

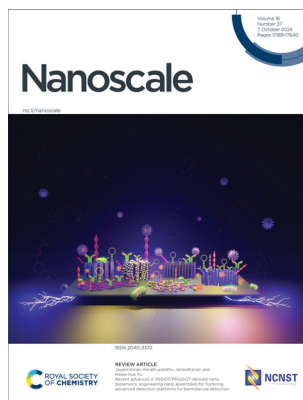
IN THIS ISSUE

ISSN 2040-3372 CODEN NANOHL 16(37) 17189–17640 (2024)



Cover
See Shilong Chen, Malte Behrens *et al.*, pp. 17378–17392.

Image reproduced by permission of Malte Behrens and Jihao Wang from *Nanoscale*, 2024, **16**, 17378.



Inside cover
See Jayakrishnan Aerathupalathu Janardhanan and Hsiao-hua Yu, pp. 17202–17229.

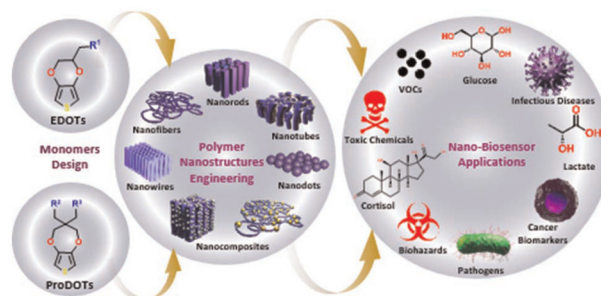
Image reproduced by permission of Hsiao-hua Yu from *Nanoscale*, 2024, **16**, 17202.

REVIEWS

17202

Recent advances in PEDOT/PProDOT-derived nano biosensors: engineering nano assemblies for fostering advanced detection platforms for biomolecule detection

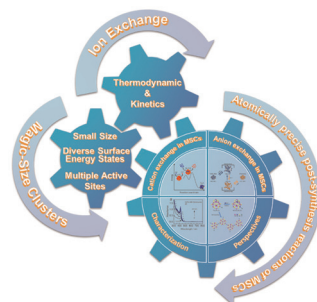
Jayakrishnan Aerathupalathu Janardhanan* and Hsiao-hua Yu*



17230

Ion exchange in semiconductor magic-size clusters

Yuelin Yang, Haoyang Zhang, Yalei Deng, Xinke Kong* and Yuanyuan Wang*



**GOLD
OPEN
ACCESS**

EES Batteries

**Exceptional research on
batteries and energy storage**

Part of the EES family

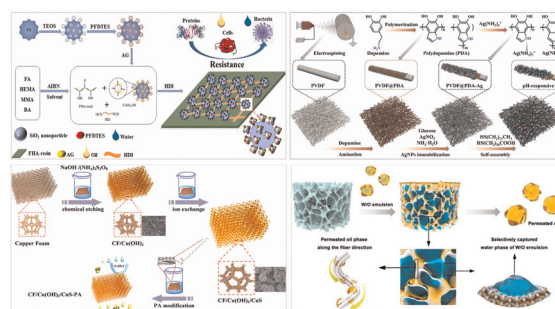
**Join
in** | Publish with us
rsc.li/EESBatteries

REVIEWS

17248

A review of various dimensional superwetting materials for oil–water separation

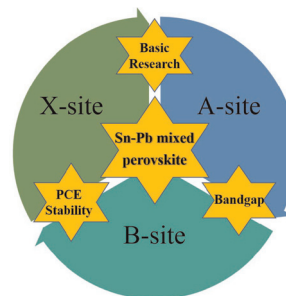
Peng Pi, Zhiying Ren,* Yu Yang, Weiping Chen and Youxi Lin



17276

Effect of ABX₃ site changes on the performance of tin–lead mixed perovskite solar cells

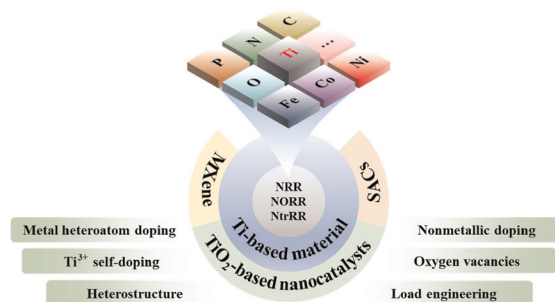
Mina Gul,*, Ran Li, Luyun Bai, Cheng Lan, Wenkai He and Yancheng Zhou



17300

Recent progress on Ti-based catalysts in the electrochemical synthesis of ammonia

Peiyan Lin, Fang Zhao, Xuefeng Ren, Yumeng Lu, Xiaoying Dong,* Ligu Gao, Tingli Ma, Junjiang Bao* and Anmin Liu*

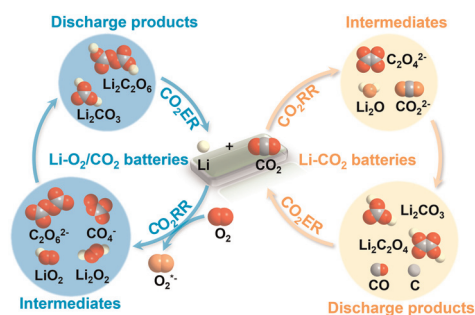


MINIREVIEW

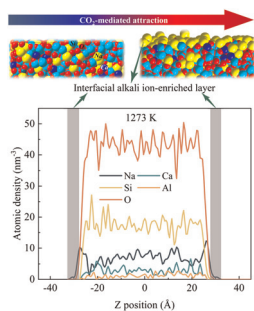
17324

Mechanistic understanding of CO₂ reduction and evolution reactions in Li–CO₂ batteries

Lang Zhou, Yaohui Huang, Yuzhe Wang, Bo Wen, Zhuoliang Jiang and Fujun Li*



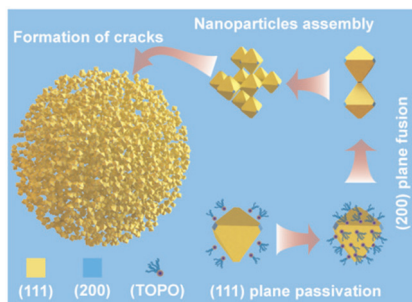
17338



Unraveling the atomic-scale mechanism of interfacial alkali ion close packing in nano glassy fibers driven by CO₂-mediated attraction

Ying Wei, Ziwei Chen,* Yongqi Sun and Chi Sun Poon

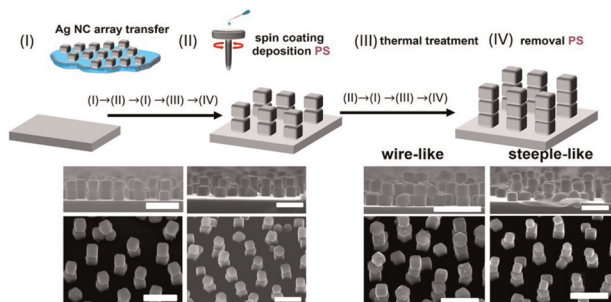
17345



Mechanisms underlying the nucleation processes of mesoporous ceria nanoparticles

Jian He, Ling Zou, Lu Yang, Guangyou Shi, Jinbao Li, Run Huang, Xiaoling Liu, Shiwu Dong* and Xiaochao Yang*

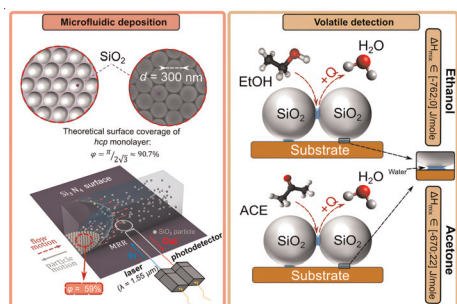
17353



Fabrication of one-dimensional nanostructures standing vertically on a substrate through layer-by-layer deposition

Fang-Chih Liu, Yu-Hsun Liao and Su-Wen Hsu*

17365



Convective assembly of silica colloidal particles inside photonic integrated chip-based microfluidic systems for gas sensing applications

Valeriy Zaytsev,* Aleksei Kuzin,* Krupamaya Panda, Vasily Chernyshev, Irina Florya, Fedor S. Fedorov, Vadim Kovalyuk, Alexander Golikov, Pavel P. An, Boris N. Khlebstov, Margarita Chetyrkina, Albert G. Nasibulin, Gregory Goltsman and Dmitry A. Gorin*

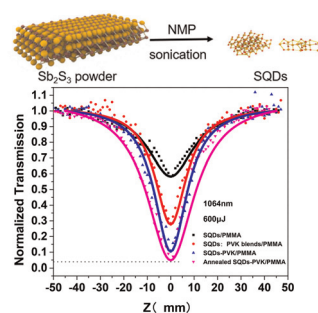


COMMUNICATIONS

17371

Polymer functionalized antimony sulfide quantum dots for broadband optical limiting

Guangwei Li, Qian Chen, Ningning Dong, Haidong He,*
Jun Wang* and Yu Chen*

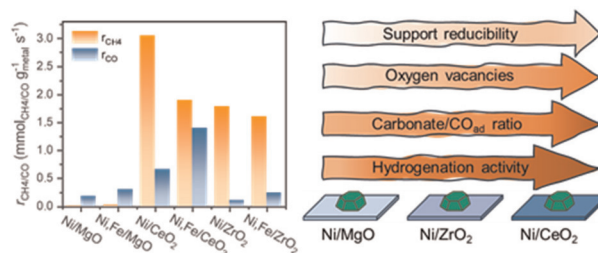


PAPERS

17378

Support effect on Ni-based mono- and bimetallic catalysts in CO₂ hydrogenation

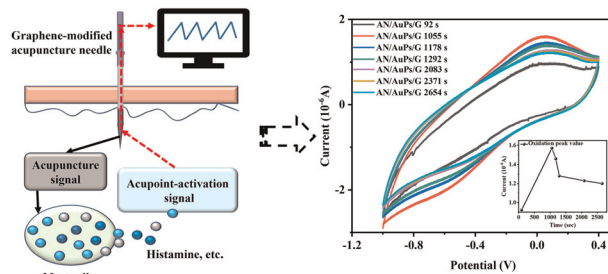
Jihao Wang, Shilong Chen,* Pierfrancesco Ticali,
Paulina Summa, Simon Mai, Katarzyna Skorupska and
Malte Behrens*



17393

Highly sensitive biosensors for real-time monitoring of histamine at acupoint PC6 in rats based on graphene-modified acupuncture needles

Pengwei Li, Aotian Yu, Lei Han, Bo Zhao, Qi Wang,
Qixuan Fu, Simin Ning, Guangyi Yang, Rong Zhang,
Liusi Yang, Anyuan Cao, Cunzhi Liu and Wenjing Xu*

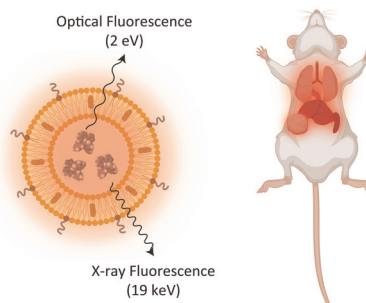


Real-time monitoring of histamine at acupoint using graphene-modified acupuncture needles

17404

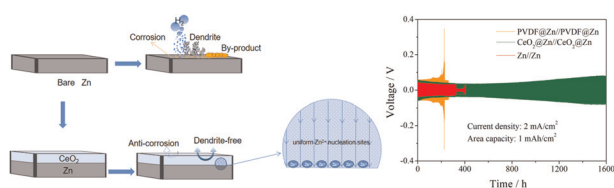
Liposome biodistribution mapping with *in vivo* X-ray fluorescence imaging

Giovanni Marco Saladino,* Po-Han Chao,
Bertha Brodin, Shyh-Dar Li and Hans Martin Hertz



PAPERS

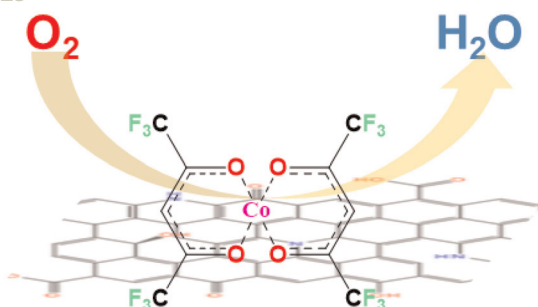
17412



Achieving a balance of rapid Zn²⁺ desolvation and hydrogen evolution reaction inertia at the interface of the Zn anode

Xiaofen Xiao,* Deqiang Wang, Guangyi Xu, Zhuxiang Zhang, Jun Li, Shun Wang, Yifei Yuan, Chuangang Hu and Huile Jin*

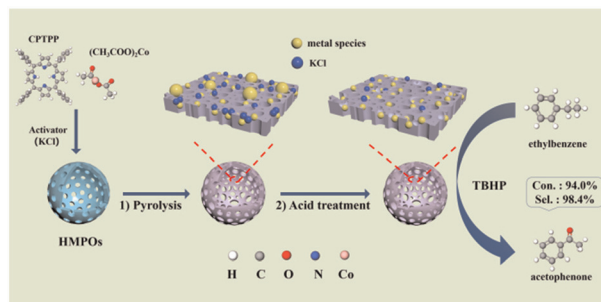
17419



Atomically dispersed Co-based species containing electron withdrawing groups for electrocatalytic oxygen reduction reactions

Yunseok Shin, Sunggu Park, Hanbi Jang, Gogyun Shin, Dongha Shin and Sungjin Park*

17426

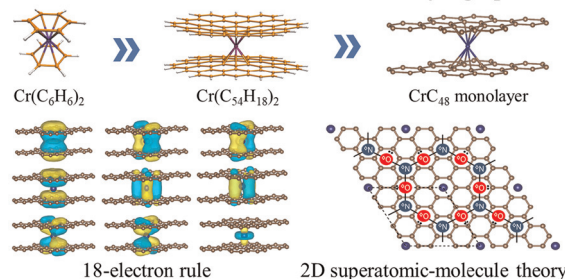


Cobalt and nitrogen co-doped hollow periodic mesoporous organosilica spheres activated by potassium chloride for selective oxidation of ethylbenzene

Jingwen Li, Yingying Lan, Chengfeng Yi and Zhigang Liu*

17433

From sandwich cluster to Cr-intercalated bilayer graphene



Modulating the bandgap of Cr-intercalated bilayer graphene *via* combining the 18-electron rule and the 2D superatomic-molecule theory

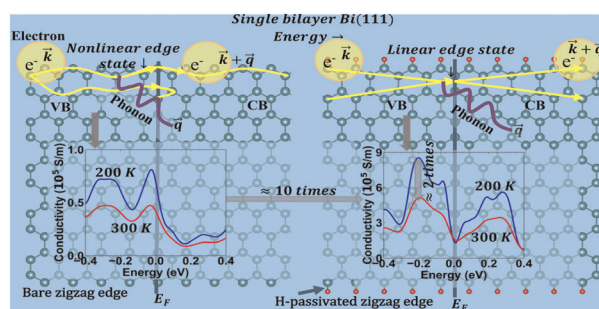
Dan Li, Zaijun Gui, Mengxuan Ling, Lijiao Guo, Zhifang Wang, Qinjin Yuan* and Longjiu Cheng*



17442

Electron–phonon interactions at the topological edge states in single bilayer Bi(111)

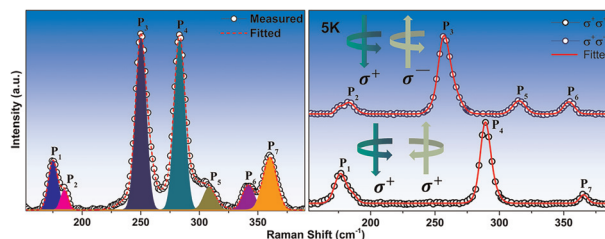
Enamul Haque,* Yuefeng Yin* and Nikhil V. Medhekar*



17452

Polarized Raman spectroscopy study of CVD-grown Cr₂S₃ flakes: unambiguous identification of phonon modes

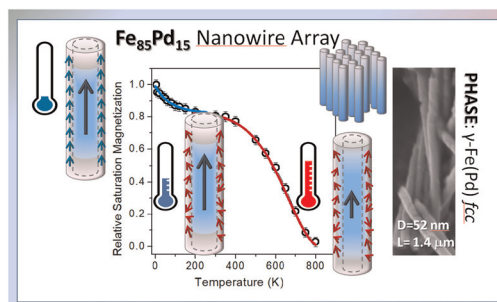
Anabil Gayen, Gwang Hwi An, Ikhwan Nur Rahman, Min Choi, Qoimatul Mustaghfiroh, Prashant Vijay Gaikwad, Evan S. H. Kang, Kyoung-Ho Kim, Chuyang Liu, Kyungwan Kim,* Junhyeok Bang,* Hyun Seok Lee* and Dong-Hyun Kim*



17463

Magnetism of metastable γ -Fe₈₅Pd₁₅ nanowire arrays across an unusually broad temperature range (5 K to 800 K)

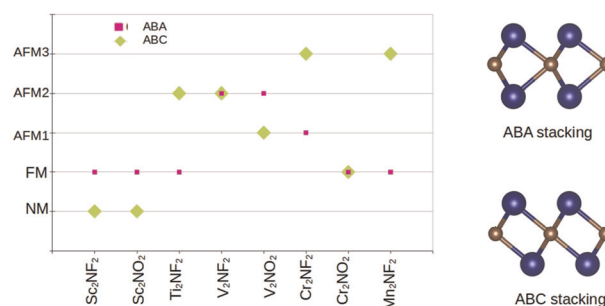
Paula G. Bercoff,* Soledad Aprea, Eva Céspedes, José Luis Martínez, Silvia E. Urreta and Manuel Vázquez



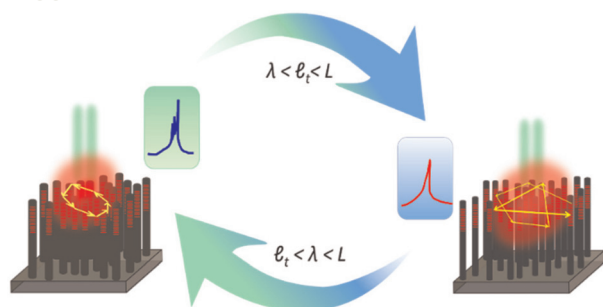
17474

Tunable magnetism in nitride MXenes: consequences of atomic layer stacking

Himangshu Sekhar Sarmah* and Subhradip Ghosh*



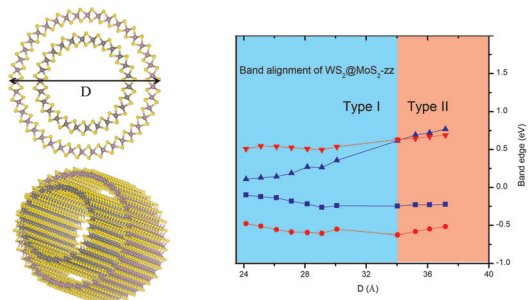
17488



Controlling the random lasing action from GaAs/AlGaAs axial heterostructure nanowire arrays

Bingheng Meng, Xuanyu Zhang, Yubin Kang, Xuanchi Yu, Puning Wang, Shan Wang, Jilong Tang, Qun Hao,* Zhipeng Wei* and Rui Chen*

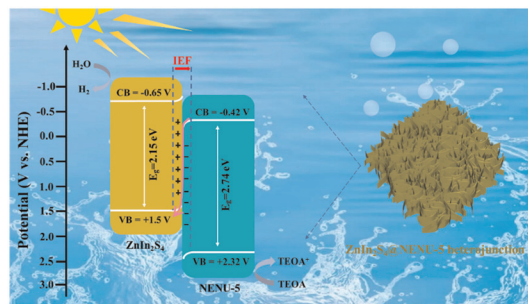
17495



Band alignment of one-dimensional transition-metal dichalcogenide heterotubes

Mei Ge, Fanmin Zeng, Zixuan Wang, Jiang-Jiang Ma* and Junfeng Zhang*

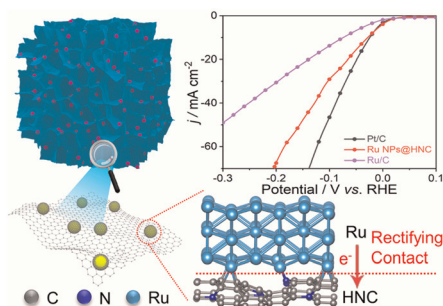
17505



Construction of Z-scheme heterojunction interfacial charge transfer pathways in ZnIn₂S₄@NENU-5 for photocatalytic hydrogen evolution

Xu Kong, Kai Wang,* Hai Yu and Zhiliang Jin

17519



Highly dispersed ultrafine Ru nanoparticles on a honeycomb-like N-doped carbon matrix with modified rectifying contact for enhanced electrochemical hydrogen evolution

Mingxin Pang, Yu Fang, Lizhang Chen, Ruoxu Sun, Xinyu Li, Huan Pang, Songtao Zhang, Lin Xu,* Dongmei Sun* and Yawen Tang

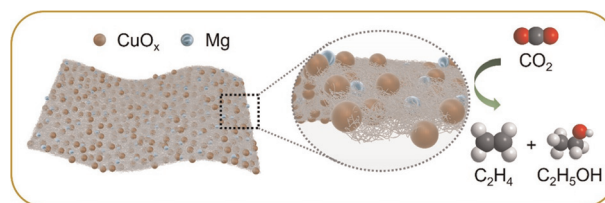


PAPERS

17527

Design and synthesis of magnesium-modified copper oxide nanosheets as efficient electrocatalysts for CO₂ reduction

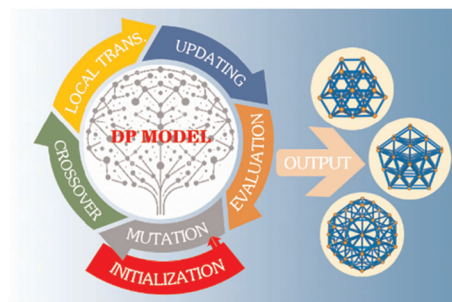
Xijuan Li, Zhiqian Li, Zining Zhang, Yuxiao Zhao, Qi Fang, Jing Tang* and Jianping He*



17537

Hierarchical structures and magnetism of Co clusters: a perspective from integration of deep learning and a hybrid differential evolution algorithm

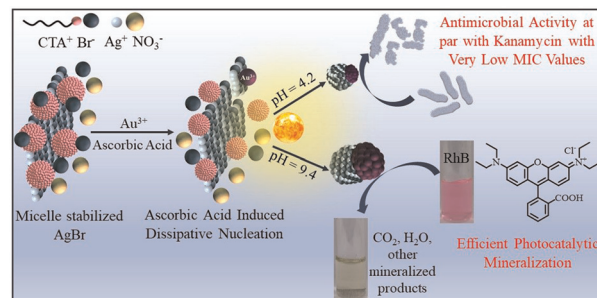
Wei-Hua Yang, Fang-Qi Yu, Zi-Wen Guo, Rao Huang,* Jun-Ren Chen, Feng-Qiang Gao, Gui-Fang Shao, Tun-Dong Liu and Yu-Hua Wen*



17549

Sustainable preparation of AuAg alloy@AgBr Janus nanoparticles via dissipative self-assembly for photocatalysis

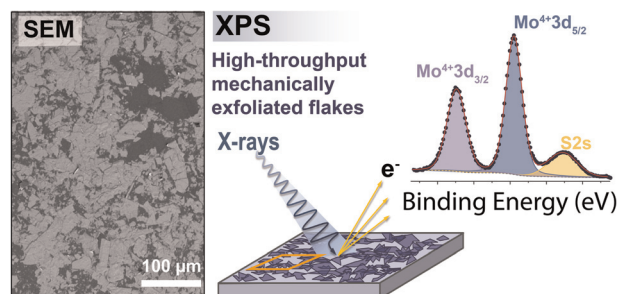
Kanica Sharma, Harjinder Singh, Gurbir Singh, Navdeep Kaur, Pratap Kumar Pati, Kuldeep Singh, Arvind Kumar and Tejwant Singh Kang*



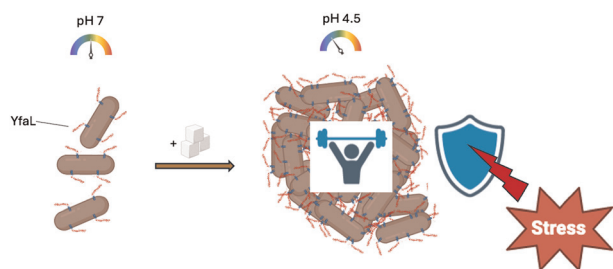
17559

X-ray photoelectron spectroscopy of high-throughput mechanically exfoliated van der Waals materials

Nuria Jiménez-Arévalo,* Carlo Mariani, Fabrice Leardini, Francesco Pandolfi, Ilaria Rago and Riccardo Frisenda*



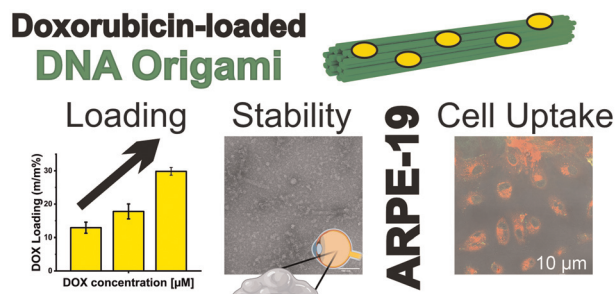
17567



Biophysical insights into sugar-dependent medium acidification promoting YfaL protein-mediated *Escherichia coli* self-aggregation, biofilm formation and acid stress resistance

Yankel Chekli, Stanislas Thiriet-Rupert, Céline Caillet, Fabienne Quilès, Hélène Le Cordier, Emilie Deshayes, Benjamin Bardiaux, Thierry Pédrón, Marie Titecat, Laurent Debarbieux, Jean-Marc Ghigo, Grégory Francius, Jérôme F. L. Duval and Christophe Beloin*

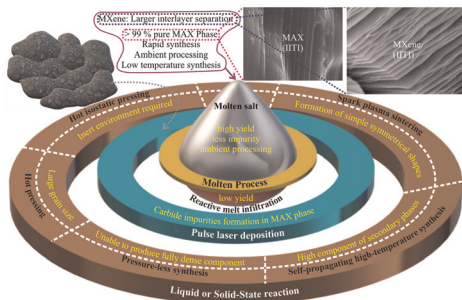
17585



Doxorubicin-loaded DNA origami nanostructures: stability in vitreous and their uptake and toxicity in ocular cells

Anna Klose,* Zahra Gounani, Heini Ijäs, Tatu Lajunen, Veikko Linko* and Timo Laaksonen*

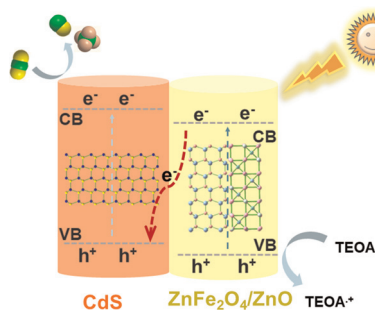
17599



Molten salt-shielded solid-state synthesis (MS⁵) reaction-driven >99% pure Ti₃AlC₂ MAX phase: effect of MAX phase purity on the interlayer separation of MXenes and Na-ion storage

Ekta Choudhary, Vishesh Manjunath, Ramchandra Kalubarme, Ravindra Jangir* and Rupesh S. Devan*

17616



Z-scheme heterojunction enhanced photocatalytic performance for CO₂ reduction to CH₄

Bangli Feng, Qian Wang, Peng Liu, Zibo Yuan, Danxuan Pan, Mingfu Ye, Kejing Shen* and Zhifeng Xin*



17624

Strong sequence-dependence in RNA/DNA hybrid strand displacement kinetics

Francesca G. Smith, John P. Goertz, Križan Jurinović, Molly M. Stevens* and Thomas E. Ouldridge*

