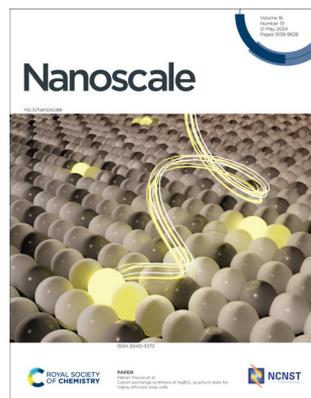


IN THIS ISSUE

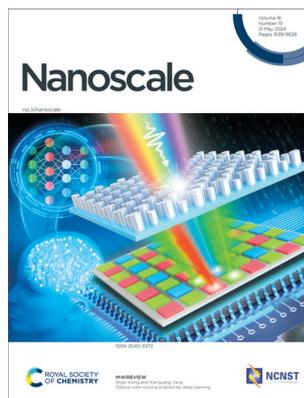
ISSN 2040-3372 CODEN NANOHL 16(19) 9139-9628 (2024)



Cover

See Fabian Paulus *et al.*, pp. 9325–9334.

Image reproduced by permission of Alina Senina from *Nanoscale*, 2024, **16**, 9325.



Inside cover

See Shijie Xiong and Xianguang Yang, pp. 9284–9294.

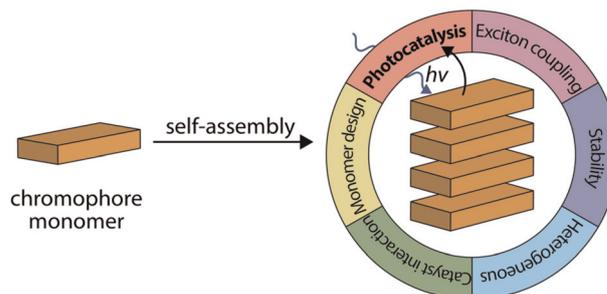
Image reproduced by permission of Xianguang Yang from *Nanoscale*, 2024, **16**, 9284.

REVIEWS

9153

Self-assembled π -conjugated chromophores: preparation of one- and two-dimensional nanostructures and their use in photocatalysis

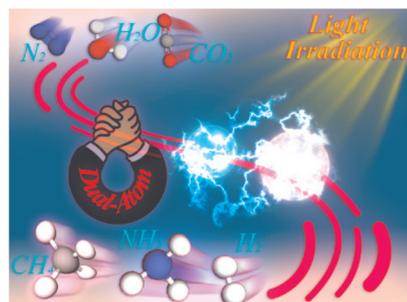
David Cappelletti, Marianna Barbieri, Alessandro Aliprandi, Michele Maggini and Luka Đorđević*



9169

Research progress of dual-atom site catalysts for photocatalysis

Jinting Wu, Haoming Zhong, Zhen-Feng Huang, Ji-Jun Zou, Xiangwen Zhang, Yong-Chao Zhang* and Lun Pan*



Royal Society of Chemistry approved training courses

Explore your options.
Develop your skills.
Discover learning
that suits you.

**Courses in the classroom,
the lab, or online**

Find something for every
stage of your professional
development. Search our
database by:

- subject area
- location
- event type
- skill level

Members **get at least 10% off**

Visit rsc.li/cpd-training



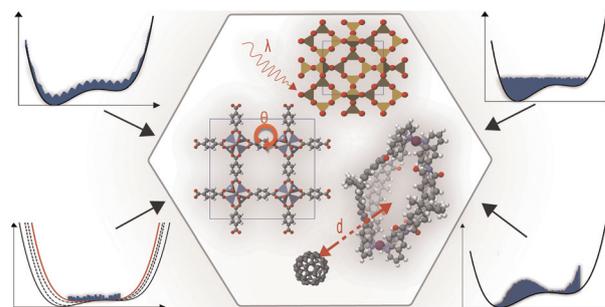
**SAVE
10%**

REVIEWS

9186

The use of collective variables and enhanced sampling in the simulations of existing and emerging microporous materials

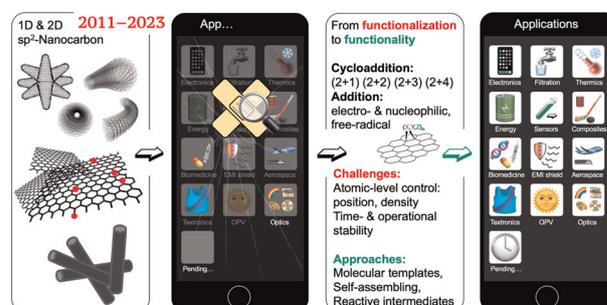
Konstantin Stracke and Jack D. Evans*



9197

Covalent functionalization of 1D and 2D sp²-carbon nanoallotropes – twelve years of progress (2011–2023)

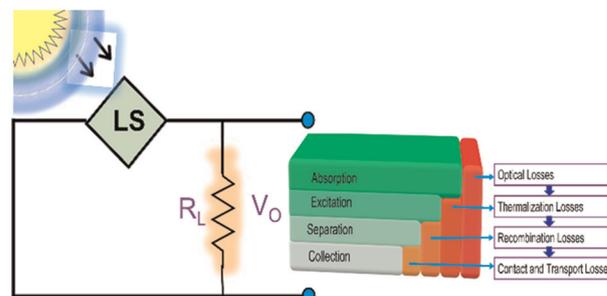
Zunaira Amjad, Artur P. Terzyk and Sławomir Boncel*



9235

Self-powered photodetectors: a device engineering perspective

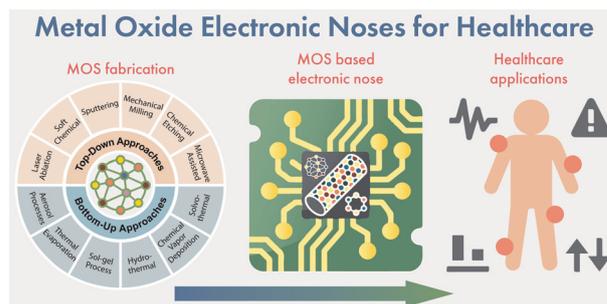
Varun Goel, Yogesh Kumar, Gopal Rawat and Hemant Kumar*



9259

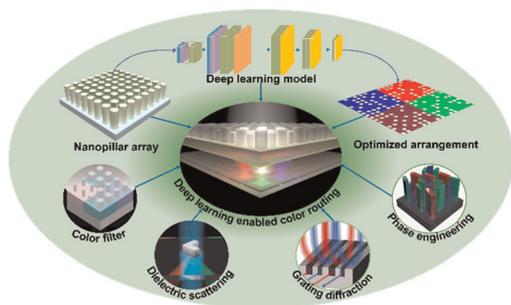
Emerging trends in metal oxide-based electronic noses for healthcare applications: a review

Zain Ul Abideen,* Waqas Ul Arifeen and Y. M. Nuwan D. Y. Bandara



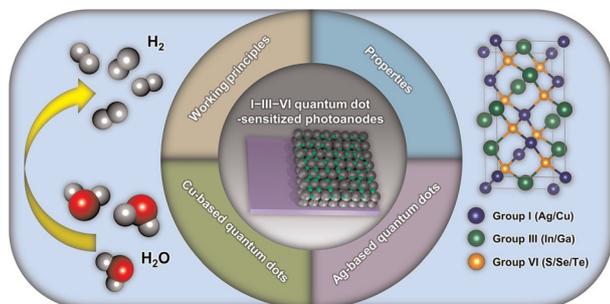
MINIREVIEWS

9284

**Optical color routing enabled by deep learning**

Shijie Xiong and Xianguang Yang*

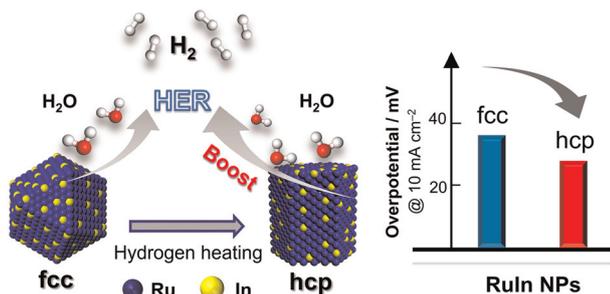
9295

**Recent advances in photoelectrochemical hydrogen production using I–III–VI quantum dots**

Hyo Cheol Lee, Ji Hye Park, Su-Il In and Jiwoong Yang*

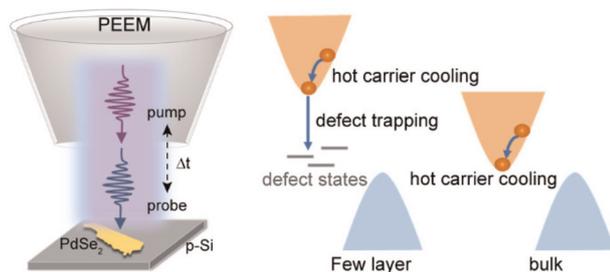
COMMUNICATIONS

9311

**Phase control of solid-solution RuIn nanoparticles and their catalytic properties**

Xin Zhou, Megumi Mukoyoshi,* Kohei Kusada, Tomokazu Yamamoto, Takaaki Toriyama, Yasukazu Murakami and Hiroshi Kitagawa*

9317

**Layer-dependent ultrafast carrier dynamics of PdSe₂ investigated by photoemission electron microscopy**

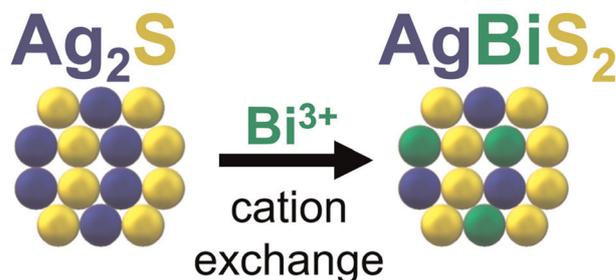
Xiaying Lyu, Yaolong Li,* Xiaofang Li, Xiulan Liu, Jingying Xiao, Weiting Xu, Pengzuo Jiang, Hong Yang, Chengyin Wu, Xiaoyong Hu, Liang-You Peng, Qihuang Gong, Shengxue Yang* and Yunan Gao*



9325

Cation exchange synthesis of AgBiS₂ quantum dots for highly efficient solar cells

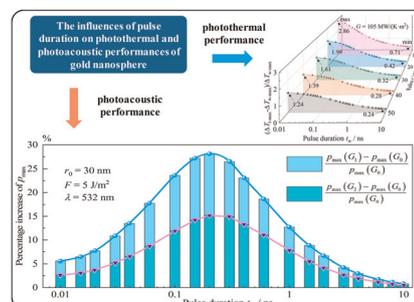
Alina Senina, Anatol Prudnikau, Angelika Wrzesińska-Lashkova, Yana Vaynzof and Fabian Paulus*



9335

Enhancement of the photoacoustic effect during the light–particle interaction

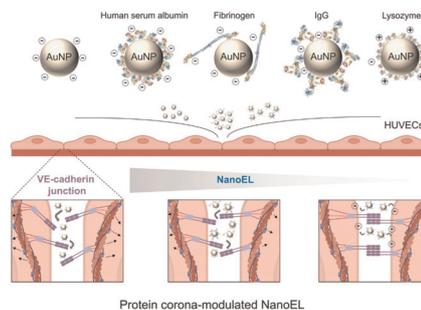
Yukun Ji, Jianping Sun, Yatao Ren,* Hong Qi and Renxi Gao*



9348

Controlling nanoparticle-induced endothelial leakiness with the protein corona

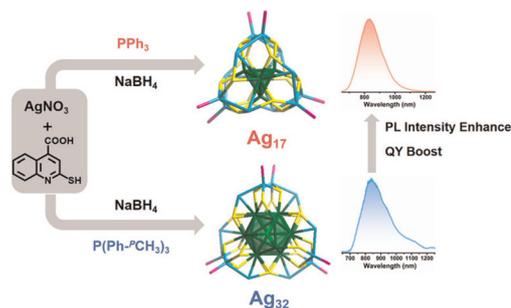
Aparna Nandakumar, Huayuan Tang, Nicholas Andrikopoulos, John F. Quinn, Feng Ding,* Pu Chun Ke* and Yuhuan Li*



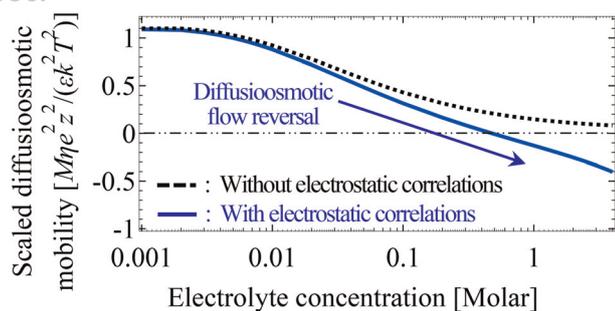
9361

Construction of novel Ag(0)-containing silver nanoclusters by regulating auxiliary phosphine ligands

Qing-Qing Ma, Xue-Jing Zhai, Jia-Hong Huang, Yubing Si, Xi-Yan Dong,* Shuang-Quan Zang* and Thomas C. W. Mak



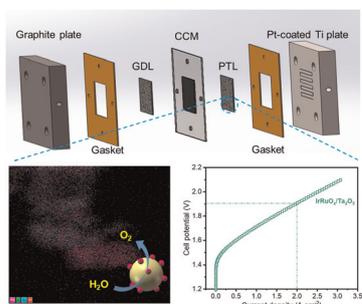
9367



Diffusioosmotic flow reversals due to ion–ion electrostatic correlations

Shengji Zhang and Henry C. W. Chu*

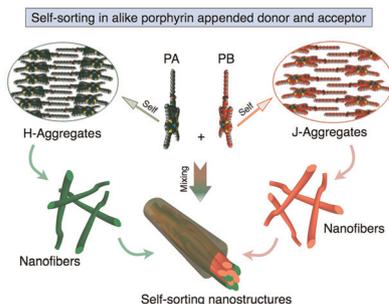
9382



An IrRuO_x catalyst supported by oxygen-vacant Ta oxide for the oxygen evolution reaction and proton exchange membrane water electrolysis

Yanrong Liu, Meiqi Zhang, Cong Zhang, Honghua Zhang and Hao Wang*

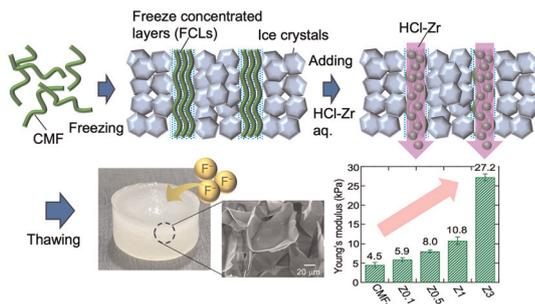
9392



Narcissistic self-sorting in Zn(II) porphyrin derived semiconducting nanostructures

Yelukula Ramakrishna, Madarapu Naresh, Madoori Mrinalini,* Nagadatta Pravallika, Priti Kumari, Botta Bhavani, Lingamallu Giribabu and Seelam Prasanthkumar*

9400



Freeze-crosslinking approach for preparing carboxymethyl cellulose nanofiber/zirconium hydrogels as fluoride adsorbents

Yurina Sekine,* Takuya Nankawa, Tsuyoshi Sugita, Yoshiyasu Nagakawa, Yuki Shibayama, Ryuhei Motokawa and Tomoko Ikeda-Fukazawa

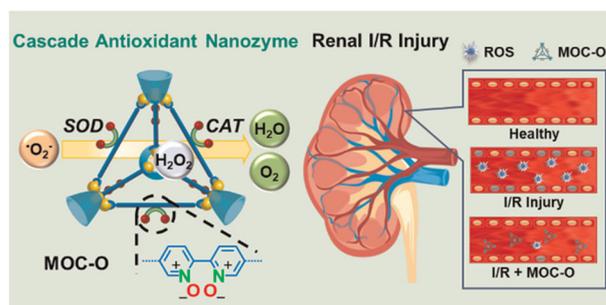


PAPERS

9406

A metal–organic cage-derived cascade antioxidant nanozyme to mitigate renal ischemia-reperfusion injury

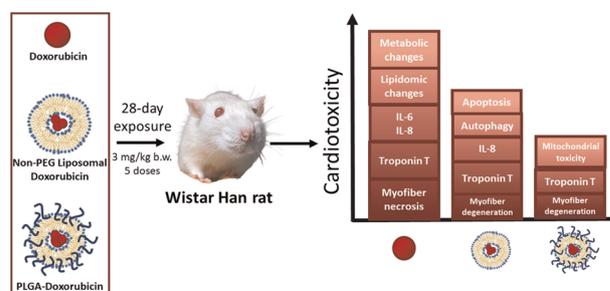
Cheng Huang, Yucen Deng, Rongze Ma, Hucheng Ge, Fuzhong Gong,* Jinghui Yang,* Xinyuan Zhu and Youfu Wang*



9412

Novel PLGA-based nanoformulation decreases doxorubicin-induced cardiotoxicity

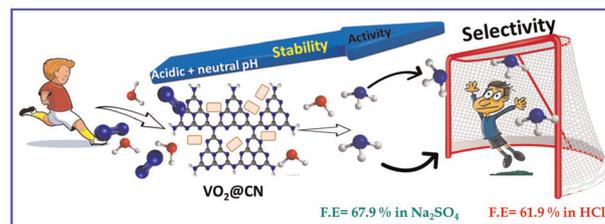
Nikša Drinković, Maja Beus, Rinea Barbir, Željko Debeljak, Blanka Tariba Lovaković, Nikolina Kalčec, Marija Čurlin, Ana Bekavac, Dunja Gorup, Ivan Mamić, Dario Mandić, Vedran Micek, Petra Turčić, Nazende Günday-Türelı, Emre Türelı and Ivana Vinković Vrček*



9426

Strategic design of VO₂ encased in N-doped carbon as an efficient electrocatalyst for the nitrogen reduction reaction in neutral and acidic media

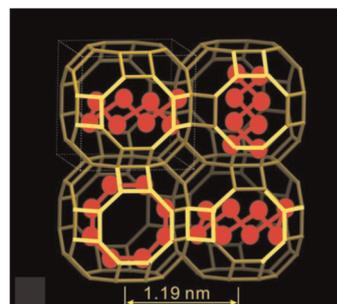
Ashis Chhetri, Ashmita Biswas, Sumana Podder, Ramendra Sundar Dey* and Joyee Mitra*



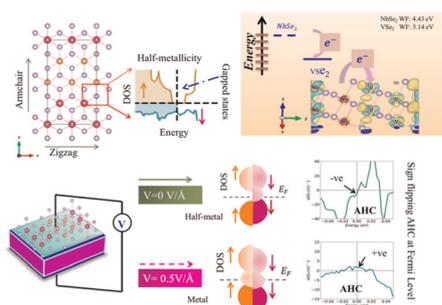
9436

Optical study of Te₈ ring clusters: comparison with density functional theory and a step towards materials design using nanoporous zeolite space

Vladimir Poborchii* and Dmitrij Rappoport



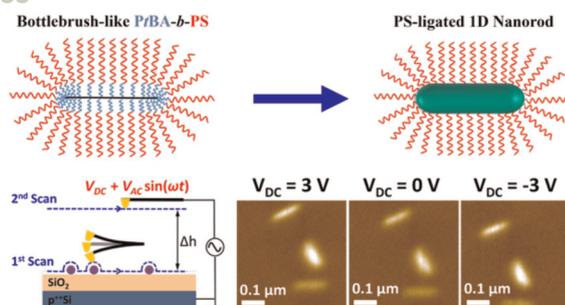
9447



Sign-flipping intrinsic anomalous Hall conductivity with Berry curvature tunability in a half-metallic ferromagnet NbSe₂-VSe₂ lateral heterostructure

Saransha Mohanty and Pritam Deb*

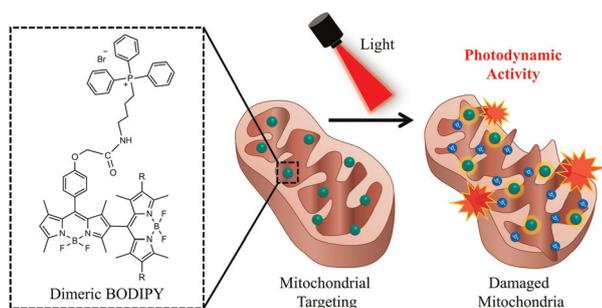
9455



Improved electronic uniformity and nanoscale homogeneity in template-grown CsPbBr₃ nanorods

Eduardo Avila-Lopez, Shuang Liang, Isaac Elias, Zhiquan Lin* and Yize Stephanie Li*

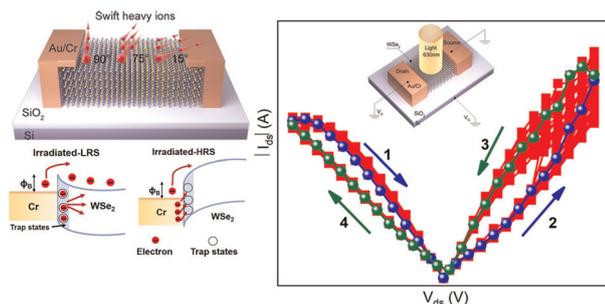
9462



Triphenylphosphonium-functionalized dimeric BODIPY-based nanoparticles for mitochondria-targeting photodynamic therapy

Chanwoo Kim, Duy Khuong Mai, Joomin Lee, Jinwoong Jo, Soyeon Kim, Isabel Wen Badon, Jong Min Lim,* Ho-Joong Kim* and Jaesung Yang*

9476



Schottky barrier reduction on optoelectronic responses in heavy ion irradiated WSe₂ memtransistors

Shengxia Zhang,* Lijun Xu, Shifan Gao, Peipei Hu, Jiande Liu, Jian Zeng, Zongzhen Li, Pengfei Zhai, Li Liu, Li Cai and Jie Liu*

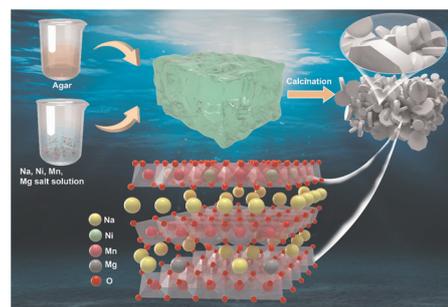


PAPERS

9488

A dual strategy of Na⁺/vacancy disorder and high Na to construct a P2-type cathode for high-stability sodium-ion batteries

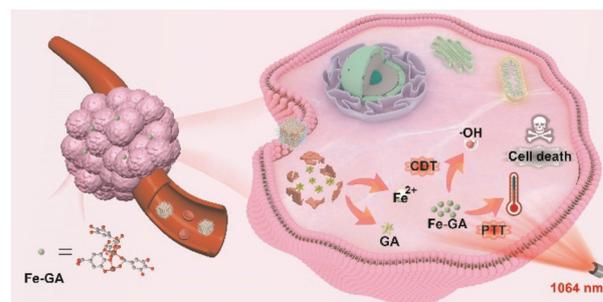
Lei Geng, Lan Wu,* Hongjie Tan, Meng Wang, Zhe Liu, Lianshan Mou, Yongjian Shang, De Yan and Shanglong Peng*



9496

Gallic acid-loaded HFZIF-8 for tumor-targeted delivery and thermal-catalytic therapy

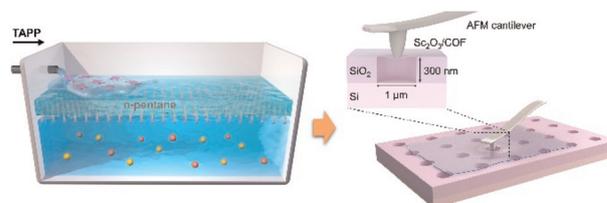
Xing Yang, Chunsheng Li, Shuang Liu, Yunlong Li, Xinyu Zhang, Qiang Wang, Jin Ye, Yong Lu, Yujie Fu and Jiating Xu*



9509

A wafer scale thin film of ultra-small Sc₂O₃ nanocrystals on a 2D COF with high rigidity

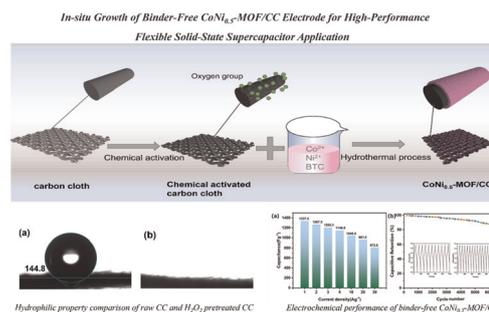
Xin Guan, Xiaohui Xu, Zhongliang Yu, Junjie Xiong, Yanhong Chang,* Bowen Liu* and Bin Wang*



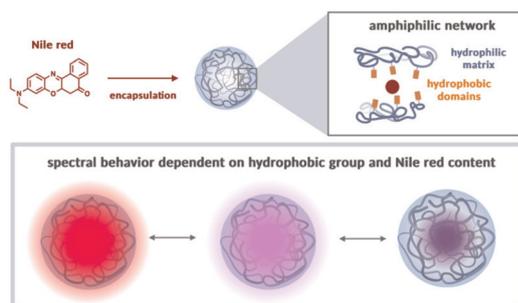
9516

In situ growth of binder-free CoNi_{0.5}-MOF/CC electrode for high-performance flexible solid-state supercapacitor application

Weijie Zhang, Zhen Cao, Yuying Li, Ruiting Li, Yanmei Zheng, Ping Su and Xinli Guo*



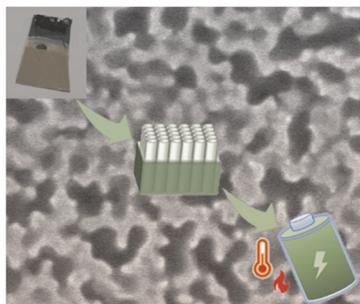
9525



Optically monitoring the microenvironment of a hydrophobic cargo in amphiphilic nanogels: influence of network composition on loading and release

Clara López-Iglesias, Ante Markovina, Nithiya Nirmalanathan-Budau, Ute Resch-Genger* and Daniel Klinger*

9536

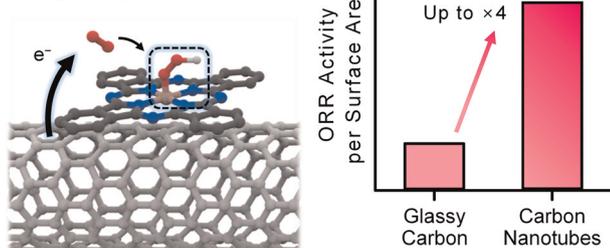


Silicon carbide single crystals for high-temperature supercapacitors

Chang Liang, Shouzhi Wang,* Ge Tian, Songyang Lv, Guodong Wang, Xuejian Xie,* Lili Li, Xiangang Xu, Guangxia Liu and Lei Zhang*

9545

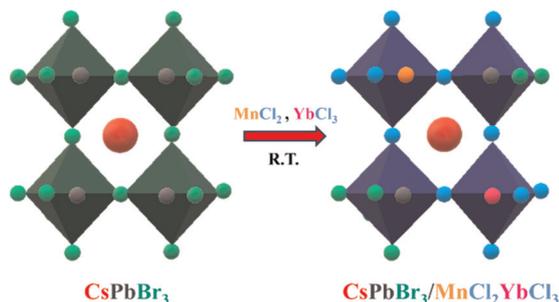
- ✓ Weakened *OOH binding
- ✓ Enhanced electron transfer



Electronic structure modification of metal phthalocyanines by a carbon nanotube support for efficient oxygen reduction to hydrogen peroxide

Yesol Lee, Chaehyeon Lee, Seoin Back* and Young Jin Sa*

9558



Halide exchange mediated cation exchange facilitates room temperature co-doping of d- and f-block elements in cesium lead halide perovskite nanoparticles

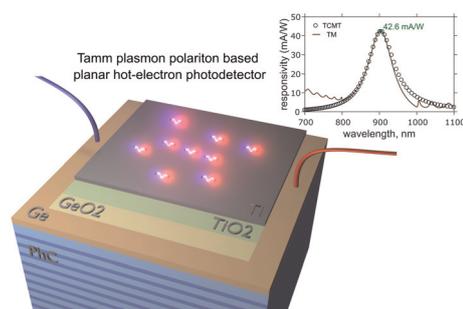
Jomy Jose Philip, Gouranga H. Debnath,* David H. Waldeck* and R. Geetha Balakrishna*



9570

Tamm plasmon polariton-based planar hot-electron photodetector for the near-infrared region

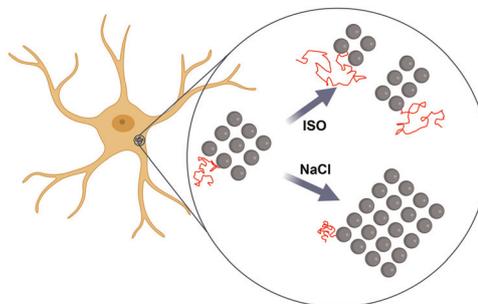
Yurii V. Konov, Dmitrii A. Pykhtin, Rashid G. Bikbaev* and Ivan V. Timofeev



9576

Single-molecule imaging of aquaporin-4 array dynamics in astrocytes

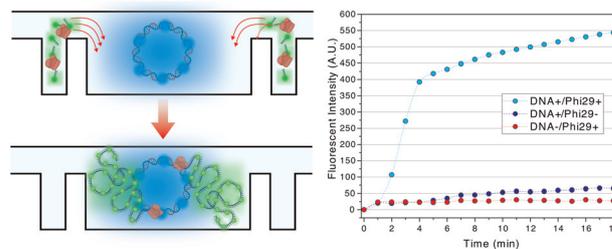
Anna-Lena Zepernick, Vanya Metodieva, Noelia Pelegrina-Hidalgo, Anna H. Lippert, Mathew H. Horrocks and Juan A. Varela*



9583

Tunable nanofluidic device for digital nucleic acid analysis

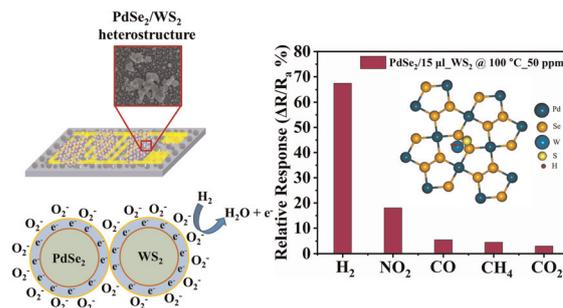
Imman I. Hosseini, Seyed Vahid Hamidi, Xavier Capaldi, Zezhou Liu, Matheus Azevedo Silva Pessoa, Sara Mahshid* and Walter Reisner*



9593

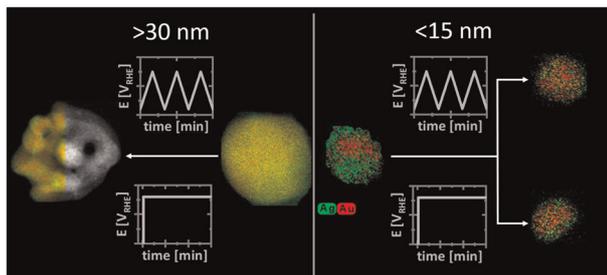
Catalytic synergy of WS₂-anchored PdSe₂ for highly sensitive hydrogen gas sensor

Suresh Kumar, Ashok Kumar, Amit Kumar, Atul G. Chakkar, Atanu Betal, Pradeep Kumar, Satyajit Sahu* and Mahesh Kumar*



PAPERS

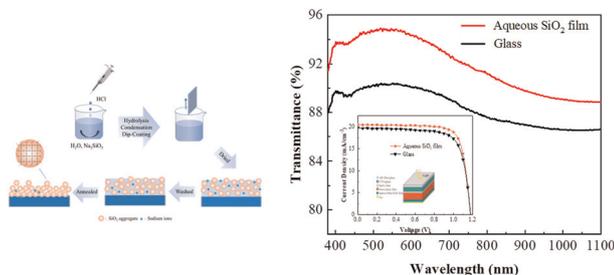
9603



Tuning the morphology and chemical distribution of Ag atoms in Au rich nanoparticles using electrochemical dealloying

Alexandra Dworzak, Paul Paciok, Christoph Mahr, Marc Heggen, Carsten Dosche, Andreas Rosenauer and Mehtap Oezaslan*

9617



Facile preparation of a water-based antireflective SiO₂ film with high transmittance for perovskite solar cells

Xuemin Zhang, Ziao Wang, Peiran Hou, Senwei Wu, Jianfeng Lu, Xiujian Zhao and Shouqin Tian*

CORRECTION

9625

Correction: Magnetic aerogels from FePt and CoPt₃ directly from organic solution

L. Schoske, F. Lübkeermann-Warwas, I. Morales, C. Wesemann, J. G. Eckert, R. T. Graf and N. C. Bigall*

