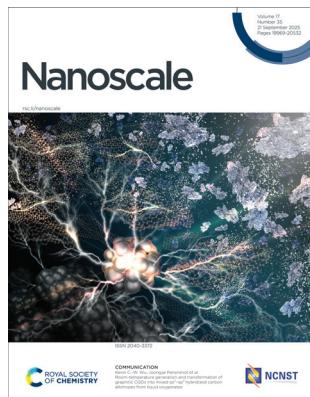


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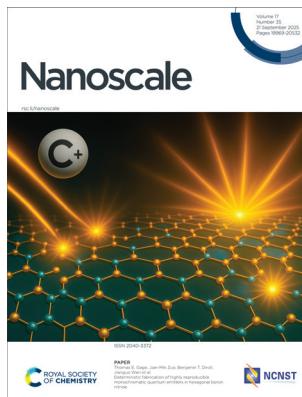
ISSN 2040-3372 CODEN NANOHL 17(35) 19969–20532 (2025)



### Cover

See Kevin C.-W. Wu,  
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## EDITORIAL

19984

### Introduction to Superwetting nanoelectrodes for renewable energy

Zuankai Wang, Alex Bell, Alberto Vomiero and  
Xiaoming Sun\*

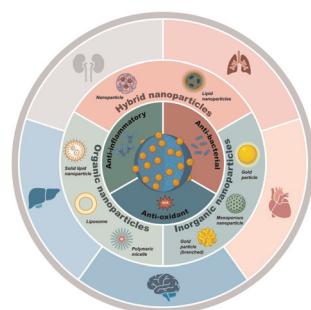


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19987

### Neutrophil-targeted nanomedicine delivery systems: therapeutic applications and future perspectives in sepsis management

Huiyi Huang, Jingyan Wang, Lixia Mao, Jiahao Huang\*  
and Liehua Deng\*



# Environmental Science: Atmospheres



GOLD  
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## Connecting communities and inspiring new ideas

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Fundamental questions  
Elemental answers

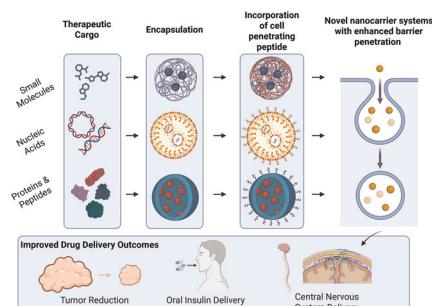


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20006

**Cell-penetrating peptides as facilitators of cargo-specific nanocarrier-based drug delivery**

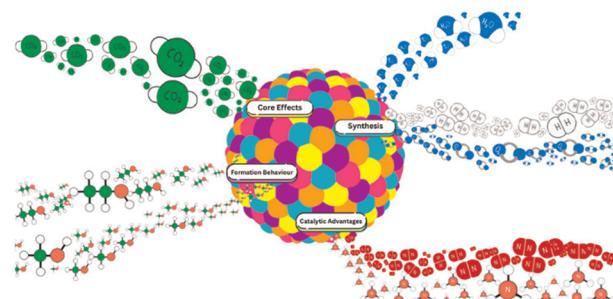
Ashleigh M. Jankowski, Matthew A. Ensign and Katharina Maisel\*



20020

**Synthesis of high-entropy alloys for electrocatalysis**

Alexander Li, Nayla Qureshi and Vivek Maheshwari\*

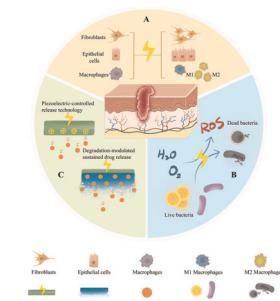


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20044

**Integrating piezoelectric dressings with botanicals as emerging smart dressings for diabetic wound healing**

Yaqi Yue, Ruodan Xu\* and Ning Li\*

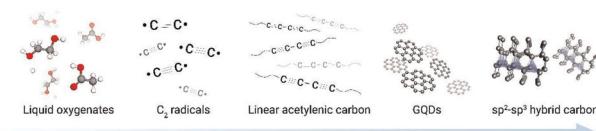


## COMMUNICATIONS

20057

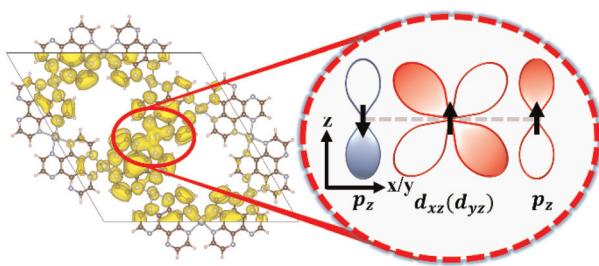
**Room-temperature generation and transformation of graphitic CQDs into mixed  $sp^2$ - $sp^3$  hybridized carbon allotropes from liquid oxygenates**

Rungkiat Nganglumpon, Krongkwan Poolboon, Pongpan Sitiputa, Piriya Pinthong, Chanon Pornrungroj, Petra Ágota Szilágyi, Yan Liu, Shibo Xi, Supareek Praserthdam, Akkarach Sukserm, Udomsilp Pinsook, Kevin C.-W. Wu\* and Joongjai Panpranot\*



## COMMUNICATIONS

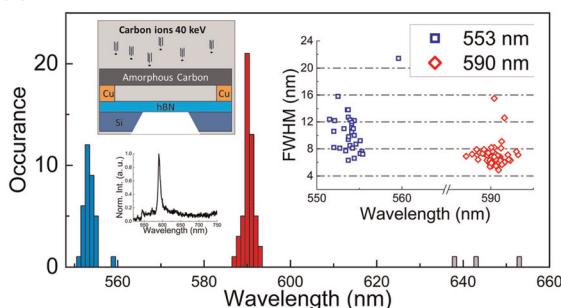
20074

Variable  $\pi$ -d orbital hybridization in 2D transition metal-organic frameworks

Chengkun Lyu, Yuantao Chen, Muqing Hua, Songyu Mo, Yifan Gao, Xiaobo Wang, Li Huang\* and Nian Lin\*

## PAPERS

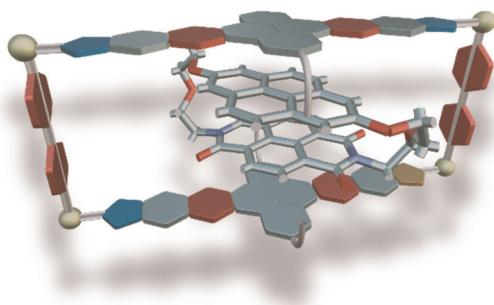
20081



## Deterministic fabrication of highly reproducible monochromatic quantum emitters in hexagonal boron nitride

Muchuan Hua, Wei-Ying Chen, Hanyu Hou, Venkata Surya Chaitanya Kolluru, Maria K. Y. Chan, Haihua Liu, Thomas E. Gage,\* Jian-Min Zuo,\* Benjamin T. Diroll\* and Jianguo Wen\*

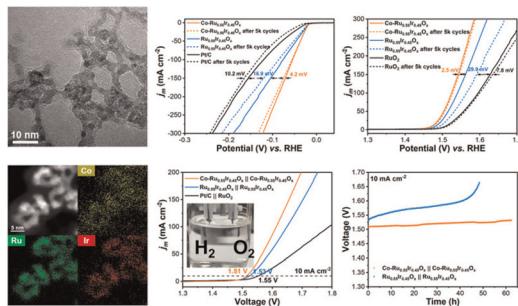
20089



## A metallosupramolecular-based ring-in-ring complex showing reversible host-guest dynamics and switchable electrochemical properties

Joel Martínez-Visiedo, Susana Ibáñez,\* Louise N. Dawe and Eduardo Peris\*

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## Co-doped RuIr nanoparticles for enhanced activity and stability in alkaline overall water splitting

Zhuofan Gan, Jingwen Cao, Zhixu Chen, Peixi Qiu, Jiangyun Bai, Chengyong Shu\* and Wei Tang\*

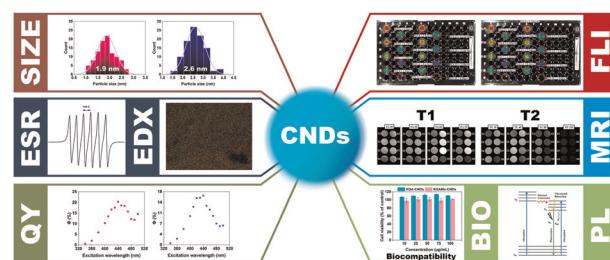


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20107

 **$\alpha$ -Ketoglutaric acid-derived carbon nanodots doped with manganese as fluorescent and MRI contrast agents**

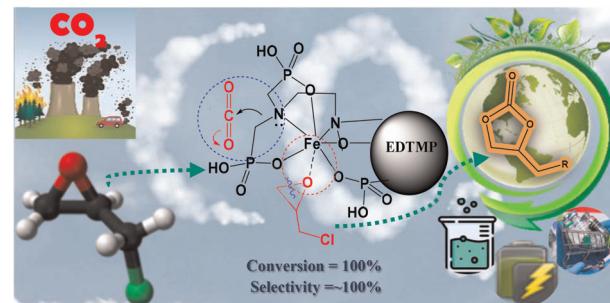
Ioana-Andreea Turin-Moleavin, Adina Coroaba, Adrian Fifere,\* Narcisa Laura Marangoci, Mariana Pinteala, Cristina Mariana Uritu, Silviu Iulian Filipiuc, Marius Dobromir, Ionut Radu Tigoianu and Tudor Pinteala



20123

**Nitrogen-rich nanoporous iron phosphonate as an acid–base bifunctional catalyst for efficient and selective CO<sub>2</sub> conversion without co-catalyst and solvent**

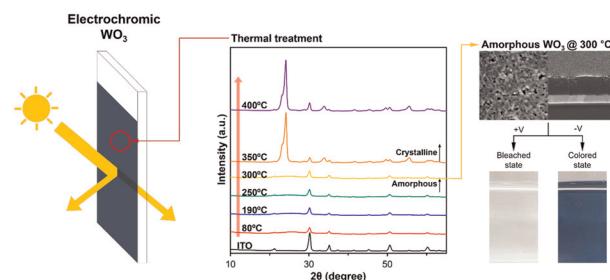
Naveen Beniwal, Nidhi Sharma, Sangeeta, Lovjeet Singh\* and Pawan Rekha\*



20135

**Temperature-dependent electrochromic cycling performance of solution-processed WO<sub>3</sub> films**

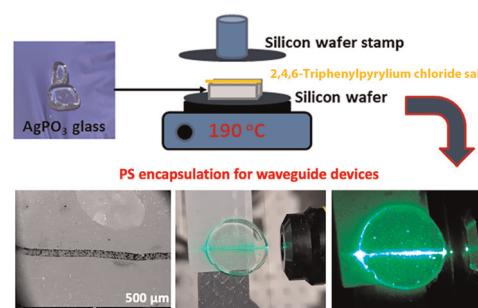
Hoon Kang, Gyung Hyun Kim, Sungho Kang, Tae Hoon Park, Kwanchul Kim, Hwan Kyu Kim\* and Yekyung Kim\*



20148

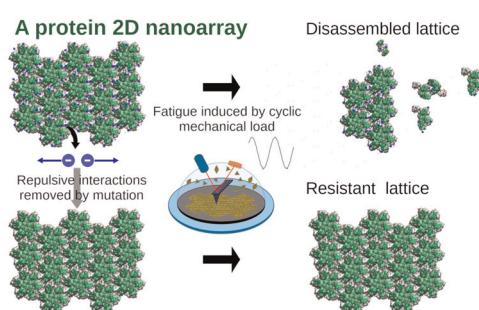
**Advanced optical waveguide design via encapsulation of 2,4,6-triphenylpyrylium chloride in oxide glasses**

Eleni Agapaki, Ioannis Konidakis,\* Egor Evlyukhin, Klytaijnstra Katsara, Georgios Kenanakis, David King, Haesook Han, Pradip K. Bhowmik and Emmanuel Stratakis\*



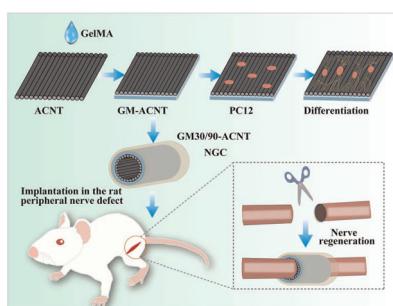
## PAPERS

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**Engineering mechanical strength and resistance to fatigue of a nanostructured protein material through genetic removal of electrostatic repulsions**

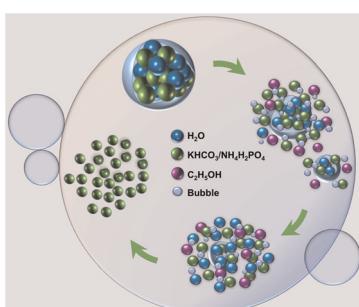
Judith Escrig, Juan Carlos Gil-Redondo, Alejandro Valbuena\* and Mauricio G. Mateu\*

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**Viscoelastic and conductive nerve guidance conduits for peripheral nerve repair**

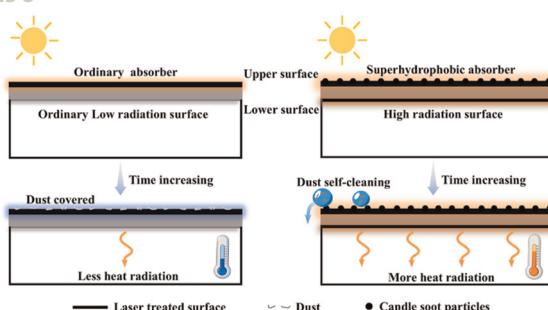
Haiyan Yin, Yangnan Hu,\* Hong Cheng, Bin Zhang, Shan Gao, Xiangyu Ma, Shuwen Song, Wei Wang,\* Hao Wu,\* Chen Zhang\* and Renjie Chai\*

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**Efficient and sustainable preparation of fine particles by a bubble-assisted freeze-dissolving method**

Qiutong Zhang, Jiaqi Luo, Yingchen Wang, Wenhao Yan, Mingting Yuan, Yimin Jia, Qiushuo Yu,\* Xinyue Zhai, Yuan Zou and Huaiyu Yang\*

20190


**Efficient solar-to-thermal management on femtosecond laser composite fabrication of hierarchical Janus plates**

Shiqing Tang, Kai Yin,\* Jianqiang Xiao, Haonan Yu, Xinghao Song, Yin Huang, Xin Deng and Hua Wang

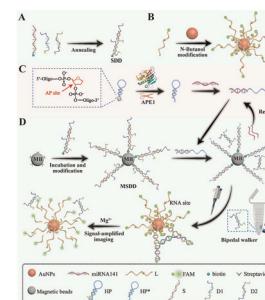


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**Sensitive detection of miRNA-141 using an endogenous dual-switch activated bipedal DNAzyme walker biosensor**

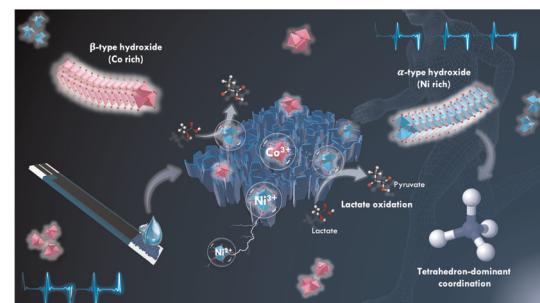
Beibei Zhang, Xinyi Wang, Min Pan, Xinhao Li, Hong Wang\* and Yingwei Zhang\*



20207

**Fine-tuning the Ni/Co ratio to elucidate the coordination structure–activity relationship of MOF-derived bimetallic layered double hydroxides for highly sensitive enzyme-free lactate biosensors**

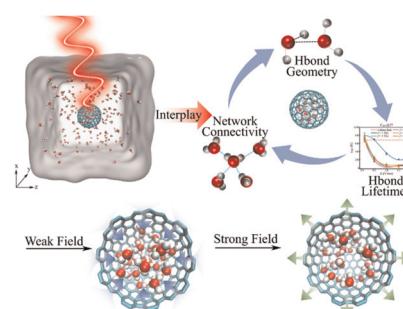
Yi-Ting Guo, Mia Rinawati, Ling-Yu Chang,\* Chieh Li, Ching-Ju Ho, Ping-Chen Shi, Kuan-Jung Chen, Wei-Hsiang Huang, Hitoshi Mizuguchi and Min-Hsin Yeh\*



20219

**Hydrogen-bond dynamics of confined water in a nanocage manipulated by terahertz waves**

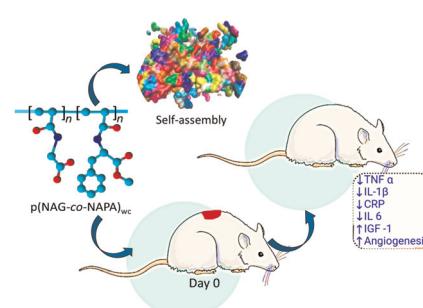
Siiao Zhu, Tao Zhang, Zi Wang and Jiaye Su\*



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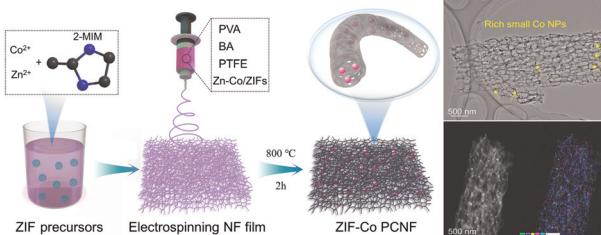
**Self-assembled amino acid-based copolymer nanoparticles for wound healing and tissue regeneration: structure studied through molecular dynamic simulation**

Sukanya Patra, Desh Deepak Yadav, Gurmeet Singh, Jyotirmayee, Prakriti Sundar Samanta, Divya Pareek, Aman Srikant Kudada, Anjali Ramsabad Mourya, Debdip Bhandary\* and Pradip Paik\*



## PAPERS

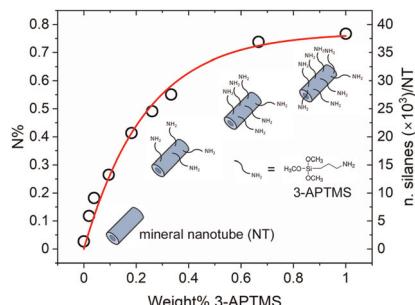
20251



### Constructing macroporous nanofibers with enriched Co–N–C sites via a cascade chamber confinement strategy for an efficient oxygen reduction reaction

Yuanyuan Zhang,\* Haotian Guo, Zihao Li, Wei Jiang, Xiaojun Wang, Yan Xu, Xinzhen Wang and Jianhua Yan\*

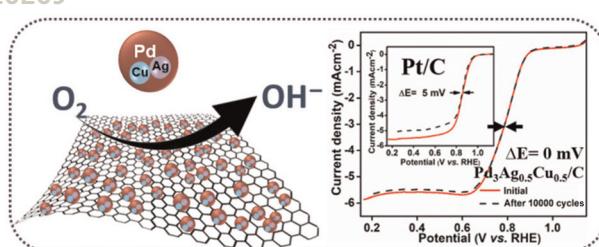
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### Tunable functional coverage of biocompatible magnesium silicate nanotubes by microwave-assisted silanization

Valeria Secchi, Daniela D'Alessio, Andrea Erroi, Silvia Mostoni, Giancarlo Capitani, Alberto Calloni, Gianlorenzo Bussetti, Massimiliano D'Arienzo, Roberto Lorenzi, Keren Keinan-Adamsky, Shai Rahimpour, Angelo Monguzzi and Marcello Campione\*

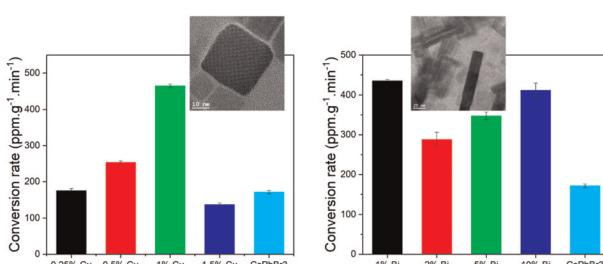
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### Interface-driven Pd–Ag–Cu/C nanocomposites with increased oxygen reduction reaction kinetics

Rashmi Chetry, Shaheen Parveez Bhuyan, Rupjyoti Dutta, Sanjana Das, Manash R. Das, Priyanka Dutta, Nand Kishor Gour, Ramesh Ch. Deka and Pankaj Bharali\*

20280



### Impact of Bi<sup>3+</sup> and Cu<sup>2+</sup> doping on the optical and electronic properties of CsPbBr<sub>3</sub> for photocatalytic toluene oxidation

Marija Knezevic, Thi-Hieu Hoang, Vien Duong Quach, Alba Garzón Manjón, David Llorens Rauret, Marie Erard, Audrey Gayral, Mireille Benoit, David Berardan, Jordi Arbiol, Christophe Colbeau-Justin and Mohamed Nawfal Ghazzal\*

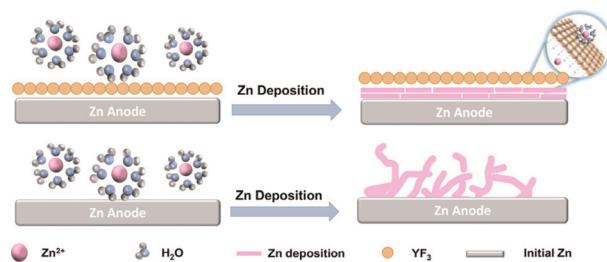


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**Robust fluorine-rich  $\text{YF}_3$  artificial interfacial layer for providing uniform  $\text{Zn}^{2+}$  flux and enhancing cycling stability of Zn anodes**

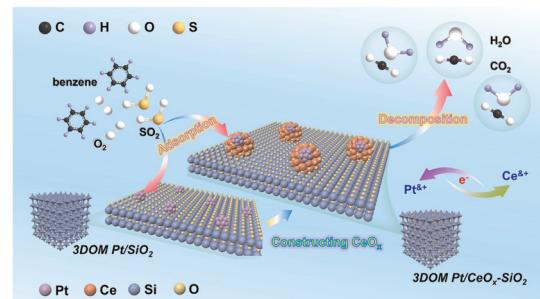
Run Jiao, Yanjie Wang,\* Jiahui Liu, Shuai Guo, Diandian Han, Wanwan Li, Han Zhao, Juan Shi, Kongyao Chen\* and Liwei Mi\*



20301

**A novel 3DOM Pt/MeO<sub>x</sub>-SiO<sub>2</sub> catalyst for the catalytic oxidation of VOCs**

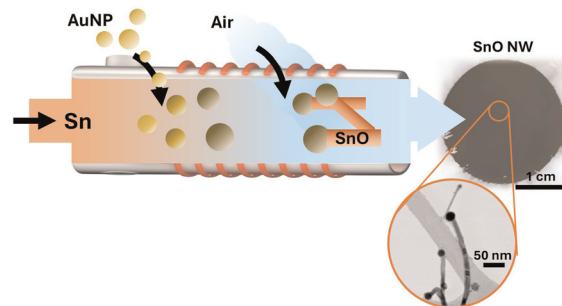
Sha Liu, Fang Dong,\* Weigao Han, Jiyi Zhang\* and Zhicheng Tang\*



20319

**Sequential control of catalyst alloying and oxygen-mediated nucleation for continuous synthesis of SnO nanowires floating in the gas phase**

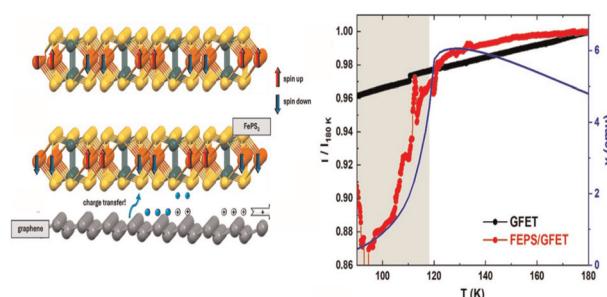
Isabel Gómez-Palos, Álvaro Ridruejo and Juan J. Vilatela\*



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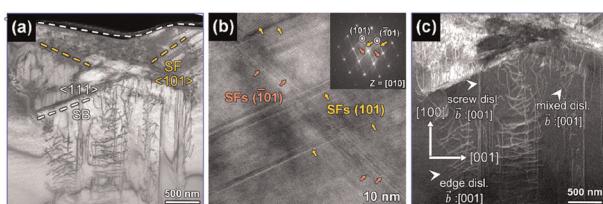
**Conductance modulation in graphene/antiferromagnet van der Waals heterostructures induced by magnetic order**

Adrián García-Martín, Rocío Sánchez-de-Armas, Sara Gullace, Esther Calle, Lucía Martín-Pérez, Nicolás Montenegro-Pohlhammer, Miriam Jaafar, José Sanchez Costa, Carmen J. Calzado\* and Enrique Burzurí\*



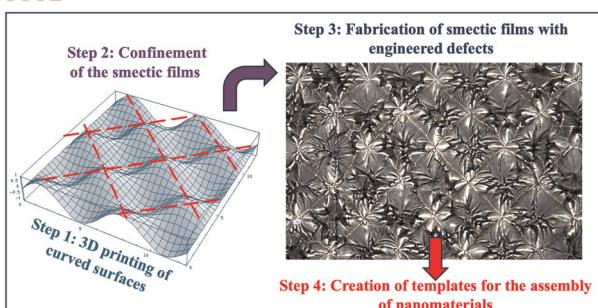
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**Dislocation-enabled plasticity in rutile  $\text{TiO}_{2-x}$  at room temperature**

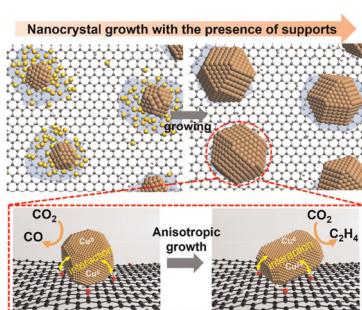
Bo Yang,\* Nicholas Richter, Huan Li, Zhongxia Shang, Zihao He, Hongyi Dou, Jianan Shen, R. Edwin García, Noam Bernstein, C. Stephen Hellberg, Haiyan Wang and Xinghang Zhang\*

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**Templated self-assembly of gold nanoparticles in smectic liquid crystals confined at 3D printed curved surfaces**

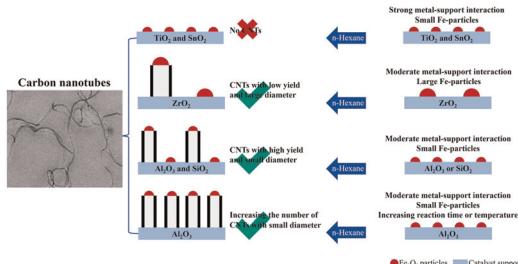
Mackenzie O'Keefe, Jane Bernadette Denise M. Garcia, Abeco J. Rwakabuba, Timothy M. Otchy, Daniel A. Beller\* and Mohamed Amine Gharbi\*

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**Atomic-scale investigation of the role of supports in nanocrystal growth**

Xiao Han, Xiaolin Tai, Xun Hong, Jingxiang Low, Yongfei Ji\* and Yue Lin\*

20375

**Carbon nanotube growth from n-hexane on Fe-based catalysts****Insights into the reaction process and mechanism of CNT growth from n-hexane on Fe-based catalysts**

Changchang Tian, Dongzhe Cui, Xu Hou,\* Xinyao Sun, Ao Dong, Jing Huang,\* Li Yin and Enxian Yuan\*

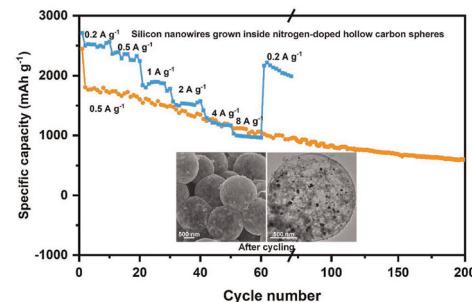


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20390

**Silicon nanowires grown inside nitrogen-doped hollow carbon spheres as anode materials for lithium-ion batteries**

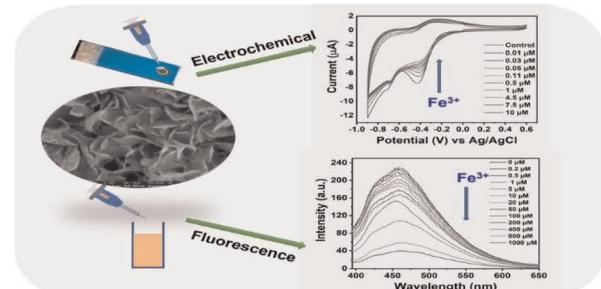
Xin-Tao Li, Qing-Chen Xiong and Fei-Hu Du\*



20400

**Bi<sub>2</sub>O<sub>2</sub>Se nanosheets for dual-mode electrochemical/fluorescence turn-off sensing of ferric ions**

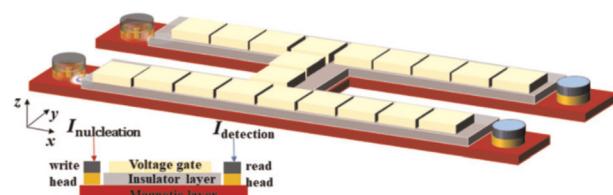
Amit Kumar Shringi, Rajeev Kumar, Rajneesh Chaurasiya, Justin Lin, Nutifafa Y. Doumon and Fei Yan\*



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**Voltage-driven flexible skyrmioniums for high-speed transport and reversible logic in discrete electrode nanowires**

Luwen Wang, Ziyang Yu,\* Qingbo Liu,\* Lun Xiong\* and Rui Xiong



20420

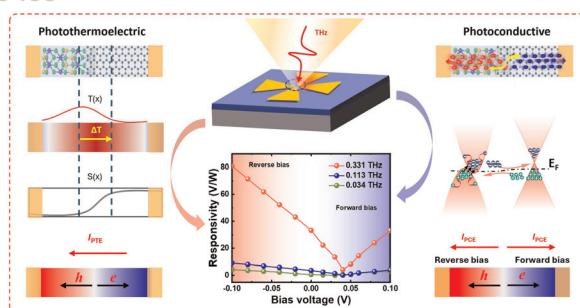
**Europium doping effects on the properties of CsPbBr<sub>3</sub> nanocrystals: *in situ* vs. *ex situ* synthetic path analysis**

Hila Shalom, Ayelet HaShachar Wallach, Raanan Carmieli and Lena Yadgarov\*



## PAPERS

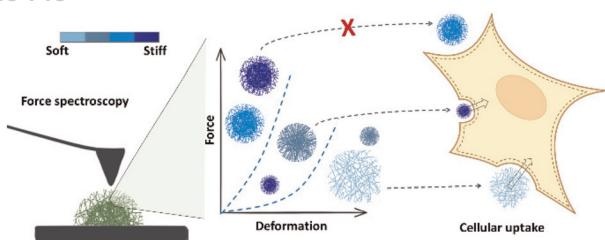
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## High-sensitivity broadband terahertz detection enabled by synergistic effects in an antenna-integrated $\text{TaCo}_2\text{Te}_2$ /graphene heterostructure

Donghai Zhang, Changlong Liu,\* Sheng Ni, Changyi Pan, Weiwei Tang, Lin Wang, Kin Seng Chiang\* and Xiaoshuang Chen\*

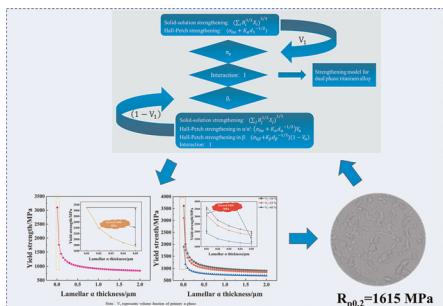
20445



## Size and softness synergy in cellular microgel uptake: a force spectroscopy study

Andrey Babenyshev, Victoria K. Switacz, Marc Spehr and Walter Richtering\*

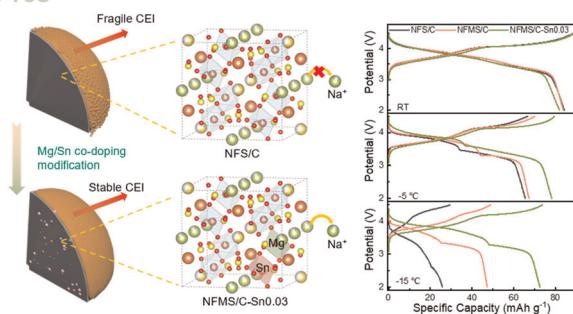
20455



## The key approach to fabricate ultra-high strength dual-phase titanium alloys and its practice

Ruyi Ji, Leying Chen, Run Li, Haicheng Zhang, Liwei Cheng, Hengjun Luo\* and Jian Mao\*

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## A novel spherical Mg/Sn co-doped alluaudite-type $\text{Na}_{2+2x}\text{Fe}_{2-x}(\text{SO}_4)_3$ cathode material for durable low-temperature sodium-ion batteries

Weiyi Li, Min Zhang, Shen Cai, Yan Xin and Huajun Tian\*

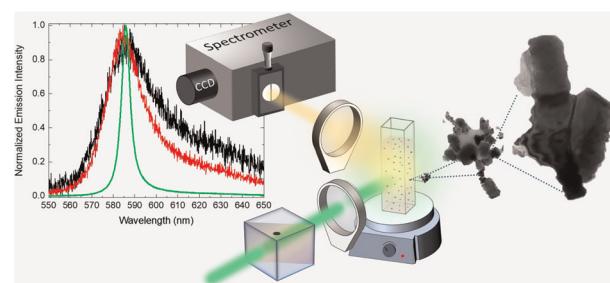


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**Graphitic carbon nitride nanosheets as scatterers for random laser action**

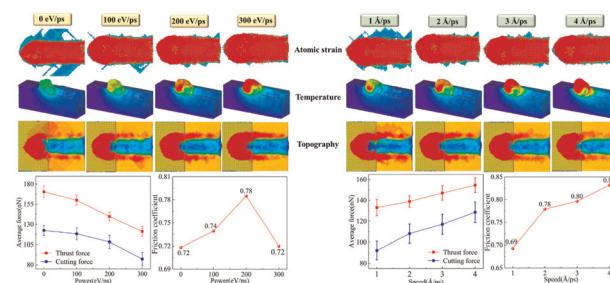
Pablo I. R. Pincheira,\* Igor M. Gonçalves, Olga Rubilar, Ana Obreque, Edward Hermosilla, Alyson J. A. Carvalho and Leonardo de S. Menezes



20488

**Simulation of laser-assisted machining of the GH2135 alloy using molecular dynamics: effects of machining parameters on cutting performance**

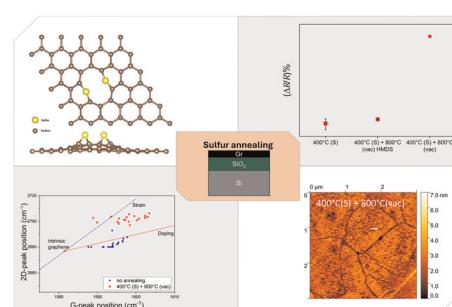
Bin Liu,\* Yanyang Wang, Yun Bai, Zezhou Kuai and Xingbin Jing\*



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**Probing defect formation in sulfur-annealed graphene for TMDC integration**

Ahmad Nizamuddin Muhammad Mustafa,\* Victoria Greenacre, Huanyu Zhou, Shabin Thomas, Tianyi Yin, Sarah Alodan, Yasir J. Noori, Giuseppe Mallia, Nicholas M. Harrison, Gillian Reid, Philip N. Bartlett, Kees de Groot, Sami Ramadan,\* Peter K. Petrov\* and Norbert Klein



20519

**Facile design of MOF-derived porous CeO<sub>2</sub>/MWCNT nanocomposites for the hydrogen evolution reaction and machine learning-assisted stability forecasting**

Mrunal M. Patil, Pramod A. Koyale, Sonali P. Sadavar, Anjali R. Shelake, Tukaram D. Dongale, Ananta G. Dhodamani, Santosh S. Sutar and Sagar D. Delekar\*

