

# Materials Advances

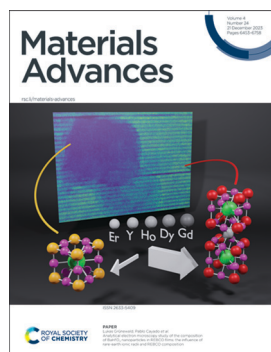
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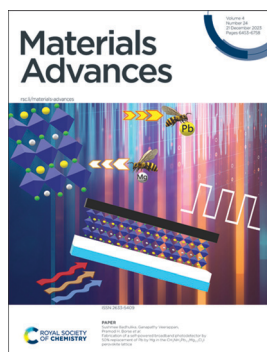
## IN THIS ISSUE

ISSN 2633-5409 CODEN MAADC9 4(24) 6453–6758 (2023)



### Cover

See Lukas Grünewald, Pablo Cayado *et al.*, pp. 6507–6521. Image reproduced by permission of Lukas Grünewald from *Mater. Adv.*, 2023, 4, 6507.



### Inside cover

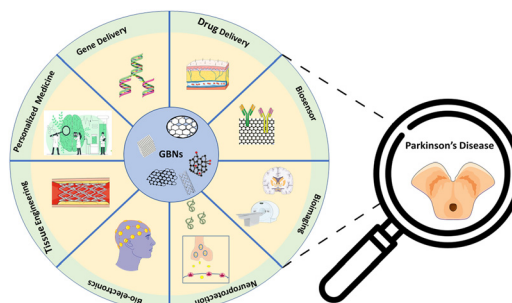
See Sushmee Badhulika, Ganapathy Veerappan, Pramod H. Borse *et al.*, pp. 6522–6534. Image reproduced by permission of Pramod H. Borse from *Mater. Adv.*, 2023, 4, 6522.

## REVIEWS

6464

### Advances in graphene-based nanoplateforms and their application in Parkinson's disease

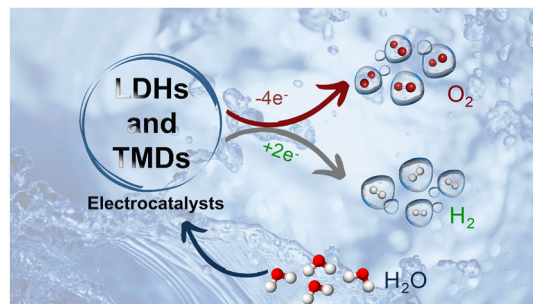
Tuba Oz, Ajeet Kumar Kaushik and Małgorzata Kujawska\*



6478

### 2D layered double hydroxides and transition metal dichalcogenides for applications in the electrochemical production of renewable hydrogen

Daniele Alves, P. Rupa Kasturi, Gillian Collins, Tara N Barwa, Sukanya Ramaraj, Raj Karthik and Carmel B. Breslin\*



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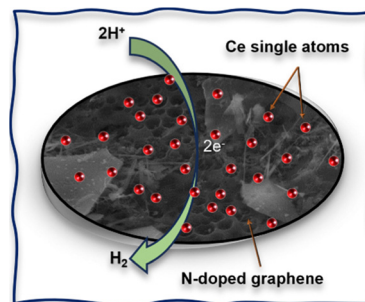


## COMMUNICATION

6498

### Promising Ce single-atom-dispersed nitrogen-doped graphene catalysts for the hydrogen evolution reaction

Sunny Yadav, Vandung Dao, Wenmeng Wang, Kai Chen, Chiyeop Kim, Gyu-Cheol Kim and In-Hwan Lee\*

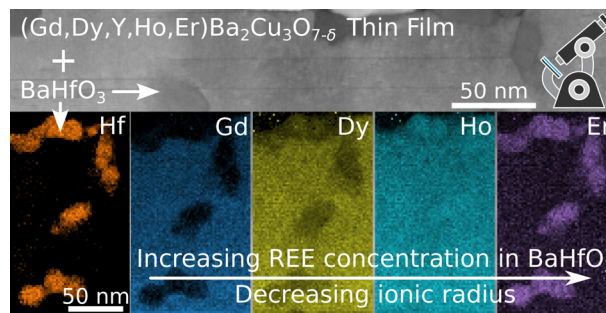


## PAPERS

6507

### Analytical electron microscopy study of the composition of BaHfO<sub>3</sub> nanoparticles in REBCO films: the influence of rare-earth ionic radii and REBCO composition

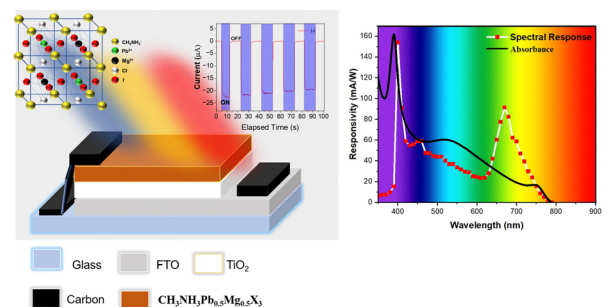
Lukas Grünewald, Pablo Cayado,\* Manuela Erbe, Jens Hänisch,\* Bernhard Holzapfel and Dagmar Gerthsen



6522

### Fabrication of a self-powered broadband photodetector by 50% replacement of Pb by Mg in the CH<sub>3</sub>NH<sub>3</sub>Pb<sub>0.5</sub>Mg<sub>0.5</sub>Cl<sub>2</sub>I perovskite lattice

Kumaar Swamy Reddy B., Smrutiranjana Panda, Easwaramoorthi Ramasamy, Sushmee Badhulika,\* Ganapathy Veerappan\* and Pramod H. Borse\*

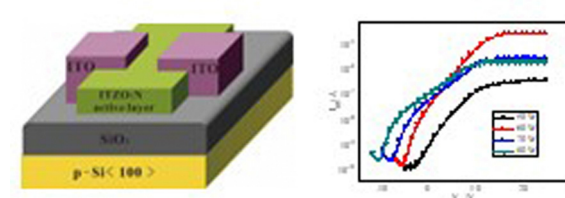


6535

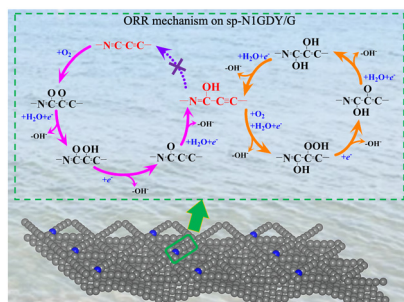
### Amorphous N-doped InSnZnO thin films deposited by RF sputtering for thin-film transistor application

Zhi-Yue Li, Shu-Mei Song, Wanxia Wang,\* Ming-Jiang Dai, Song-Sheng Lin, Ting-Yong Chen and Hui Sun\*

- ◆ The influence of RF sputtering power on TFT's performance was studied
- ◆ ITZO:N film prepared with suitable sputtering power enhance the performance of TFT



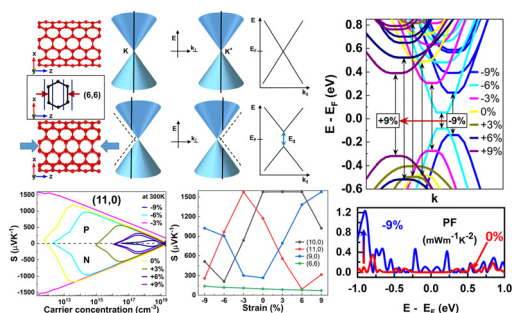
6542



### DFT investigation of the oxygen reduction reaction over nitrogen (N) doped graphdiyne as an electrocatalyst: the importance of pre-adsorbed OH\* and the solvation effect

Yuelin Wang, Thanh Ngoc Pham, Harry H. Halim, Likai Yan and Yoshitada Morikawa\*

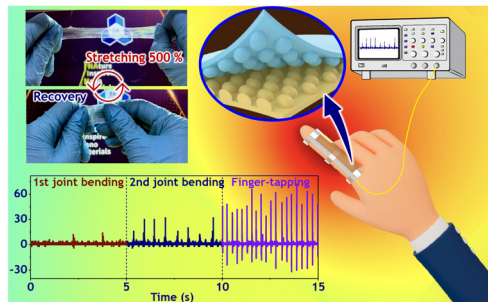
6553



### Ab initio study of uniaxial strain-induced thermoelectric property tuning of individual single-wall carbon nanotubes

Md. Mafizul Islam and Ahmed Zubair\*

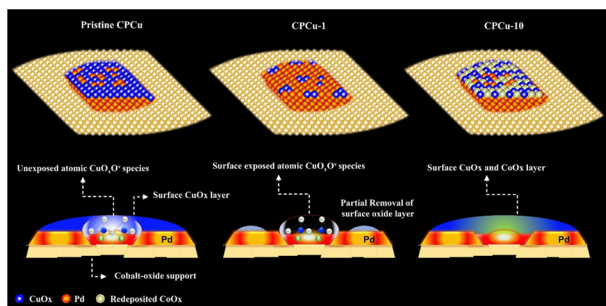
6568



### Ultra-stretchable and shape-memorable ability of an output-boosted triboelectric nanogenerator utilizing highly ordered microdome-crowning thermoplastic polyurethane for a finger-motion detection sensor

Ngoc Mai Chau, Phuong Mai Tran, Thu Ha Le, Thi Thai Ha La\* and Van-Tien Bui\*

6578



### Facile surface restructure by one-step sub-millisecond laser exposure promotes the CO<sub>2</sub> methanation performance of cobalt oxide supported Pd nanoparticles with copper-oxide cluster decoration

Dinesh Bhalothia, Amisha Beniwal, Praveen Kumar Saravanan, Guo-Heng Huang, Mingxing Cheng, Ming-Wei Lin, Po-Chun Chen\* and Tsan-Yao Chen\*



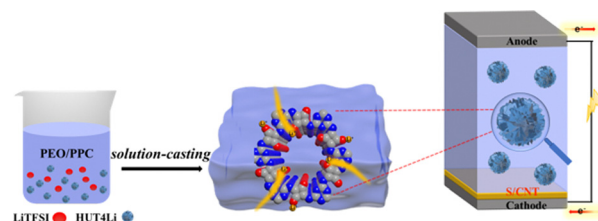


## PAPERS

6589

### Zwitterionic metal covalent organic frameworks constructed from lithium salts to reinforce poly(ethylene oxide)/poly(propylene carbonate) composite polymer electrolytes

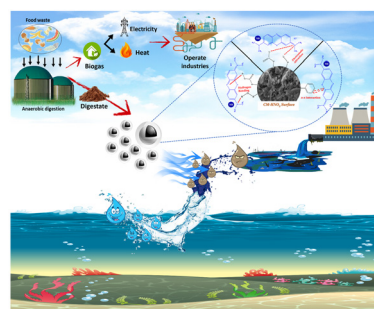
Hui Liu,\* Li Jing, Juanjuan Liu, Hongxing Guo, Tao Li and Xiaojie Zhang\*



6599

### Harnessing a carbon-based material from food waste digestate for dye adsorption: the role of hydrogel beads in enhancing the material stability and regenerative capacity

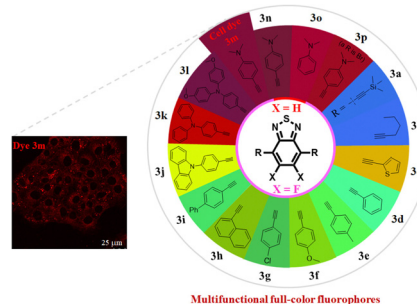
Salaheddine Farsad,\* Asma Amjlef, Ayoub Chaoui, Aboubakr Ben Hamou, Chaima Hama, Mohamed Benafqir, Amene Jada and Noureddine El Alem\*



6612

### Full-color emission of fluorinated benzothiadiazole-based D-A-D fluorophores and their bioimaging applications

Si-Hong Chen, Xi-Ying Cao, Peng-Tao Hu, Kai Jiang,\* Yong-Tong Liang, Bing-Jia Xu, Zhong-Hao Li and Zhao-Yang Wang\*

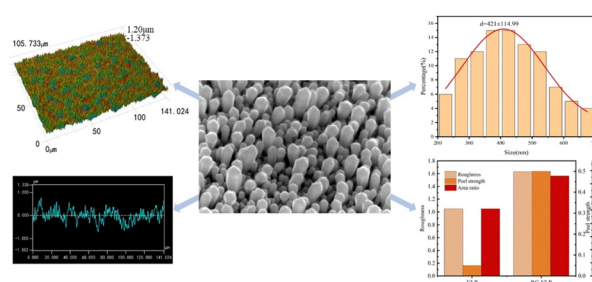


Multifunctional full-color fluorophores

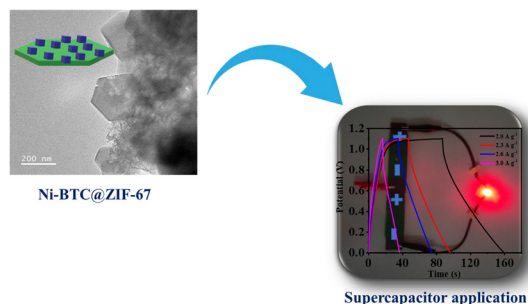
6621

### Preparation of an ultra-low profile and high peel strength copper foil with rice-grain microstructures

Lijuan Wang, Xiaowei Fa, Yunzhi Tang,\* Juan Liao, Yuhui Tan,\* Ning Song, Jian Huang, Zhen Sun, Men Zhao, Weifei Liu and Man Zhao



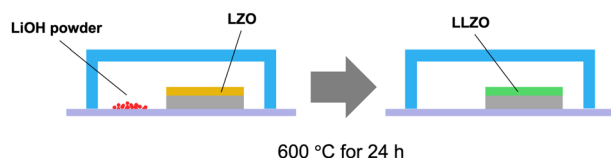
6627



### Robust MOF-on-MOF heterostructures as efficient cathode candidates for next-generation supercapacitors

Rakesh Deka, Viresh Kumar and Shaikh M Mobin\*

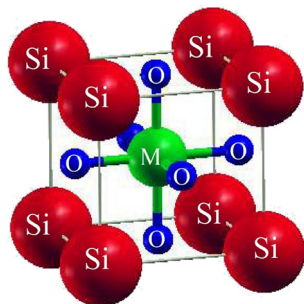
6638



### Post-lithiation: a way to control the ionic conductivity of solid-state thin film electrolyte

Jixi Chen,\* Alessandro Palliotto, Shinhee Yun, Dennis Valbjørn Christensen, Vincenzo Esposito and Nini Pryds\*

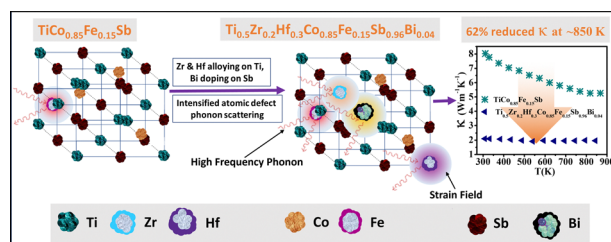
6645



### Computational study of the physical characteristics of Si-based oxide perovskites for energy generation using DFT

Amjad Ali Pasha, Hukam Khan, Mohammad Sohail,\* Nasir Rahman, Rajwali Khan, Omar H. Alsalmi, Dilsora Abduvalieva, Khamael M. Abualnaja, Atef El Jery and Mouataz Adrderly

6655



### Approaching the minimum lattice thermal conductivity in TiCoSb half-Heusler alloys by intensified point-defect phonon scattering

Ajay Kumar Verma, Shamma Jain, Kishor Kumar Johari, Christophe Candolfi, Bertrand Lenoir,\* Sumeet Walia, S. R. Dhakate and Bhasker Gahtori\*

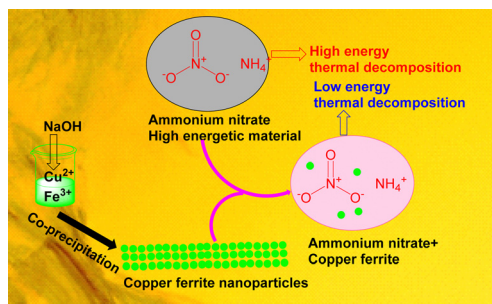


## PAPERS

6665

# Comparative study of the thermal decomposition of ammonium nitrate in the presence of nanocrystalline copper ferrite

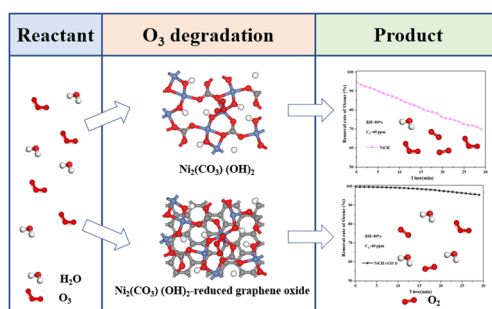
Pragnesh N. Dave\* and Ruksana Sirach



6673

# rGO nickel matrix composites with high ozone degradation efficiency under high humidity

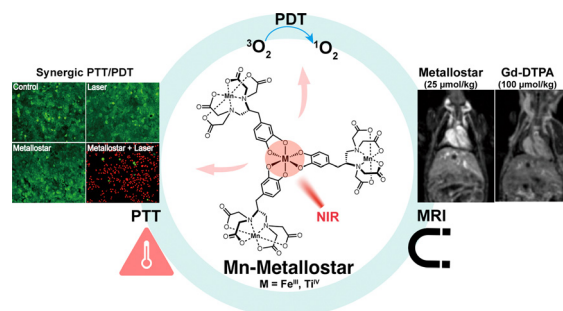
Qian Zhang,\* Wenyan Xiao, Bangxin Li, Yu Lin, Lingyu Huang, Jifei Liao, Huiguo Han, Jie Zhu and Yan Fu



6682

# Coordination-driven self-assembled Mn(II)-metallostar with high relaxivity and synergistic photothermal and photodynamic effects

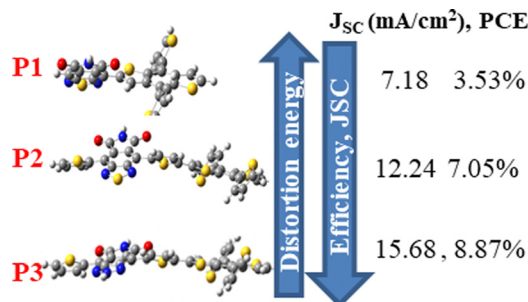
Huiyu Wu, Zhenghui Li, Yao Liu, Xingchi Shi, Yuan Xue, Zuhua Zeng, Fanglin Mi, Haiying Wang\* and Jiang Zhu\*



6694

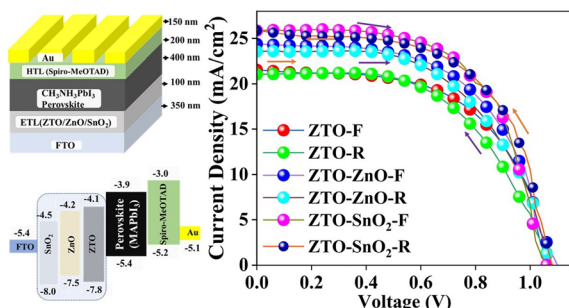
# Tailoring intra-molecular coupling in BDT-based copolymers to enhance their performance in fullerene-free organic solar cells

Newayemedhin A. Tegegne,\* Asfaw Negash,\* Desalegn Yilma, Kidan G. Gebremariam, Zewdneh Genene, Wendimagegn Mammo and Neill J. Goosen



## PAPERS

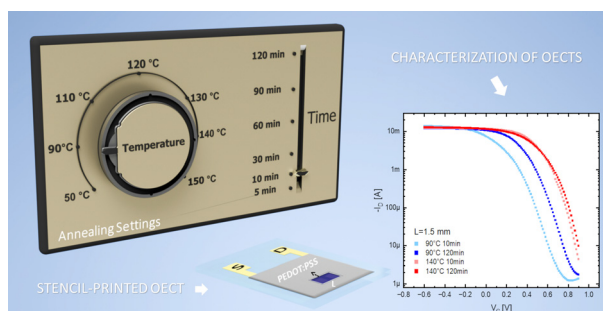
6704



### Enhancing the perovskite solar cell performance by the interface modification of Zn–Sn–O compound heterostructures

Ranjith Kumar Poobalan, Ramarajan Ramanathan,\*  
Chellakumar R., K. Ravichandran and Michel Zinigrad

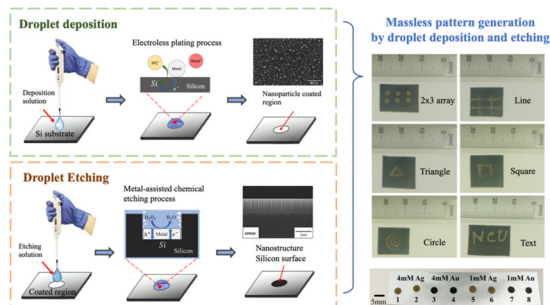
6718



### Experimental design of stencil-printed high-performance organic electrochemical transistors

Amir Mohammad Ghafari, Michele Catacchio,  
Emil Rosqvist, Axel Luukkonen, Anni Eklund,  
Kim Björkström, Paolo Bollella, Luisa Torsi,  
Eleonora Macchia\* and Ronald Österbacka\*

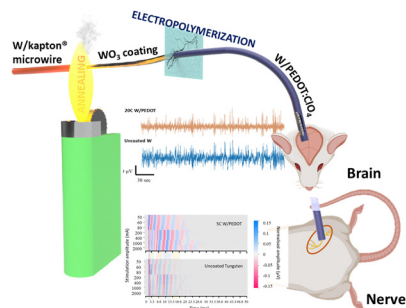
6730



### Maskless patterning of metal nanoparticles and silicon nanostructures by a droplet deposition and etching process

Chia-Wen Tsao\* and Ping-Chin Shen

6741



### Electrodeposition of PEDOT:ClO<sub>4</sub> on non-noble tungsten microwire for nerve and brain recordings

Amparo Güemes, Antonio Dominguez-Alfaro,  
Ryo Mizuta, Santiago Velasco-Bosom,  
Alejandro Carnicer-Lombarte, Damiano G. Barone,  
David Mecerreyes and George Malliaras\*





## CORRECTIONS

6754

**Correction: The state of understanding of the electrochemical behaviours of a valve-regulated lead–acid battery comprising manganese dioxide-impregnated gel polymer electrolyte**

Bipin S. Chikkatti, Ashok M. Sajjan\* and Nagaraj R. Banapurmath

6755

**Correction: Green pepper-derived hierarchical porous carbon for supercapacitors with high performance**

Yicheng Zeng, Fuming Zhang, Jinggao Wu and Jing Huang\*

