Ce-MOF growth within ZSM zeolite for robust three-proofing thermoplastic polyurethane

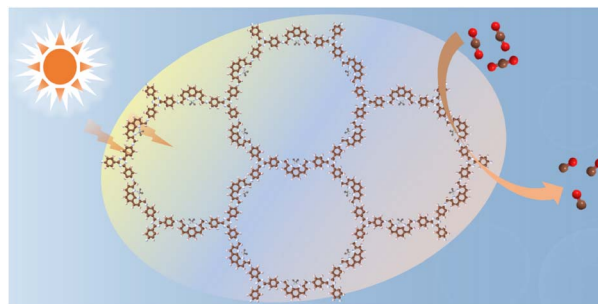
Xue Bi, Kunpeng Song, Qianlong Li, Tao Lin, Ye-Tang Pan,* Wei Wang, Jiyu He* and Rongjie Yang



32045

Installing active metal species in a covalent triazine framework for highly efficient and selective photocatalytic CO₂ reduction

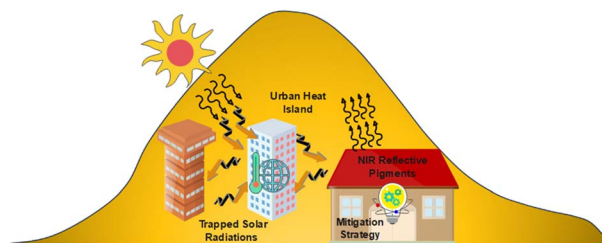
Yiqing Jiang, Liangliang Xiong, Shien Guo,* Chao Xu, Jiaxin Wang, Xiaomin Wu, Yuting Xiao* and Renjie Song*



32054

Composite oxide cooling pigments mitigate the impact of urban heat islands

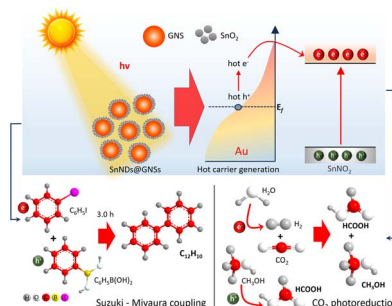
G. P. Darshan,* Akshay Arjun, H. B. Premkumar, Elisa Moretti and Alberto Vomiero*



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Increasing electron density through an n-type semiconductor to accelerate hot electrons from plasmonic Au nanospheres for artificial photosynthesis and cross-coupling reactions

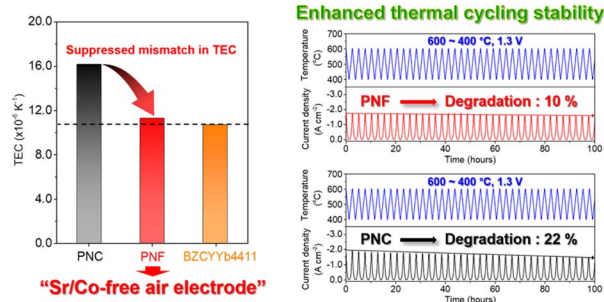
Dinesh Kumar,* Richa Jaswal, Devendra Shrestha, Suresh Kumar, Chan Hee Park* and Cheol Sang Kim*



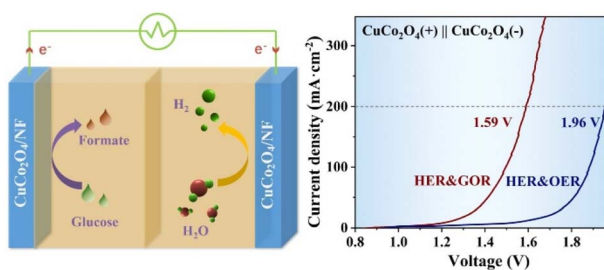
32084

High-performance and excellent thermal cycling stability of reversible protonic ceramic cells enabled by a promising Sr/Co-free PrNi_{0.5}Fe_{0.5}O_{3-δ} air electrode

Boseok Seong, Jiwon Yun and Sihyuk Choi*



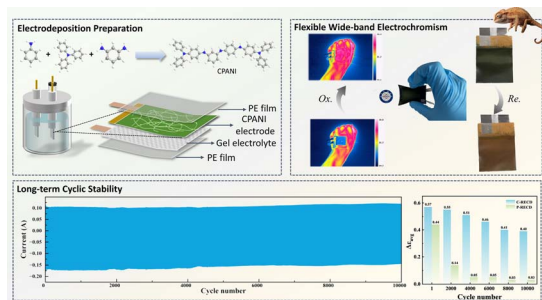
32095



Electrochemical glucose-to-formic acid conversion coupled with alkaline hydrogen production over nanostructured CuCo₂O₄ catalysts

Xinxuan Lin, Xiongbiao Xue and Jing Du*

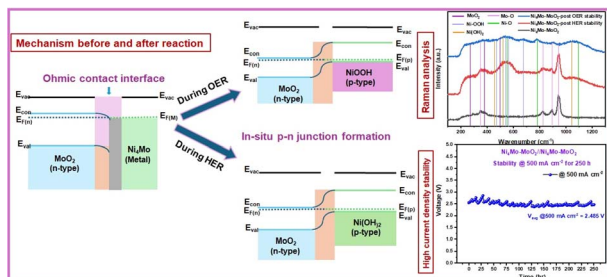
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Ultrahigh cycling stability and wide infrared modulation of electrochromic devices based on electrodeposited triphenylamine cross-linked polyaniline derivatives

Yulin Liu, Hengzhi Zhang, Shengwei Tang, Rongzong Zheng and Chunyang Jia*

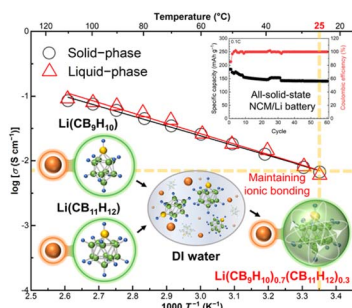
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Ohmic contact interface in the self-surface reconstructed Ni₄Mo/MoO₂ heterostructure for achieving effective alkaline electrocatalytic water splitting

Amar Nath T. Sivagurunathan, T. Kavinkumar and Do-Heyoung Kim*

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Aqueous synthesis of lithium superionic-conducting complex hydride solid electrolytes

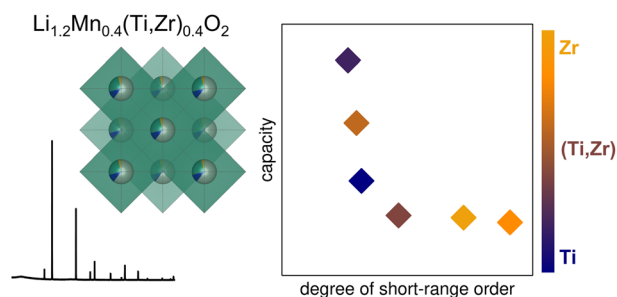
Hyerim Kim, Taehyun Kim, Seunghee Joo, Jeonghyun Kim, Jaehyun Noh, Jiyoun Ma, Jung-Je Woo, Seungcho Choi, KyungSu Kim, Woosuk Cho, Kazuaki Kisu, Shin-ichi Orimo and Sangryun Kim*



32140

Isovalent substitution modulates average and short-range structure in disordered rocksalt oxides

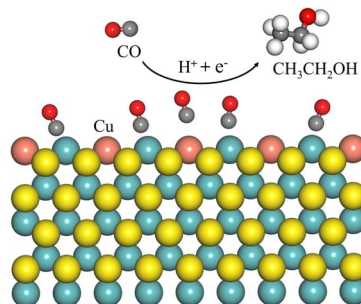
John D. Langhout, Elizabeth Gager, Talianna Ulloa, Shane Shepard, Juan C. Nino and Megan M. Butala*



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Enhanced reduction of CO to C₂ products on MoS₂ nanoribbons by edge engineering

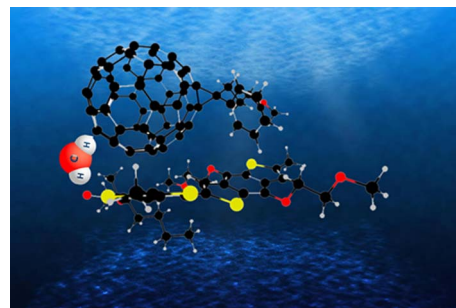
Jiangke Tao, Di Liu, Zhichao Yu and Hui Pan*



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Hydrophilic conjugated polymer additives in fullerene-heterojunction photocatalytic systems for efficient photocatalytic hydrogen evolution

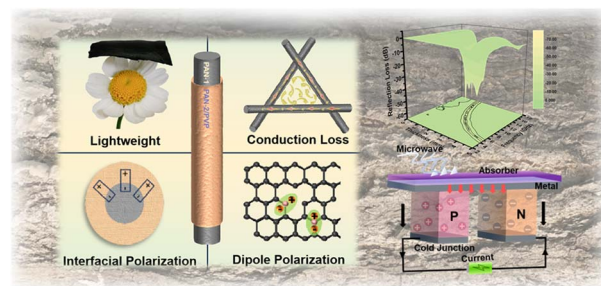
Li Tian,* Shukui Guo, Lingwei Feng, Jichao Wang, Airong Wang* and Cheng-xing Cui*



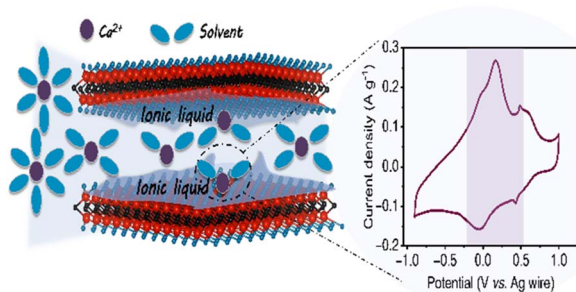
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Lure the "enemy" deep: an innovative biomimetic strategy for enhancing the microwave absorption performance of carbon nanofibers

Yu Deng, Minghang Yang, Yining Wang, Mingguang Zhang, Shuaining Zhou, Xiangyang Lu, Xigao Jian and Yousi Chen*



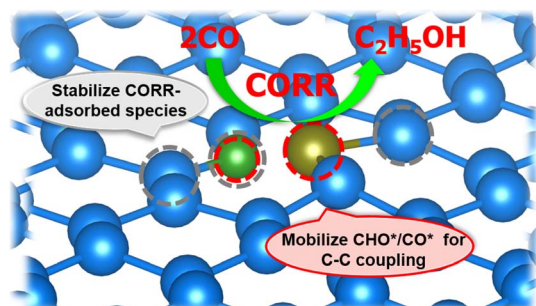
32182



Nanoconfinement-induced calcium ion redox charge storage of V_2CT_x MXene

Suman Yadav and Narendra Kurra*

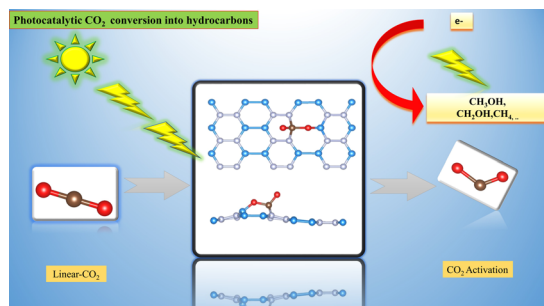
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Novel multi-functional sites in boron-based bi-atom catalysts synergistically boost C–C coupling for efficient CO electroreduction towards ethanol

Huong T. D. Bui and Tore Brinck*

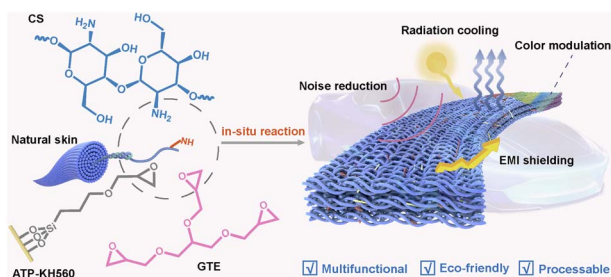
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$o\text{-B}_2\text{N}_2$: a promising metal-free photocatalyst for highly efficient conversion of CO_2 to hydrocarbons

Rajesh Chitara, Himalay Kolavada, Madhu Menon, P. N. Gajjar* and Sanjeev K. Gupta*

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Rationally engineered smart automotive upholstery leather based on gradient feeding *in situ* one-pot reaction in microreactors of natural skin

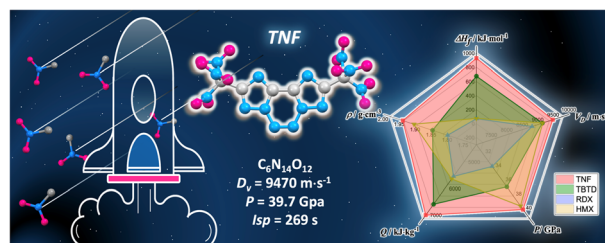
Qingxin Han,* Huishu Fan, Xuechuan Wang, Junli Zhang, Xinhua Liu and Xiaoyu Guan*



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Zero-oxygen balanced fused 1,2,3,4-tetrazine (TNF) as a high-performance energetic material

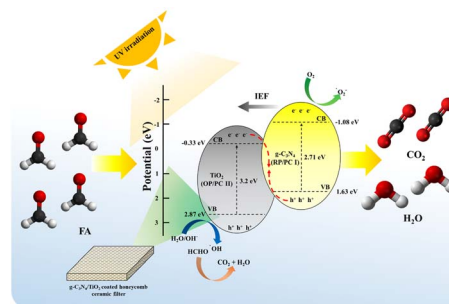
Hui Zhang, Xinyu Du, Xudong Han, Gong Cheng, Wenchuan Chen, Yingqi Xia,* Qi Lai,* Ping Yin and Siping Pang*



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The superior mineralization potential of a graphitic carbon nitride/titanium dioxide composite and its application in the construction of a portable photocatalytic air purification system against gaseous formaldehyde

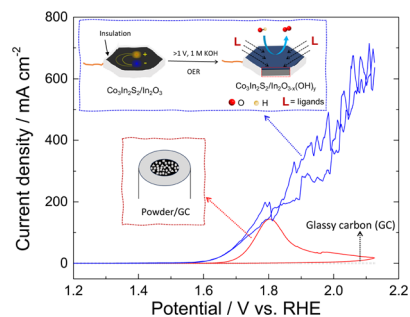
Myeon-Seong Cho, Sherif A. Younis, Caroline. S. Lee, Xiaowei Li and Ki-Hyun Kim*



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Ultra-stable and poison tolerant oxygen evolution activity enabled by surface $\text{In}_2\text{O}_{3-x}(\text{OH})_y$ of $\text{Co}_3\text{In}_2\text{S}_2$ large single crystals

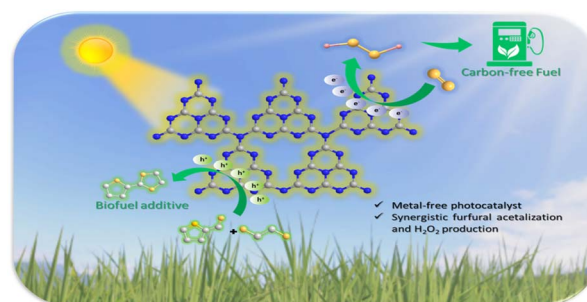
Anjaiah Sheelam, Ariel Whitten, Carrington Gates Moore, Mark Engelhard, Jean-Sabin McEwen and Jeffrey G. Bell*



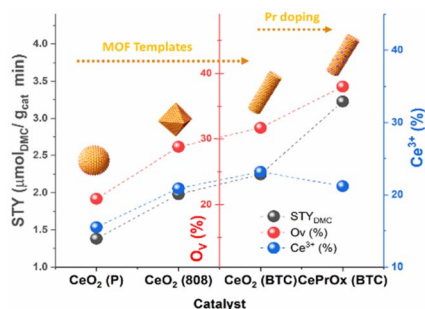
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Unveiling the solar-driven synergistic production of a cyclic fuel-additive and carbon-free solar fuel from biogenic furfural: mediated by a metal-free organic semiconductor

Shivali Dhingra, Arpna Jaryal, Deepak Kumar Chauhan and Kamalakannan Kailasam*



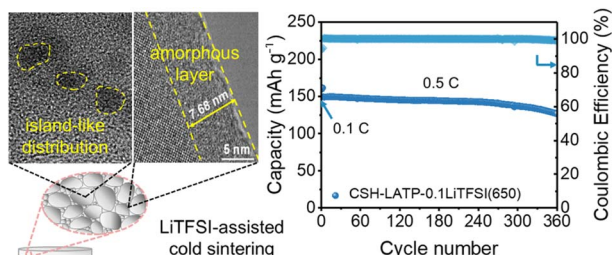
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MOF-derived CeO₂ catalysts with Pr doping: engineering oxygen vacancies for improved CO₂ conversion to dimethyl carbonate

Jungseob So, Min Hye Jeong, Jungwon Yun, Byeong-Seon An, Seung-ik Kim, Geun-yeong Kim, Hyun-Tak Kim, Tae Sun Chang, Jin Hee Lee, Iljeong Heo, Jinjoo An, Young-Woo You,* Minkyu Kim* and Young Jin Kim*

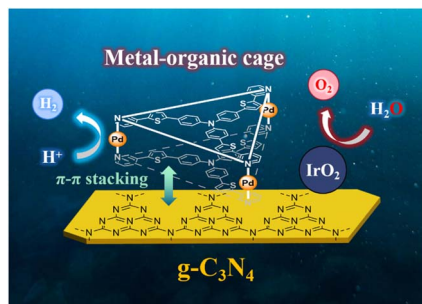
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Achieving high ionic conductivity of LATP solid electrolyte via a LiTFSI-assisted cold sintering process

Shanshan Yi, Shuyu Zhou, Yudong Liu, PengPeng Dai, Yuxin Liu, Shixi Zhao* and Guozhong Cao*

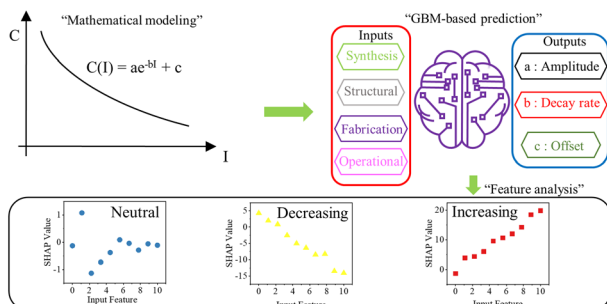
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A Z-scheme photosensitive MOC/g-C₃N₄ composite catalyst for efficient visible-light driven half and overall water splitting

Xin-Ao Li, Li-Lin Tan, Xiao-Lin Wang, Yang Liu, Zi-Zhan Liang, Jian-Feng Huang,* Li-Min Xiao and Jun-Min Liu*

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Insights on the rate performance of polyaniline supercapacitors by integrated mathematical modeling and machine learning

Elham Rahmanian, Rasoul Malekfar and Ali Sajedi-Moghaddam*



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Highly transparent ternary bulk-heterojunctions for semi-transparent organic photovoltaics

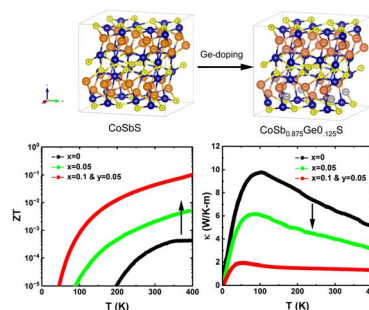
Hryhorii P. Parkhomenko, Andrii I. Mostovyi, Nora Schopp, Mykhailo M. Solovan and Viktor V. Brus*



32338

Massive reduction in lattice thermal conductivity and strongly enhanced thermoelectric properties in Ge- and Se-doped CoSbS

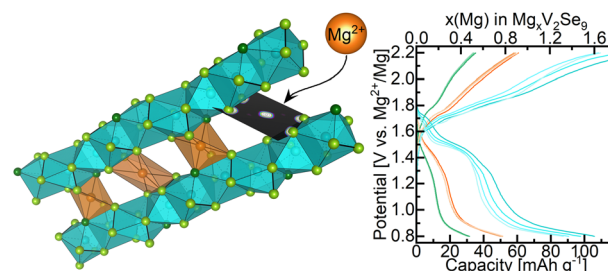
H. Sajida Kousar, Divya Srivastava, Antti J. Karttunen, Maarit Karppinen* and Girish C. Tewari*



32349

Fast Mg-ion insertion kinetics in V₂Se₉

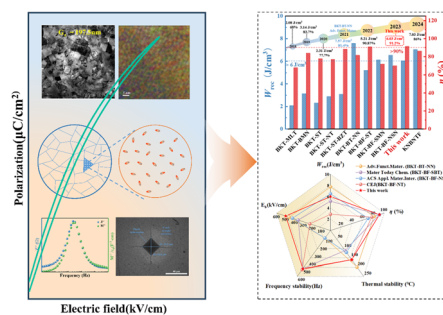
Matthew A. Wright, Jungwoo Lim, Raul A. Pacheco Muino, Anna E. Krowitz, Cara J. Hawkins, Mounib Bahri, Luke M. Daniels, Ruiyong Chen, Luciana Gomes Chagas, James Cookson, Paul Collier, Alan V. Chadwick, Nigel D. Browning, John B. Claridge, Laurence J. Hardwick* and Matthew J. Rosseinsky*



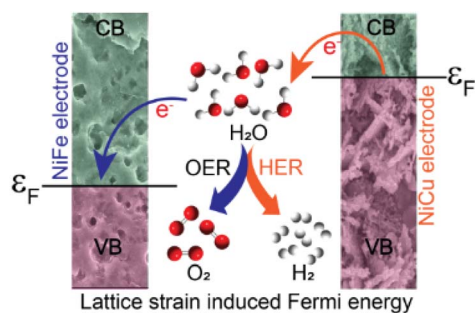
32359

Multiple-design and synergism toward superhigh capacitive energy storage with (Bi_{0.5}K_{0.5})TiO₃-based lead-free superparaelectrics

Xinyao Li, Jiachen Xi, Chongyang Li, Wangfeng Bai,* Shiting Wu, Peng Zheng, Peng Li and Jiwei Zhai*



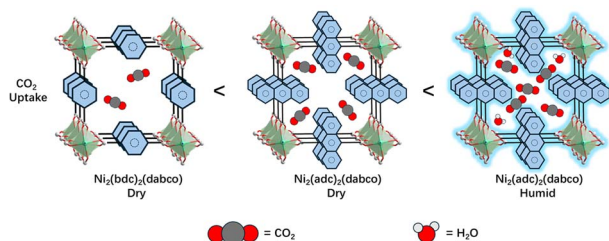
32371



Lattice strain-induced electronic effects on a heteroatom-doped nickel alloy catalyst for electrochemical water splitting

Shouvik Mete, Manish S. Sengar, Marshal Dhayal, Vijay Kumar and Santosh K. Singh*

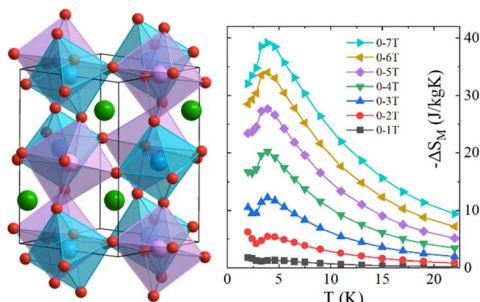
32385



Enhancing carbon dioxide capture under humid conditions by optimizing the pore surface structure

Guoyu Zhang, Feng Xie, Saif Ullah, Lulu Ma, Simon J. Teat, Shengqian Ma, Timo Thonhauser, Kui Tan, Hao Wang* and Jing Li*

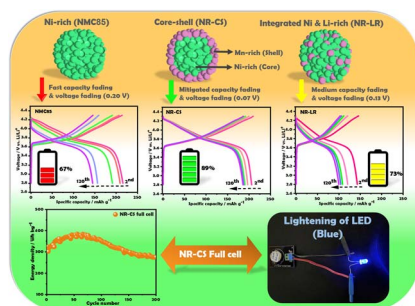
32396



Experimental and theoretical insights into the structural, magnetic, and low-temperature magnetocaloric properties of RE₂CoTiO₆ (RE = Gd, Dy, and Er) double perovskite oxides

Yikun Zhang,* Yang Xie, Jingjing Wei and Weixiang Hao

32408



Advantageous electrochemical behaviour of new core-shell structured cathodes over nickel-rich ones for lithium-ion batteries

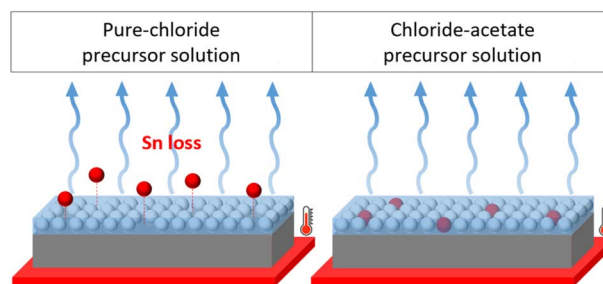
Yuvashri Jayamkondan, Boris Markovsky, Doron Aurbach and Prasant Kumar Nayak*



32424

Mitigating Sn loss via anion substitution in the Cu^{2+} – Sn^{2+} precursor system for $\text{Cu}_2\text{ZnSn}(\text{S}, \text{Se})_4$ solar cells

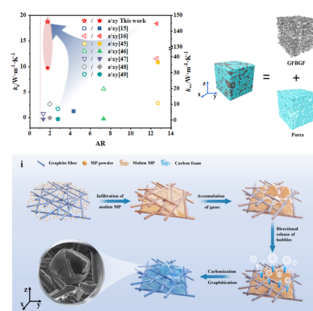
Simon Moser,* Jasmin Kruppenacher,
Abdessalem Aribia, Jędrzej Morzy and Romain Carron



32436

Confined vertical foaming induces graphite crystal orientation: exceptional isotropy of thermal conductivity and anti-leakage properties for phase change systems

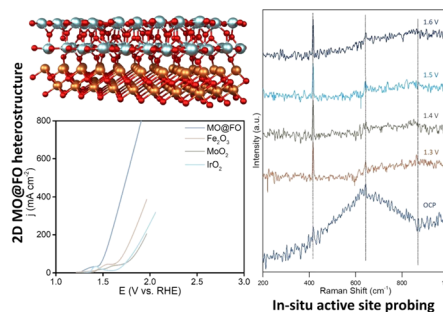
Yu Qin, Le Ding, Zhao Jiang, Yafang Zhang, Chong Ye,
Jinshui Liu, Yudi Zhang, M.-Sadeeq Balogun*
and Ting Ouyang*



32447

Sacrificial Fe sites making 2D heterostructure an efficient catalyst for oxygen evolution reaction in alkaline seawater

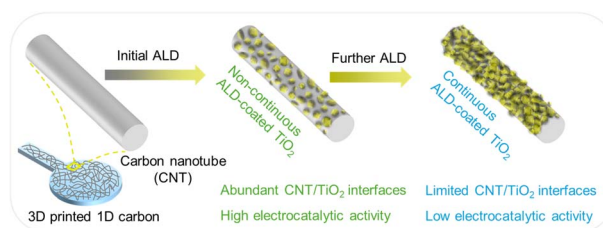
Suraj Loomba, Muhammad Waqas Khan,
Ashakiran Maibam, Muhammad Haris,
Sharafadeen Gbadamasi, Vasundhara Nettem,
Seyedmahdi Mousavi, Anton Tadich, Lars Thomsen,
Karishma Jain, Babar Shabbir, Asif Mahmood,
Ravichandar Babarao,* Jian Xian and Nasir Mahmood*



32458

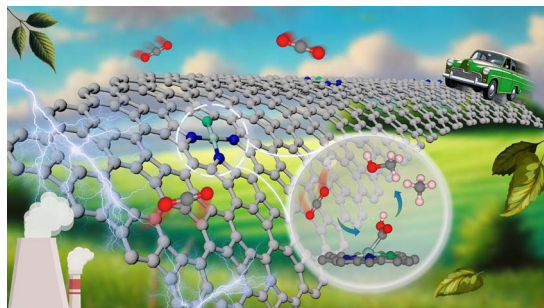
Atomic tuning of 3D printed carbon surface chemistry for electrocatalytic nitrite oxidation and reduction to ammonia

Wanli Gao, Jan Michalička and Martin Pumera*



PAPERS

32471



Towards efficient CO₂RR electrocatalysts: a study of structure and properties of M–N–E active moieties embedded in a biphenylene framework (M = Mn, Fe, Co, Ni, Cu; E = C, B)

Zhengqin Zhao, Andrey V. Zibarev, Hui Wang,* Jinbo Hao and Lijia Luo

CORRECTIONS

32480

Correction: Achieving dynamic stability of single-crystal low-Co Ni-rich cathode material for high performance lithium batteries

Adil Saleem, Leon L. Shaw,* Mehwish Khalid Butt, Javed Rehman, Arshad Hussain, Zawar Hussain, Rashid Iqbal* and Muhammad Kashif Majeed*

32481

Correction: MOF-derived CeO₂ catalysts with Pr doping: engineering oxygen vacancies for improved CO₂ conversion to dimethyl carbonate

Jungseob So, Min Hye Jeong, Jungwon Yun, Byeong-Seon An, Seung-ik Kim, Geun-yeong Kim, Hyun-Tak Kim, Tae Sun Chang, Jin Hee Lee, Iljeong Heo, Jinjoo An, Young-Woo You,* Minkyu Kim* and Young Jin Kim*

