

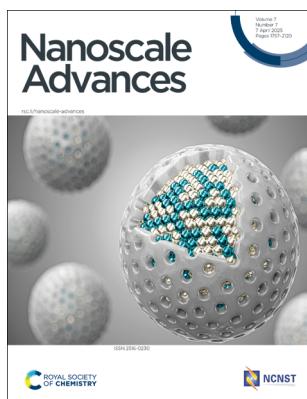
# Nanoscale Advances

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## IN THIS ISSUE

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### Cover

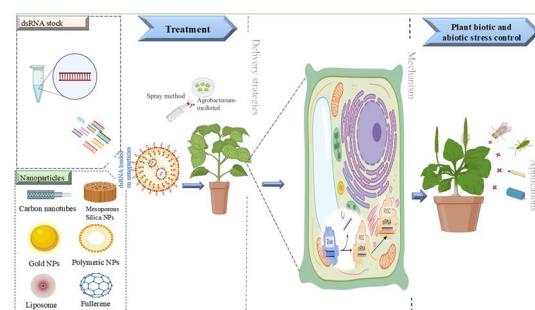
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## REVIEWS

1768

### Advances in RNAi-based nanoformulations: revolutionizing crop protection and stress tolerance in agriculture

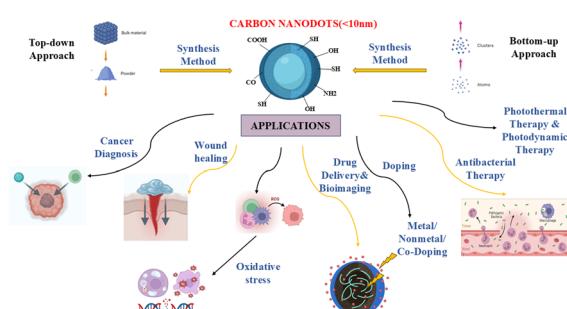
Shivangi Mathur, Ambika Chaturvedi and Rajiv Ranjan\*



1784

### Effect of carbon nanodots on the cellular redox reaction and immune system

Surabhi Verma, Manini Bhatt and Bodhisatwa Das\*





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## PAPERS

1803

## High-performance boron nitride/graphene oxide composites modified with sodium thiosulfate for energy storage applications

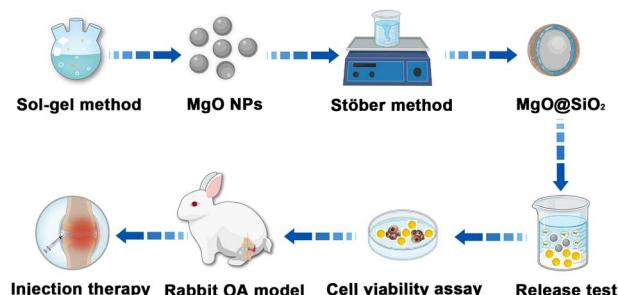
Shamsiya Shams, B. Bindhu,\* Adhigan Murali, R. Ramesh,\* Abdullah Al Souwaileh and Sung Soo Han\*



1814

## MgO@SiO<sub>2</sub> nanocapsules: a controlled magnesium ion release system for targeted inhibition of osteoarthritis progression

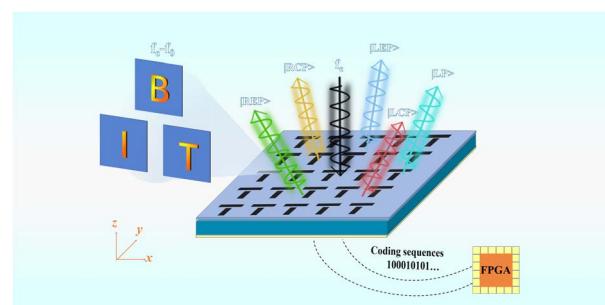
Na Liu, Fangchao Jiang, Zhizi Feng, Sen Mei, Yingna Cui, Yu Zheng, Wei Yang, Benjie Wang, Weizhong Zhang, Jin Xie\* and Nan Zhang\*



1825

## Graphene spatiotemporal reconfigurable intelligent surface (GSRIS) for terahertz polarization-state manipulation and holographic imaging

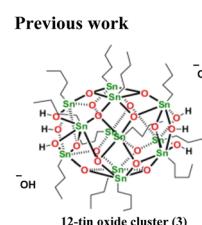
Tianyu Ma, Liming Si,\* Chenyang Dang, Rong Niu, Genhao Wu, Xiue Bao, Houjun Sun and Weiren Zhu\*



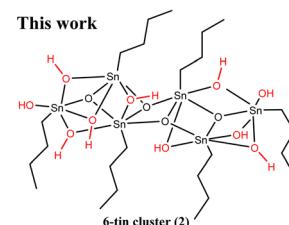
1838

## A highly hydroxylated 6-tin oxide cluster serves as an efficient e-beam and EUV-photoresist to achieve high-resolution patterns

Cheng-Dun Li, Chun-Fu Chou, Yu-Fang Tseng, Burn-Jeng Lin,\* Tsai-Sheng Gau, Po-Hsiung Chen, Po-Wen Chiu, Sun-Zen Chen, Shin-Lin Tsai, Wen-Bin Jian and Jui-Hsiung Liu\*



Surface roughness: 1.32 nm  
threshold energy:  
e-beam: 1360  $\mu$ J/cm<sup>2</sup>  
EUV: 50 mJ/cm<sup>2</sup>

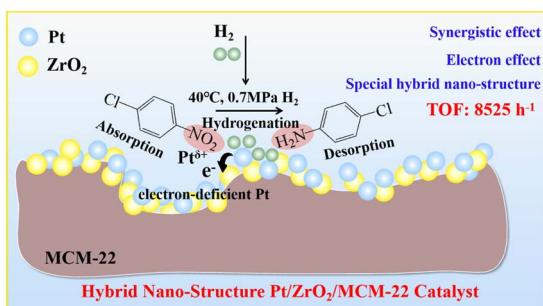


Surface roughness: 0.36 nm  
threshold energy:  
e-beam: 560  $\mu$ J/cm<sup>2</sup>  
EUV: 31 mJ/cm<sup>2</sup>



## PAPERS

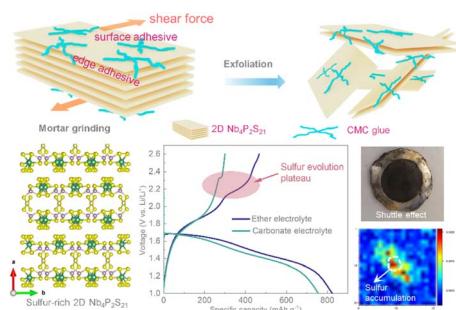
1851



### Highly efficient catalytic hydrogenation of *p*-chloronitrobenzene: the synergistic effect and hybrid nano-structure

Yanji Zhang\* and Jicheng Zhou

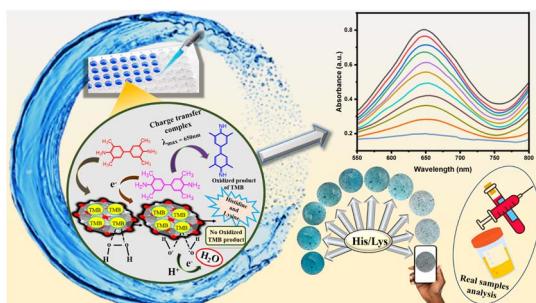
1860



### Glue-assisted exfoliation of two-dimensional sulfur-rich niobium thiophosphate ( $\text{Nb}_4\text{P}_2\text{S}_{21}$ ) for sulfur-equivalent electrode study in lithium storage

Bing Wu,\* Vlastimil Mazánek, Min Li, Martin Veselý, Qiliang Wei, Luxa Jan, Filipa M. Oliveira, Lei Zheng, Heng Li, Vojtech Kundrat, Jakub Zálešák, Jakub Regner, Rui Gusmão, Junjie He, Tomáš Hartman, Saeed Ashtiani, Yulong Ying and Zdenek Sofer\*

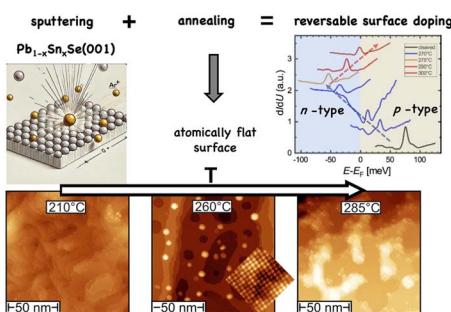
1872



### An octahedral metal oxide nanoparticle-based dual-signal sensing platform for simultaneous detection of histidine and lysine in human blood plasma and urine

Robina Akhtar, Asim Yaqub,\* Zia Ul Haq Khan, Ali Turab Jafry and Huma Ajab\*

1885



### Reversible doping and fine-tuning of the Dirac point position in the topological crystalline insulator $\text{Pb}_{1-x}\text{Sn}_x\text{Se}$ via sputtering and annealing process

Artem Odobesko,\* Johannes Jung, Andrzej Szczerbakow, Jędrzej Korczak, Tomasz Story and Matthias Bode

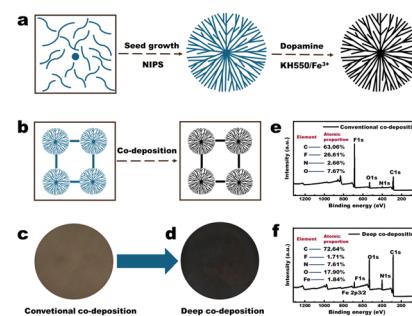


## PAPERS

1892

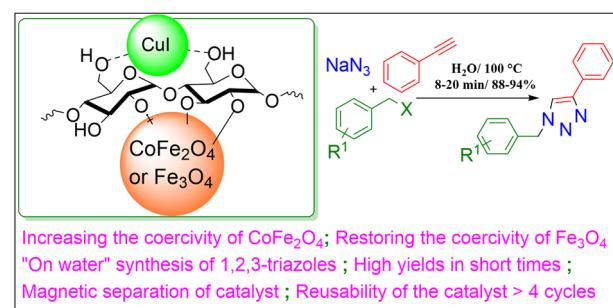
## Deep co-deposition of polydopamine in PVDF hydrogel to enhance photothermal evaporation efficiency

Yu Ma,\* Lan Yang, Shangdi Wu, Liran Xu and Hua Huang\*



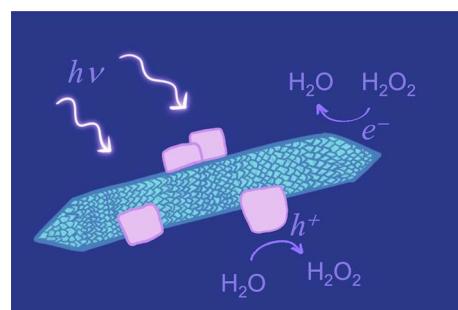
1901

## Cuprous iodide implanted in hot-water-soluble-starch coating of ferrite nanoparticles: efficient catalysts for on-water click synthesis of 1,2,3-triazoles

Seyyed Mohammad Rezapour Mousavi  
and Kurosh Rad-Moghadam\*

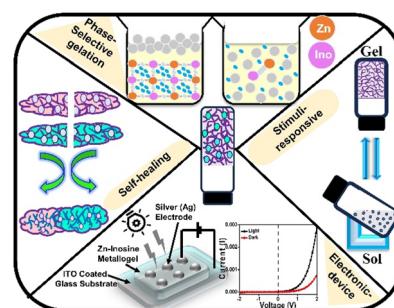
1914

## Light driven water oxidation on silica supported NiO-TiO<sub>2</sub> heteronanocrystals yields hydrogen peroxide

Nurul Muttakin, Shelton J. P. Varapragasam, Rashed Mia,  
Mahfuz A. Swadhen, Michael Odlyzko and James  
D. Hoefelmeyer\*

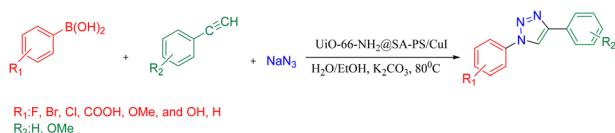
1923

## A multistimuli responsive and self-healing Zn(II)-inosine supramolecular metal-organic gel: phase selective gelation and application as a light-responsive Schottky barrier diode

Surbhi Singh, Atul Kumar Sharma, Kunal Rohilla,  
Nisha Verma and Bhagwati Sharma\*

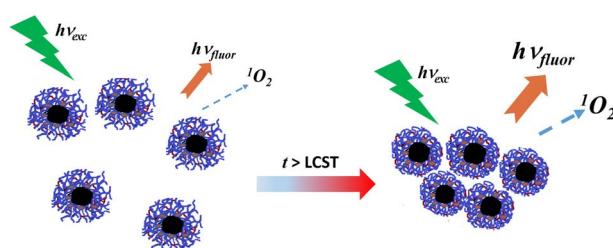
## PAPERS

1937

**Copper-anchored polysulfonamide-modified Uio-66-NH<sub>2</sub>/sodium alginate nanocatalyst for sustainable synthesis of 1,2,3-triazoles**

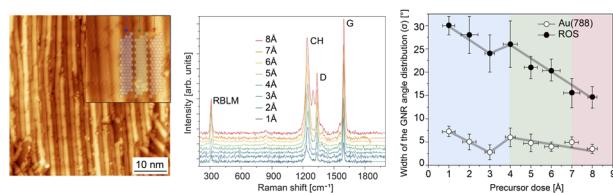
Samaneh Koosha, Ramin Ghorbani-Vaghei\* and Sedigheh Alavinia

1946

**Polymeric nanoparticles with a thermoresponsive shell loaded with fluorescent molecules allow for thermally enhanced fluorescence imaging and singlet oxygen generation**

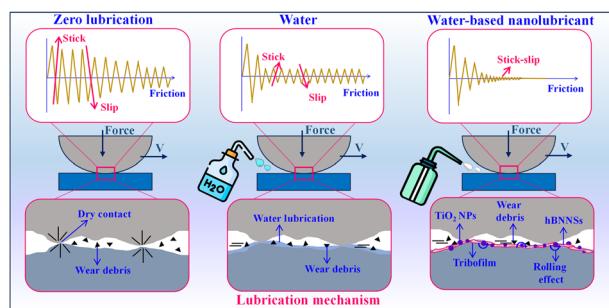
Oksana Chepurna, Artem Yakovliev, Roman Ziniuk, Anna Grebinyk, Hao Xu, Olena A. Nikolaeva, Andrii I. Marynin, Liudmyla O. Vretik, Junle Qu and Tymish Y. Ohulchansky\*

1962

**The role of precursor coverage in the synthesis and substrate transfer of graphene nanoribbons**

Rimah Darawish, Oliver Braun, Klaus Müllen, Michel Calame, Pascal Ruffieux, Roman Fasel and Gabriela Borin Barin\*

1972

**hBN/TiO<sub>2</sub> water-based nanolubricants: a solution for stick-slip mitigation in tribological applications**

Afshana Morshed, Fei Lin, Hui Wu, Zhao Xing, Sihai Jiao, Md Mahadi Hasan\* and Zhengyi Jiang\*

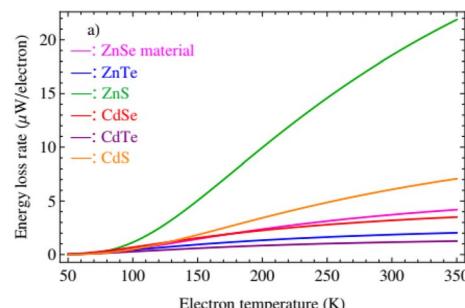


## PAPERS

1989

**A comparative study of the hot electron energy loss rate in zinc- and cadmium compound quasi-two-dimensional materials**

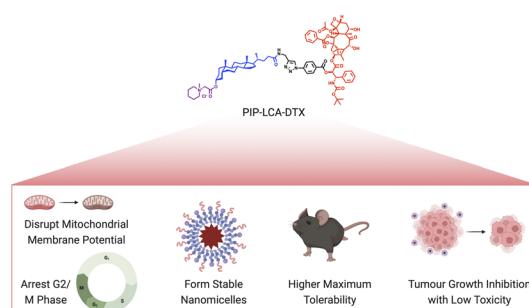
Huynh Thi Phuong Thuy and Nguyen Dinh Hien\*



2003

**Docetaxel-conjugated bile acid-derived nanomicelles can inhibit tumour progression with reduced toxicity**

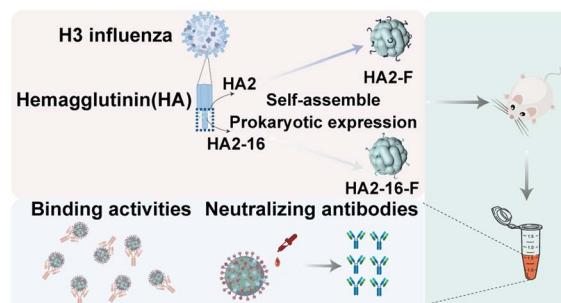
Devashish Mehta, Chhavi Dua, Ruchira Chakraborty, Poonam Yadav, Ujjaini Dasgupta and Avinash Bajaj\*



2011

**Induction of enhanced stem-directed neutralizing antibodies by HA2-16 ferritin nanoparticles with H3 influenza virus boost**

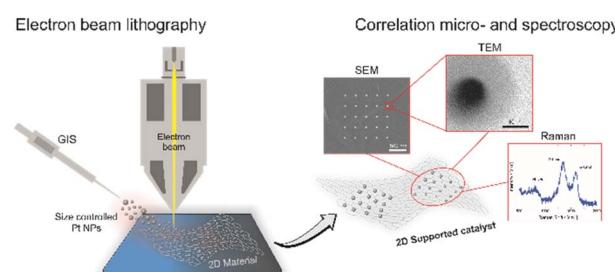
Qingyu Wang, Jiaoqiao Nie, Zejinxuan Liu, Yaotian Chang, Yangang Wei, Xin Yao, Lulu Sun, Xiaoxi Liu, Qicheng Liu, Xinyu Liang, Xinran Zhang, Yong Zhang, Weiheng Su, Qi Zhao, Yaming Shan, Yingwu Wang, Xianbin Cheng\* and Yuhua Shi\*



2021

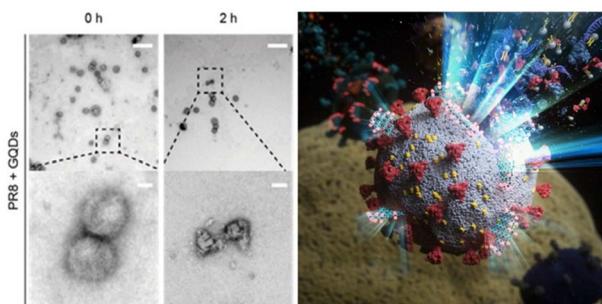
**Direct chemical lithography writing on 2D materials by electron beam induced chemical reactions**

Iryna Danylo, Lukáš Koláčný, Kristína Kissíková, Tomáš Hartman, Martina Pitínová, Jiří Šturala, Zdeněk Sofer\* and Martin Veselý\*



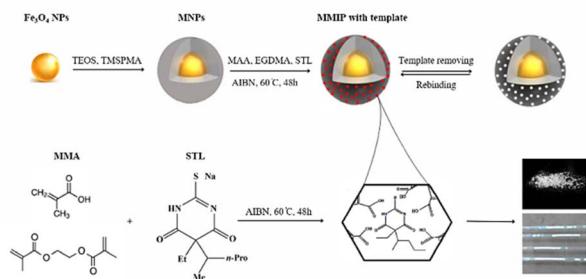
## PAPERS

2032

**Graphene quantum dots as potential broad-spectrum antiviral agents**

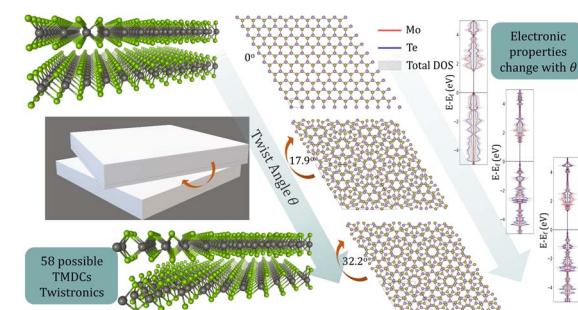
Younghun Jung, Jaehyeon Hwang, Hyeonwoo Cho, Jeong Hyeon Yoon, Jong-Hwan Lee, Jaekwang Song, Donghoon Kim, Minchul Ahn,\* Byung Hee Hong\* and Dae-Hyuk Kweon\*

2039

**Design and development of pH-sensitive nanocarriers using molecularly imprinted polymers for the targeted delivery of sodium thiopental**

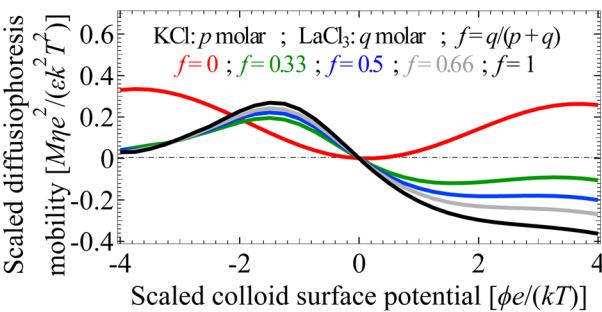
Ayda Yari-Illkhchi, Abdolrahim Abbaszad Rafi and Mehrdad Mahkam\*

2047

**How can we engineer electronic transitions through twisting and stacking in TMDC bilayers and heterostructures? a first-principles approach**

Yu-Hsiu Lin, William P. Comaskey and Jose L. Mendoza-Cortes\*

2057

**Diffusiophoresis in porous media saturated with a mixture of electrolytes**

Siddharth Sambamoorthy and Henry C. W. Chu\*



## PAPERS

2068

**Biological and mechanical properties of a self-curing acrylic resin enriched with AgNPs as a proposal for orthopedic aparatoLOGY**

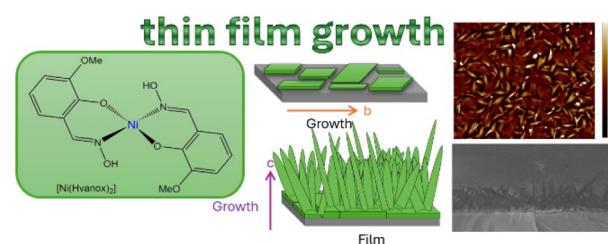
Christian Andrea Lopez-Ayuso, Rene Garcia-Contreras, Ravichandran Manisekaran, Mario Figueroa, Manuel Rangel-Grimaldo, Mariano Jacome, Ruben Abraham Dominguez-Perez, Salvador Lopez-Morales, Sol Cristians and Laura Susana Acosta-Torres\*



2083

**Investigating the thin film growth of  $[Ni(Hvanox)_2]$  by microscopic and spectroscopic techniques**

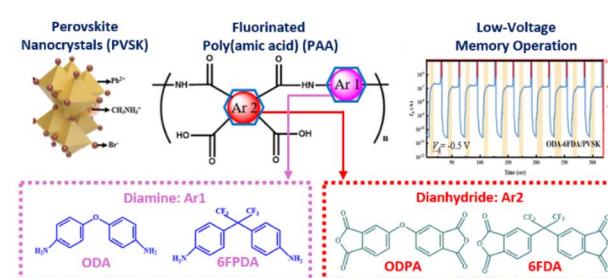
Atharva U. Sapre, Jan Vlček, Esther de Prado, Ladislav Fekete, Mariana Klementová, Martin Vondráček, Petr Svora, Emmelyne Cuza, Grace G. Morgan, Jan Honolka and Irina A. Kühne\*



2092

**Improving the performance of floating gate phototransistor memory with perovskite nanocrystals embedded in fluorinated polyamic acids**

Wei-En Wu, You-Wei Cao, Yu-Chih Hsu, Yan-Cheng Lin\* and Yang-Yen Yu\*



2105

**High performance supercapacitors driven by the synergy of a redox-active electrolyte and core-nanoshell zeolitic imidazolate frameworks**

Mansi, Vishal Shrivastav, Prashant Dubey, Aristides Bakandritsos, Shashank Sundriyal,\* Umesh K. Tiwari\* and Akash Deep\*

