



# Environmental Science: Atmospheres

GOLD  
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ACCESS

Connecting communities  
and inspiring new ideas

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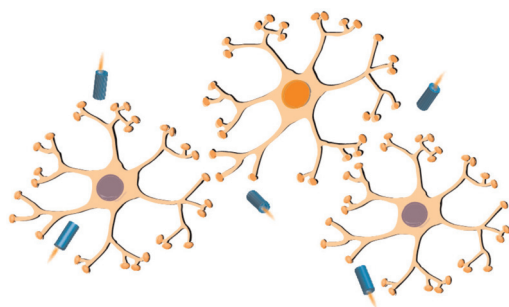
Fundamental questions  
Elemental answers





## MINIREVIEWS

11019

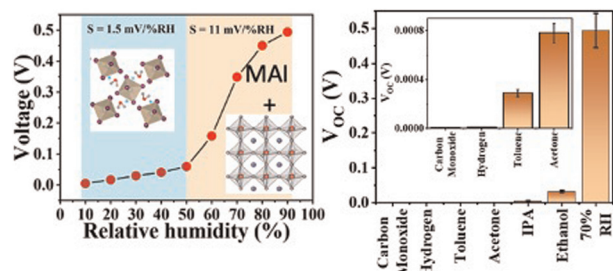


## Micro/nanomotors for neuromodulation

Yulin Huang and Fei Peng\*

## COMMUNICATION

11028

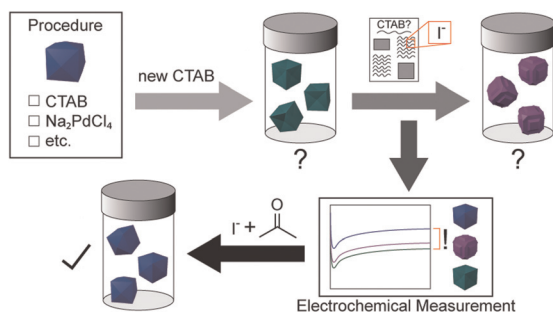


## Self-powered humidity sensors based on zero-dimensional perovskite-like structures with fast response and high stability

Sumit Kumar Sharma, Abinash Tiwari, Mir Arjumand and Aswani Yella\*

## PAPERS

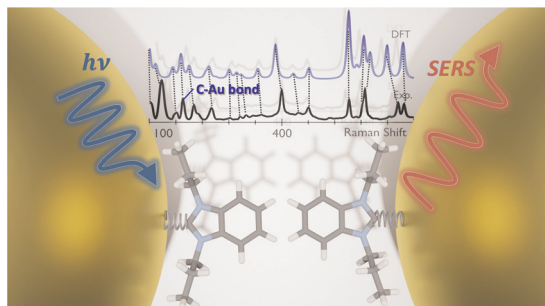
11038



## Troubleshooting the influence of trace chemical impurities on nanoparticle growth kinetics via electrochemical measurements

Gabriel C. Halford, Sean P. McDarby, Sebastian Hertle, Anne F. Kiely, Jessica T. Luu, Claire J. Wang and Michelle L. Personick\*

11052

Insight into the nature of carbon-metal bonding for *N*-heterocyclic carbenes in gold/silver complexes and nanoparticles using DFT-correlated Raman spectroscopy: strong evidence for  $\pi$ -backbonding

Lucille Kuster, Marilyne Bélanger-Bouliga, Thomas E. Shaw, Titel Jurca, Ali Nazemi\* and Mathieu Frenette\*

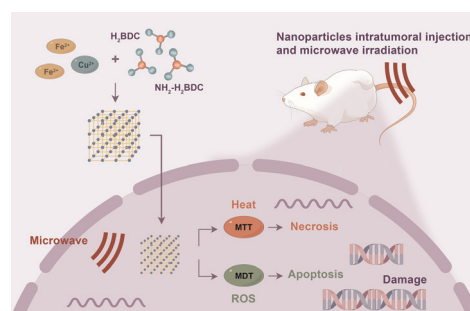


## PAPERS

11069

### Fe-doped Cu-based bimetallic metal–organic frameworks as nanoscale microwave sensitizers for enhancing microwave thermal and dynamic therapy for hepatocellular carcinoma

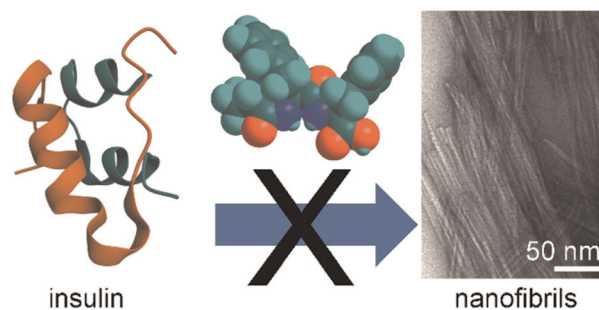
Xi Luo, Han-Yao Sun, Shang-Yu Lu, Yan Zhou, Zi-Qing Xu, Nan Zhong, Yi-Shi Lu, Shou-Ju Wang,\* Hai-Bin Shi\* and Wei Tian\*



11081

### Insulin amyloid fibril formation reduction by tripeptide stereoisomers

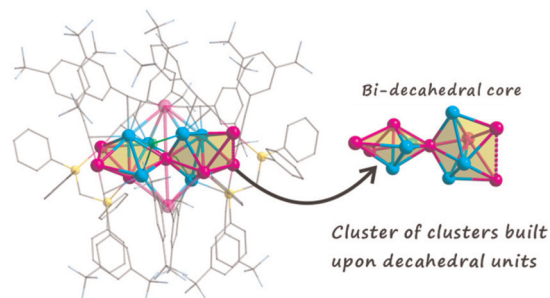
Beatrice Rosetti, Slavko Kralj, Erica Scarel, Simone Adorinni, Barbara Rossi, Attilio V. Vargiu, Ana M. Garcia\* and Silvia Marchesan\*



11090

### [Au<sub>9</sub>Ag<sub>6</sub>(C≡CR)<sub>10</sub>(DPPM)<sub>2</sub>Cl<sub>2</sub>](PPh<sub>4</sub>): a four-electron cluster with a bi-decahedral twisted metal core

Guocheng Deng, Taeyoung Ki, Seungwoo Yoo, Xiaolin Liu, Kangjae Lee, Megalamane S. Bootharaju\* and Taeghwan Hyeon\*

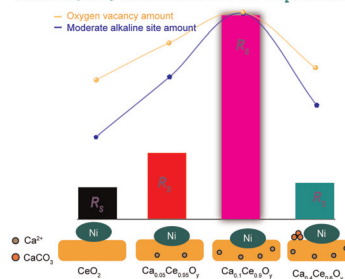


11096

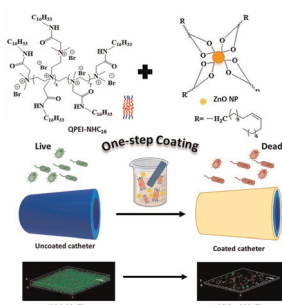
### Lattice capacity-dependent activity for CO<sub>2</sub> methanation: crafting Ni/CeO<sub>2</sub> catalysts with outstanding performance at low temperatures

Kun Liu,\* Yixin Liao, Peng Wang, Xiuzhong Fang, Jia Zhu, Guangfu Liao\* and Xianglan Xu\*

#### Lattice capacity threshold effects for CO<sub>2</sub> methanation



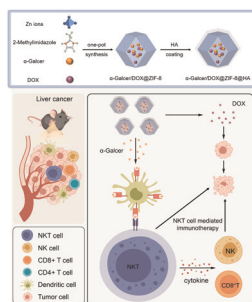
11109



### Antimicrobial nanocomposite coatings for rapid intervention against catheter-associated urinary tract infections

Dipanjana Patra, Sreyan Ghosh, Sudip Mukherjee, Yash Acharya, Riya Mukherjee and Jayanta Haldar\*

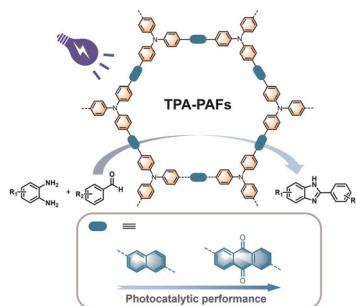
11126



### A natural killer T cell nanoagonist-initiated immune cascade for hepatocellular carcinoma synergistic immunotherapy

Ting Luo, Xiaoqiong Tan, Guangchao Qing, Jie Yu,\* Xing-Jie Liang\* and Ping Liang\*

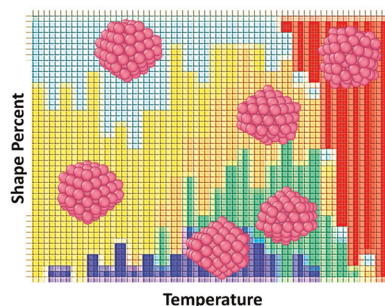
11138



### Donor-acceptor type triphenylamine-based porous aromatic frameworks (TPA-PAFs) for photocatalysis of benzimidazoles

Xinmeng Xu, He Wang, Zhenwei Zhang, Jiali Li, Xiaoming Liu, Xin Tao\* and Guangshan Zhu

11146



### Size and temperature dependent shapes of copper nanocrystals using parallel tempering molecular dynamics

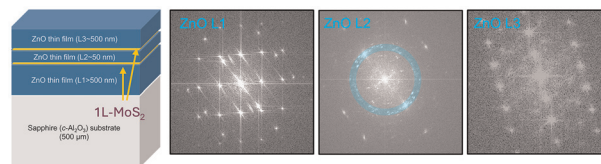
Huaizhong Zhang, Mohd Ahmed Khan, Tianyu Yan and Kristen A. Fichthorn\*



11156

### Structural alignment of ZnO columns across multiple monolayer MoS<sub>2</sub> layers as compliant substrates

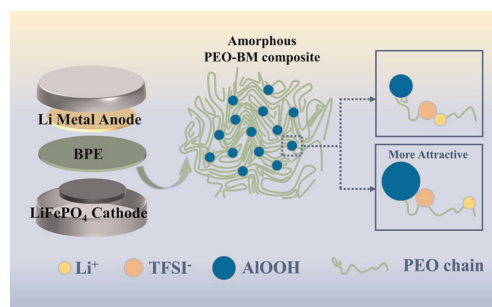
Xuejing Wang, Kyungtae Kim, Benjamin K. Derby, Terrence McGuckin, Gabriel A. Calderón, Michael T. Pettes, Jinwoo Hwang, Yeonhoo Kim, Jeongwon Park, Aiping Chen, Kibum Kang and Jinkyong Yoo\*



11163

### Different-grain-sized boehmite nanoparticles for stable all-solid-state lithium metal batteries

Weiran Zhao, Peng Tian,\* Tingting Gao, Wu Wang, Chenxi Mu, Hongchang Pang, Junwei Ye and Guiling Ning\*



11174

### Morphological and structural design through hard-templating of PGM-free electrocatalysts for AEMFC applications

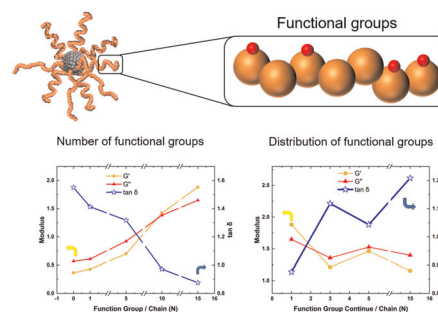
Hilah C. Honig, Silvia Mostoni, Yan Presman, Rifael Z. Snitkoff-Sol, Paolo Valagussa, Massimiliano D'Arienzo, Roberto Scotti, Carlo Santoro, Mohsin Muhyuddin\* and Lior Elbaz\*



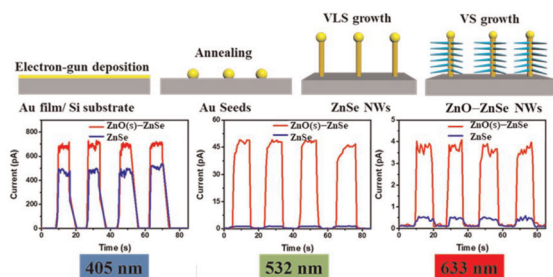
11187

### Advancing elastomer performance with dynamic bond networks in polymer-grafted single-chain nanoparticles: a molecular dynamics exploration

Yuan Wei, Tongkui Yue, Haoxiang Li, Pengwei Duan, Hengheng Zhao, Qionghai Chen, Sai Li, Xiaoyu Fang, Jun Liu\* and Liqun Zhang\*



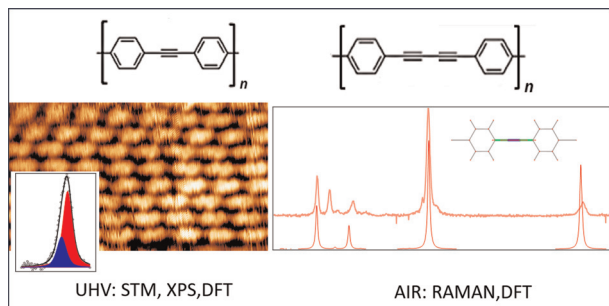
11203



### Rational design of comb-like 1D–1D ZnO–ZnSe heterostructures toward their excellent performance in flexible photodetectors

Ming-Jin Liu, Hsuan-Chu Chen, Tse-Ning Yang, Shu-Chi Wu, Yao-Jen Kuo, Rwei-Hong Cyu, Yu-Ren Peng and Yu-Lun Chueh\*

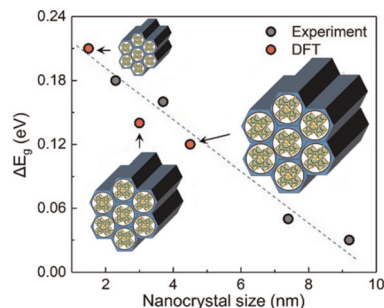
11211



### Structure and vibrational properties of 1D molecular wires: from graphene to graphdiyne

Francesco De Boni, Roberto Pilot, Alberto Milani, Viktoria V. Ivanovskaya, Raichel J. Abraham, Stefano Casalini, Danilo Pedron, Carlo S. Casari, Mauro Sambi and Francesco Sedona\*

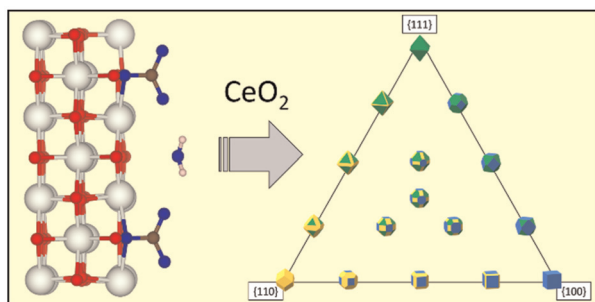
11223



### Quantum-confined bismuth iodide perovskite nanocrystals in mesoporous matrices

Sarah Dupé, Dongyu Liu, Antik Ghosh, Andrey S. Vasenko, Stéphanie Pouget, Sandrine Schlutig, Mathieu Vidal, Bénédicte Lebeau, Wai Li Ling, Peter Reiss, Oleg V. Prezhdo, Andrey Ryzhikov and Dmitry Aldakov\*

11232



### Composition-dependent morphologies of CeO<sub>2</sub> nanoparticles in the presence of Co-adsorbed H<sub>2</sub>O and CO<sub>2</sub>: a density functional theory study

Samuel Moxon, Adam R. Symington, Joshua S. Tse, Joseph M. Flitcroft, Jonathan M. Skelton, Lisa J. Gillie, David J. Cooke, Stephen C. Parker and Marco Molinari\*



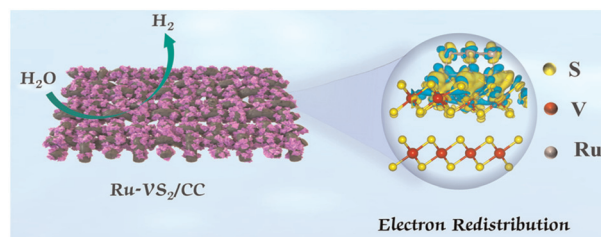


## PAPERS

11250

### Modulating the electronic structure of $\text{VS}_2$ via Ru decoration for an efficient pH-universal electrocatalytic hydrogen evolution reaction

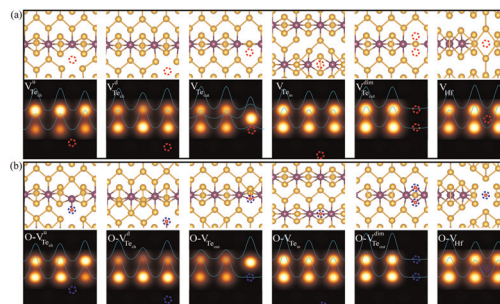
Tingxia Wang, Xu Zhang, Xiaojiao Yu,\* Yun Liu, Junpeng Li, Zongbin Liu, Ningning Zhao, Jian Zhang, Jinfen Niu and Qingliang Feng\*



11262

### Anisotropic structural, vibrational, electronic, optical, and elastic properties of single-layer hafnium pentatelluride: an *ab initio* study

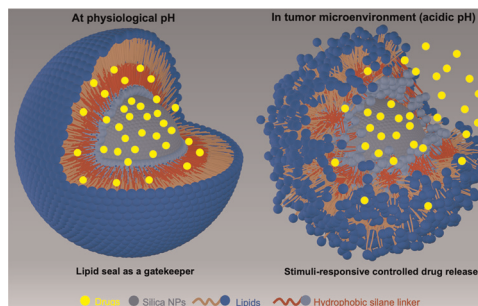
Kadir Can Dogan, Zebih Cetin and Mehmet Yagmurcukardes\*



11274

### Carriers for hydrophobic drug molecules: lipid-coated hollow mesoporous silica particles, and the influence of shape and size on encapsulation efficiency

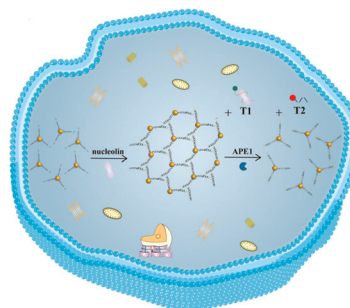
Sumiya Iqbal, Tom-Jonas Klaus Schneider, Thanh Tung Truong, Roman Ulrich-Müller, Phuong-Hien Nguyen, Shaista Ilyas\* and Sanjay Mathur\*



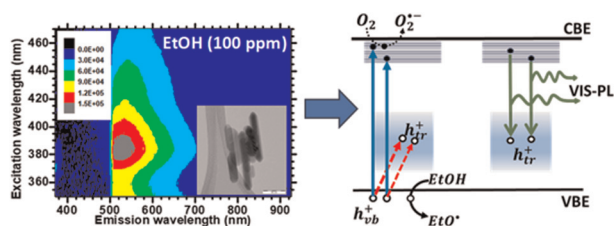
11290

### Biomarker-triggered, spatiotemporal controlled DNA nanodevice simultaneous assembly and disassembly

Tingting Zhao, Yi Fang, Xuyang Wang, Lei Wang, Yujuan Chu and Wenxiao Wang\*



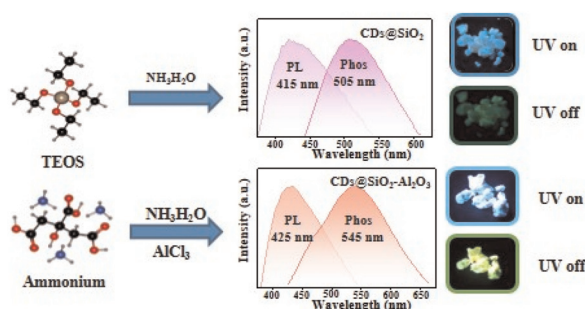
11296



### Charge carrier recombination processes, intragap defect states, and photoluminescence mechanisms in stoichiometric and reduced TiO<sub>2</sub> brookite nanorods: an interpretation scheme through *in situ* photoluminescence excitation spectroscopy in controlled environment

Romina Rega, Ambra Fioravanti, S. M. Hossein Hejazi, Mahdi Shahrezaei, Štěpán Kment, Pasqualino Maddalena, Alberto Naldoni\* and Stefano Lettieri\*

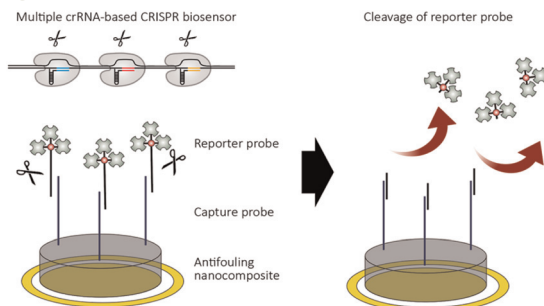
11310



### Metal oxide hybridization enhances room temperature phosphorescence of carbon dots–SiO<sub>2</sub> matrix for information encryption and anti-counterfeiting

Qing Yao, Zeyu Wang,\* Nikolai V. Gaponenko, Jindou Shi, Zheyuan Da, Chen Zhang, Junnan Wang and Minqiang Wang

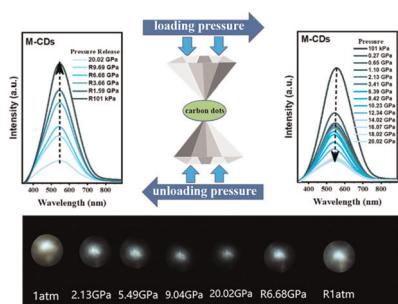
11318



### CRISPR/Cas12a antifouling nanocomposite electrochemical biosensors enable amplification-free detection of Monkeypox virus in complex biological fluids

Jeong-Chan Lee, Seuk-Min Ryu, YongJin Lee, Hyowon Jang, Jayeon Song, Taejoon Kang, Kwan Hyi Lee\* and Steve Park\*

11327



### The reversible piezochromic luminescence behavior of carbon dots under a cycle of loading/unloading pressure

Lele Liu, Menghui Ma, Lei Jiang, Zijian Li, Vladimir Yu. Osipov, Ting Geng, Guanjun Xiao\* and Hong Bi\*

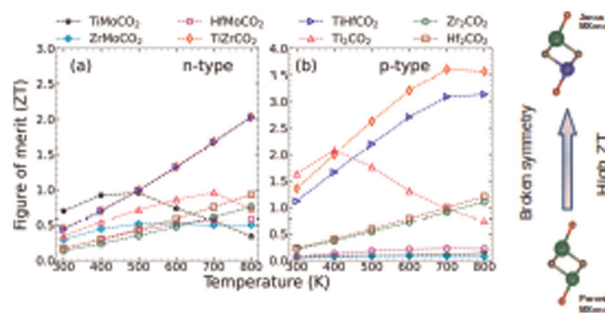


## PAPERS

11336

## Symmetry lowering through surface engineering and improved thermoelectric properties in Janus MXenes

Himanshu Murari and Subhradip Ghosh\*



## CORRECTION

11350

## Correction: Ultrafast switching to zero field topological spin textures in ferrimagnetic TbFeCo films

Kaixin Zhu, Linzhu Bi, Yongzhao Zhang, Dingguo Zheng, Dong Yang, Jun Li, Huanfang Tian, Jianwang Cai, Huaixin Yang, Ying Zhang\* and Jianqi Li\*

