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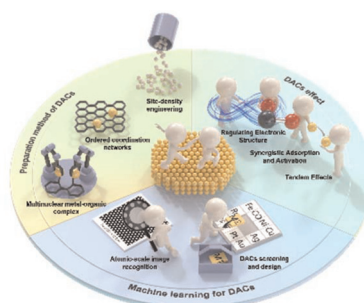
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## REVIEWS

7882

### Catalytic tango in diatomic catalysts: from precision-guided pair construction to machine-learning-driven identification and design

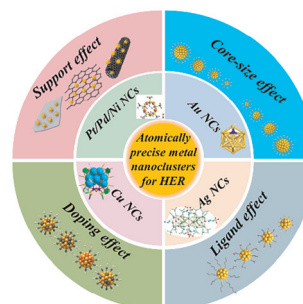
Bowen Jiang, Jishui Huang, Kuibo Yin\* and Litao Sun\*



7910

### Recent advances in atomically precise metal nanocluster-based electrocatalysts for hydrogen evolution reaction

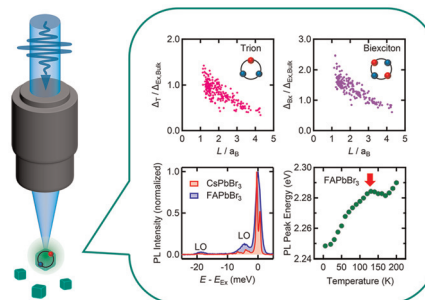
Lipuspa Sahoo\* and Amitava Patra\*



7936

### Size-dependent photophysical properties of individual halide perovskite nanocrystal quantum dots

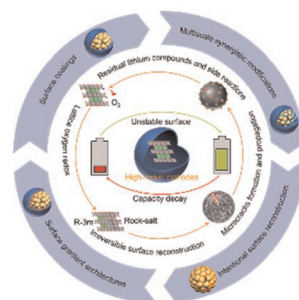
Kenichi Cho and Yoshihiko Kanemitsu\*



7954

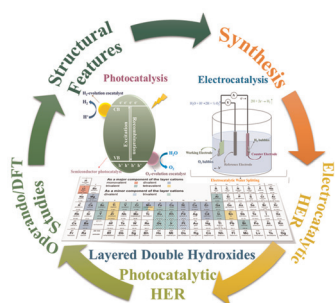
### Challenges and strategies for enhancing surface stability of high-nickel layered oxide cathodes for lithium-ion batteries

Qingyun Liu,\* Siqi Guan, Huicong Yang, Huize Wu, Zhenhua Sun and Feng Li\*



## REVIEWS

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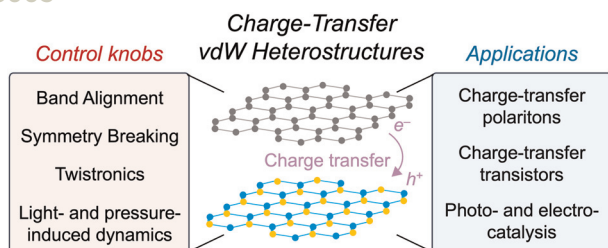


### Engineering layered double hydroxides for photochemical and electrochemical hydrogen evolution: mechanistic insights and structure–property relationships

Iqra Sadiq, Syed Asim Ali and Tokeer Ahmad\*

## MINIREVIEW

8005

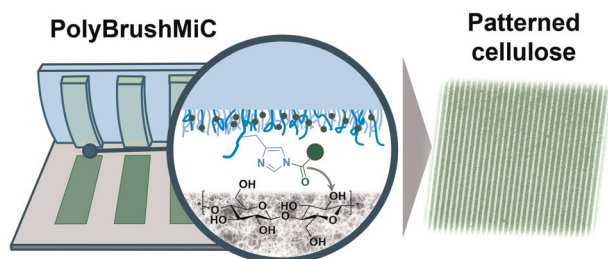


### Designer charge-transfer van der Waals heterostructures

T. Huynh, N. Lee, Y. Hassan, N. Battulga, K. Muralidharan, O. L. A. Monti, M. S. Choi\* and B. S. Y. Kim\*

## COMMUNICATIONS

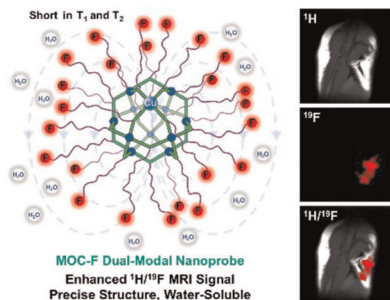
8025



### (Sub-)microscale structuring of cellulose thin films using a polymer brush-assisted microcontact printing (PolyBrushMiC) routine

Nazim Pallab, Maurice Schmette, Sergio Kogikoski, Jr., Kay Hettrich, Matthias Schenderlein and Martin Reifarth\*

8033



### A water-soluble fluorinated metal–organic cage based on paramagnetic copper as an efficient $^1\text{H}$ and $^{19}\text{F}$ MRI nanoprobe

Xin Fang, Hongyu Yang, Meina Liu,\* Xinyuan Zhu, Xin Jin\* and Youfu Wang\*

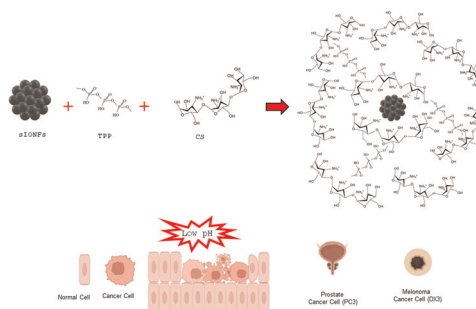


## PAPERS

8041

### Smart pH-responsive magnetic iron oxide nanoflower–chitosan nanogels for controlled drug delivery in cancer therapy

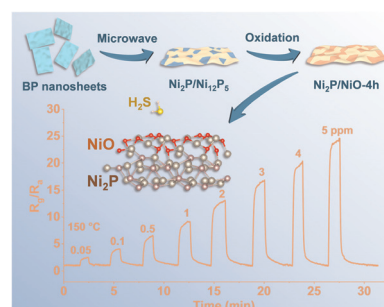
Bengi Ozkahraman, Liudmyla Storozhuk, Dongdong Guo, Le Duc Tung, Stefanos Mourdikoudis and Nguyen Thi Kim Thanh\*



8054

### A phosphorene-derived Ni<sub>2</sub>P/NiO lateral heterostructure for highly sensitive and selective H<sub>2</sub>S gas detection

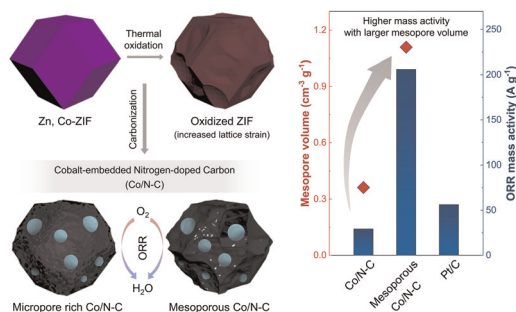
Shutong He, Lei Li,\* Yaoda Liu, Jie Su, Yudong Sun\* and Zhengfei Dai\*



8063

### Enhancing oxygen reduction reaction activity in ZIF-derived catalysts through thermal oxidation-induced micropore enlargement

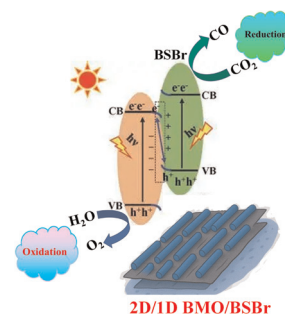
Yu Joong Kim, Ki Hwan Koh, Hyeong Jun Kim, Hyeonhoo Lee, Sima Umrao, Youn Jeong Jang\* and Tae Hee Han\*



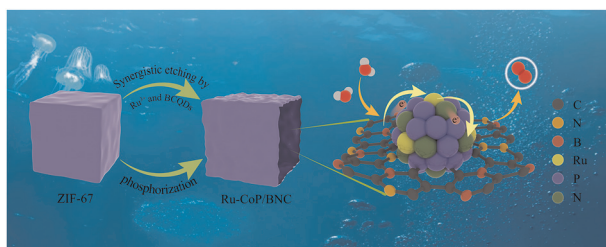
8074

### Design of a 2D/1D Bi<sub>2</sub>MoO<sub>6</sub>/Bi<sub>19</sub>S<sub>27</sub>Br<sub>3</sub> direct Z-scheme heterojunction with a built-in internal electric field for enhanced photocatalytic CO<sub>2</sub> reduction performance

Zakaria Ismail, You Li, Jian Lei, Saira Man, Khadija Tul Kubra, Chao Zhang,\* Jingxiang Low and Yujie Xiong\*



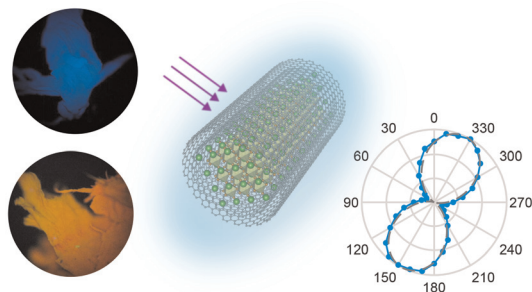
8085



### Rational design of open hollow nanoboxes via Ru and B synergistic electronic modulation in cobalt phosphide for efficient oxygen evolution reaction

Zhao Li, Wenjing Cheng, Xuena Gao, Chunmei Ni, Jianguo Dong, Huiming Yang, Ju Wang, Wenyi Tan and Lin Tian\*

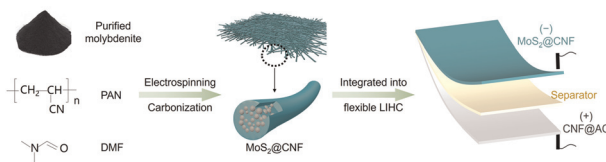
8093



### Emissive perovskite quantum wires in robust nanocontainers: CsPbX<sub>3</sub> confined inside boron nitride nanotubes

Bea Botka,\* Erzsébet Dodony, Gergely Németh, Michael Stratton, Ildikó Harsányi, János Mózer, Éva Kováts, Ferenc Borondics and Katalin Kamarás

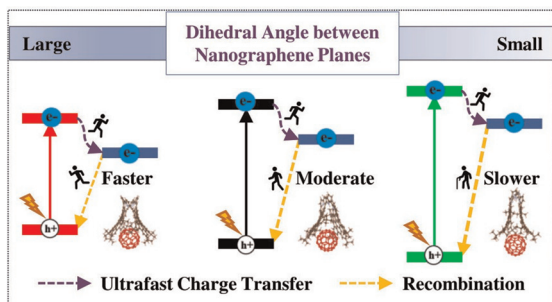
8106



### Purified molybdenite encapsulated in N-doped carbon nanofibers as binder-free anodes for flexible lithium-ion hybrid capacitors

Lingyao Li, Zhixuan Zhou, Fang Xu, Yuan Zhao, Tao Chen, Jie Gao, Yifu Zhang, Tian Liang,\* Yuzhu Li\* and Xiaoming Zhu\*

8115



### Quantum simulation of carrier dynamics in nanographene-fused carbaporphyrin tweezers@C60 heterojunctions: role of dihedral-angle engineering

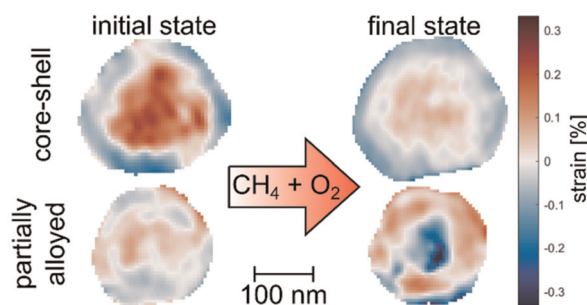
Uttam Chowdhury, Ritabrata Sarkar, Pranab Sarkar\* and Sougata Pal\*



8127

### *In situ* X-ray imaging of segregation and mixing in PtPd core-shell nanoparticles under methane oxidation conditions

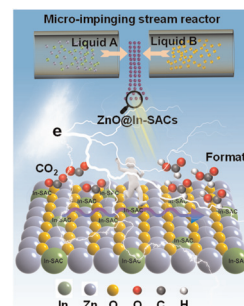
Lydia J. Bachmann, Jagrati Dwivedi, Dmitry Lapkin, Bihan Wang, Jan-Christian Schober, Gerard N. Hinsley, Sarah Bernart, Kuan Hoon Ngoi, Rustam Rysov, Arti Dangwal Pandey, Thomas F. Keller, Ivan A. Vartanyants and Andreas Stierle\*



8138

### Large-scale synthesis of zinc oxide-supported indium single-atom catalysts for efficient electrocatalytic CO<sub>2</sub> reduction reaction

Wenzhao Duan, Tianrui Lu, Qiuyue Xiang, Heng Chen,\* Xi Yu, Ge Meng, Zheng-Jun Wang,\* Hailong Zhang, Lilong Zhang,\* Huile Jin, Shun Wang and Jing-Jing Lv\*



8147

### Noble-metal-free recyclable electronic nanoinks for wireless wearable sensors

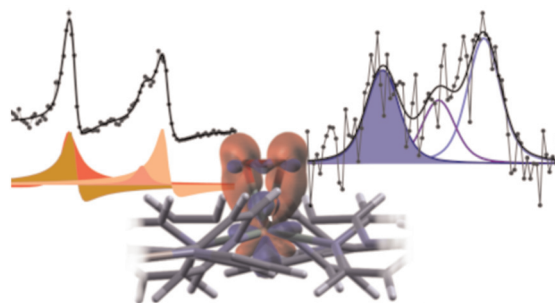
Naimul Arefin, Kwame Afrifa Obeng Ofori, Curtis Borden, Nishat Paul, Thomas Jones, Nicolas Constantinides, Kai Wu\* and Minxiang Zeng\*



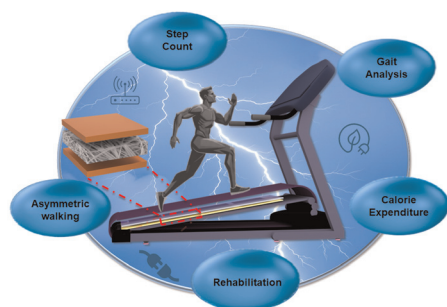
8158

### Pressure-controlled oxygen activation at single metal atom sites in a manganese-cobalt coordination network on graphene: from triplet-singlet spin transition to superoxo dissociation

Asha Yadav, Stefania Baronio, Michela De Col, Danilo Comini, Valentin Mischke, Alessandro Namar, Nikolay Vinogradov, Mattia Scardamaglia, Mirko Cinchetti, Giovanni Zamborlini, Paolo Giannozzi\* and Erik Vesselli\*



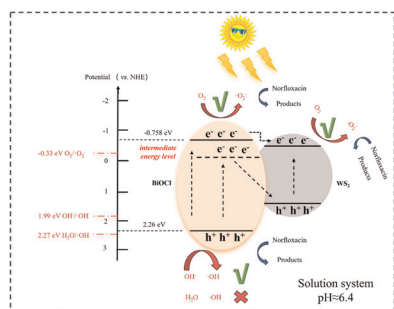
8172



### High-performance PVDF/borophene-based TENG for energy harvesting and self-sustaining health monitoring in manual treadmill systems

Sithara Radhakrishnan, K. V. Vijoy, Youhong Tang, Mats R. Andersson, T. Santhanakrishnan and Honey John\*

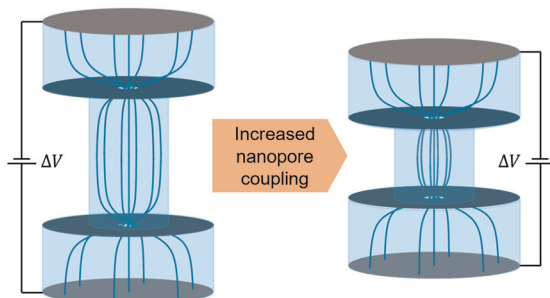
8185



### Dual modulation of BiOCl: enhancing photocatalytic antibiotic degradation through Co surface bonding and a WS<sub>2</sub> heterojunction

Wenhao Yang, Xueling Hu, Jing Sun, Jiemo Zong, Linxing Wang, Xiaohang Fang,\* Yang Yu, Kun Liu and Hanbing Zhang\*

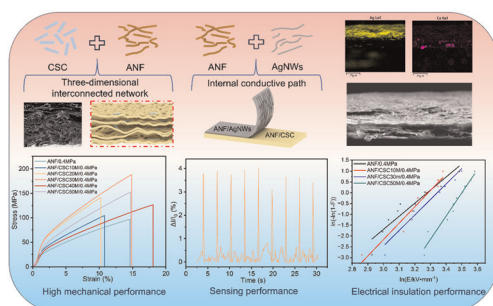
8199



### Coupling effects on access resistance of in-series nanopores

Jacob Bair, Thor Burkhardt, Zachery Gottshall and Matthias Kuehne\*

8212



### A high-strength Janus-structured aramid nanofiber/calcium sulfate crystal-silver nanowire composite film for integrated insulation, sensing, and Joule heating

Yijie Du, Jizhen Huang,\* Jiaoyang Li, Chunyao Liu, Changrong Shi and Yuxin Liu\*

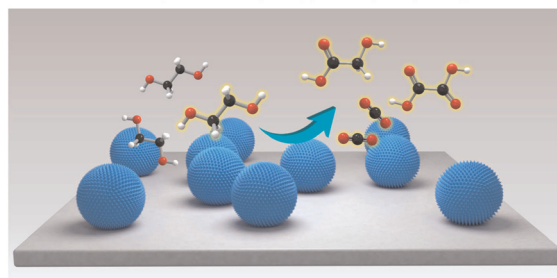


8225

### The controlled synthesis of PdAg alloy nanospheres and the selective oxidation of ethylene glycol

Anqi Zhao, Mengyun Hu, Jie Li, Xinyu Gu, Changqing Ye\* and Yukou Du\*

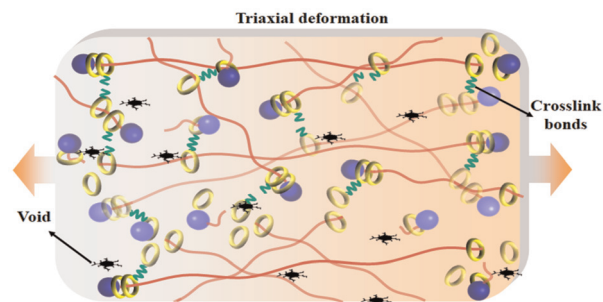
The oxidized products of ethylene glycol catalyzed by Pd<sub>4</sub>Ag NSs.



8234

### Molecular mechanism of the fracture properties of slide-ring crosslinked elastomers

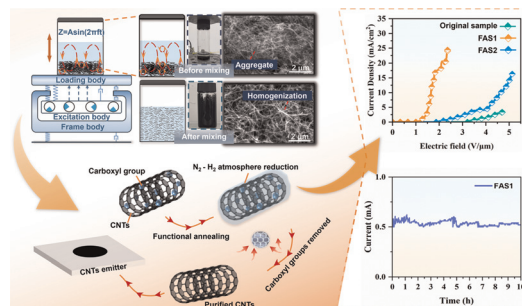
Ruibin Ma, Yang Zhang, Xiangbao Wang, Xiuying Zhao, Xiaolin Li, Liqun Zhang and Yangyang Gao\*



8249

### Outstanding field emission performance via superior carbon nanotubes dispersion by acoustic resonance mixing and synergistic function-oriented annealing strategy

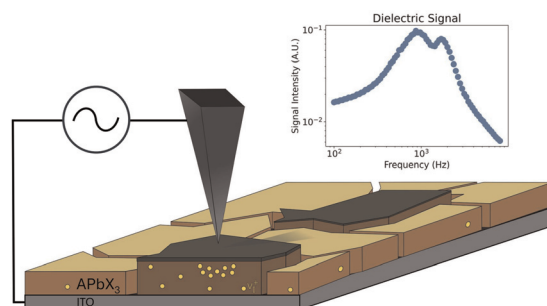
Weiwei Yu, Ziqin Ai, Zhe Liu, Shulan Jiang,\* Zirong Tang, Xiaobin Zhan and XiuGuo Chen



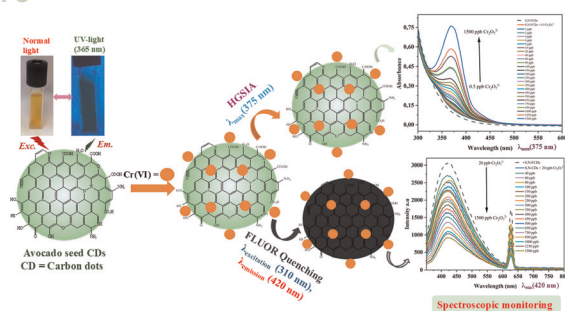
8263

### Resolving ionic spectra of lead-halide perovskites to the nanometer

Lukas D. Čavar, Emilia R. Schütz, Yenal Yalçinkaya, Constantin Bach, Carsten Deibel, Lukas Schmidt-Mende and Stefan A. L. Weber\*



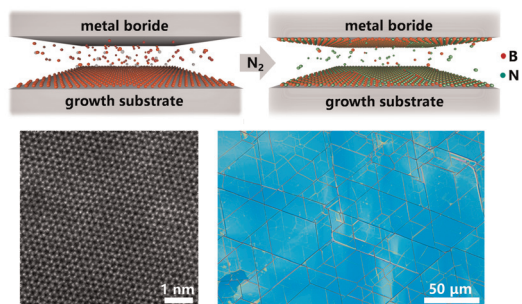
8278



### Enhanced absorption and fluorescence quenching methods for the quantitative analysis of Cr(vi) ions using avocado seed-derived carbon quantum dots as pseudo-derivatising reagents

Amahle Mkhize, Xolani Nocanda, Irvin Noel Booysen\* and Allen Mambanda\*

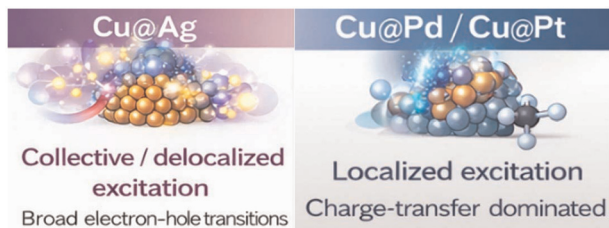
8297



### Growth of centimeter-scale multilayer hexagonal boron nitride films using metal-boride-vapor CVD

Jiawen Liu, Yanping Sui, Chenxi Liu, Xiaolong Ming, Chuang Tian, Runhan Xiao, Jie Cheng, Yangjian Xu, Haomin Wang, Shujie Tang, Haidi Wang and Guanghui Yu\*

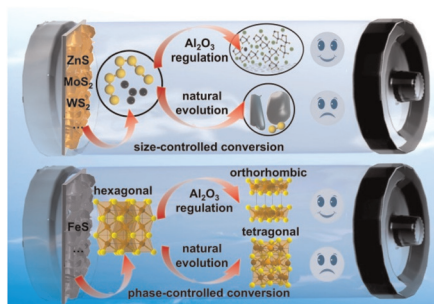
8306



### Dopant-rich surface alloying effects on photoexcited carrier pathways in Cu nanoclusters with adsorbed CH<sub>4</sub> and CO<sub>2</sub>

Mufasila Mumthaz Muhammed and Junais Habeeb Mokkaath\*

8318



### Enhancing the Li<sup>+</sup> storage capability of transition metal sulfides by *in situ* regulation of the phase conversion in operating batteries

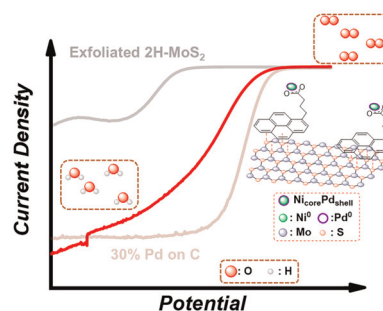
Guannan Zu, Hexiong Liu, Peng Liu, Yunfei Yang,\* Juan Wang, Yilong Li, Yonghong Fu, Liangliang Wang, Yongfeng Cai and Hongyi Li\*



8329

### High-performance oxygen reduction electrocatalysis enabled by Ni<sub>core</sub>Pd<sub>shell</sub> nanoparticles immobilized on MoS<sub>2</sub> nanosheets

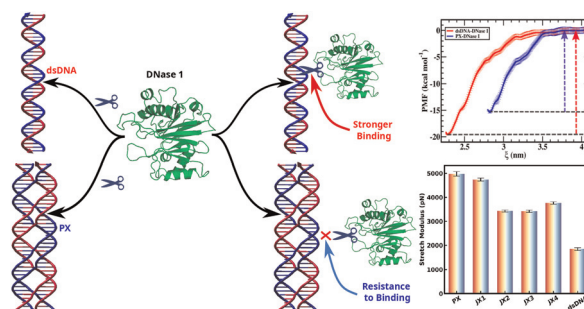
Michail P. Minadakis, Yuta Sato, Ruben Canton-Vitoria, Kazu Suenaga and Nikos Tagmatarchis\*



8339

### Mechanistic insights into crossover-dependent nuclease resistance of PX vs. dsDNA using enhanced sampling

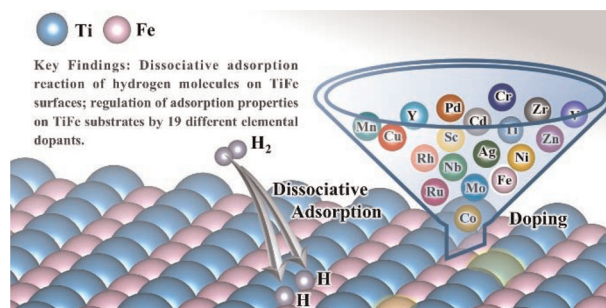
Sandip Mandal, Arun Richard Chandrasekaran and Prabal K. Maiti\*



8352

### First-principles investigation of transition metal doping effects on H<sub>2</sub> dissociative adsorption in TiFe-based alloys

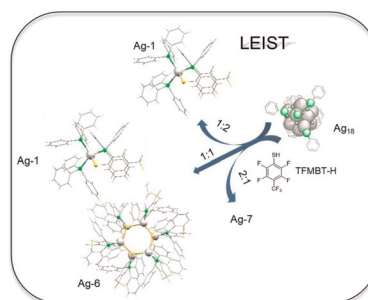
Mengxue Li, Xueqing Zhang, Dong Xu, Chengwu Yang and Xinyu Zhang\*



8361

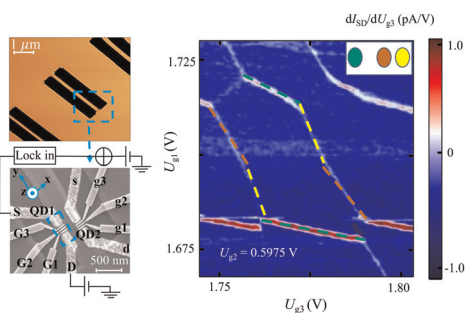
### Unravelling the reactions between a hydride-protected Ag<sub>18</sub> nanocluster and thiol by the crystallization of intermediates

Subrata Duary, Samapti Mondal, Souvik Manna, Soham Chowdhury, Biswarup Pathak\* and Thalappil Pradeep\*



## PAPERS

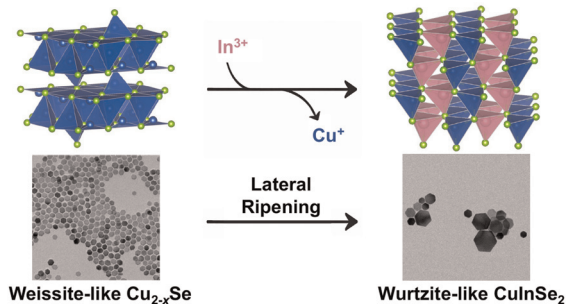
8368



### Site-controlled Ge hut wire-based multiple quantum dots with integrated charge sensing capability

Jin Leng, Fei Gao, Yu-Chen Zhou, Chu Wang, Hao-Tian Jiang, Zhi-Tao Wu, Gang Cao, Jianjun Zhang, Hai-Ou Li\* and Guo-Ping Guo

8376



### Cation-exchange and lateral ripening in wurtzite-like $\text{CuInSe}_2$ formation from weissite-like $\text{Cu}_{2-x}\text{Se}$

Christopher P. Pakhyan, Allison P. Forsberg and Richard L. Brutchey\*

## EXPRESSION OF CONCERN

8385

### Expression of concern: Null current hysteresis for acetylacetonate electron extraction layer in perovskite solar cells

Abd. Rashid bin Mohd Yusoff, Mohd Asri Mat Teridi and Jin Jang\*

