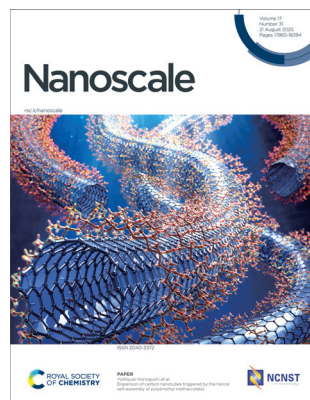


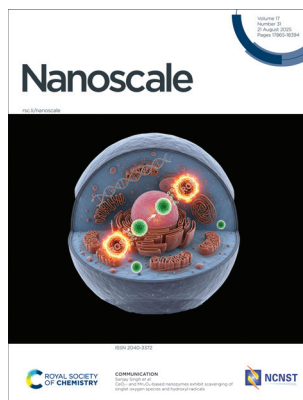
## IN THIS ISSUE

ISSN 2040-3372 CODEN NANOHL 17(31) 17865–18394 (2025)



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*et al.*, pp. 18105–18111.

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## EDITORIAL

17878

### Advances and perspectives in nanoscale materials and optoelectronics

Christian Klinke

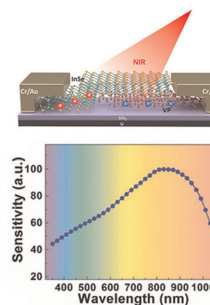
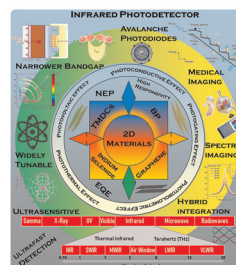


## REVIEWS

17881

### 2D material-based infrared photodetectors: recent progress, challenges, and perspectives

Muhammad Wajid Zulfiqar, Sobia Nisar, Ghulam Dastgeer,\* Muhammad Rabeel, Hammad Ghazanfar, Awais Ali, Muhammad Imran, Honggyun Kim and Deok-kee Kim\*



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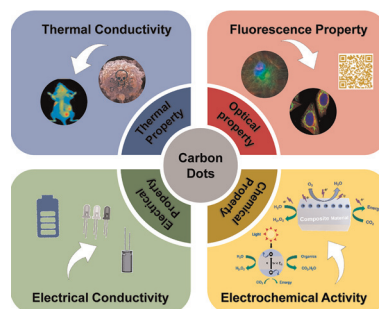
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## REVIEWS

17919

**Carbon dots: translating versatile physicochemistry into multidisciplinary application frameworks**

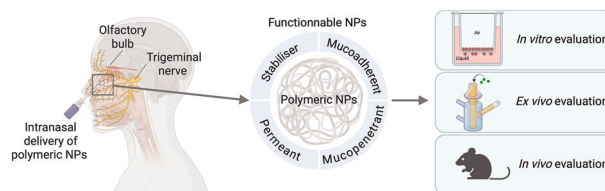
Chen Liu, Qi Feng, Yafeng Liu, Hao Liu,\* Xuemei Wang\* and Hui Jiang\*



17947

**Polymeric nanoparticles for efficient nose-to-brain delivery**

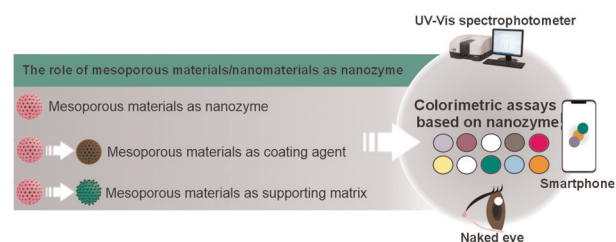
Marie Bolon, Maxime Fieux, Claire Monge and Sophie Richard\*



17980

**Recent advances in nanozymes based on mesoporous materials for enhancing the performance of colorimetric biosensors: Applications and challenges**

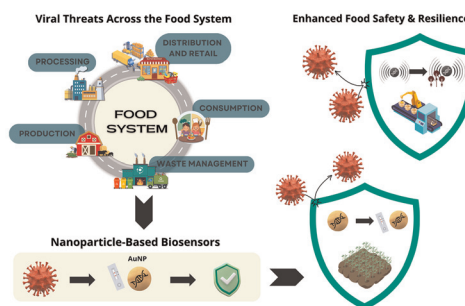
Chou-Yi Hsu,\* Rosull Saadon Abbood, Ahmed Hussein Zwamel, Mohammad Y. Alshahrani, Subbulakshmi Ganesan, Jatin Sharma, Subhashree Ray, Rajesh Singh, Nooruldeen Ali Abdulhussein and Marwa Fadhil Alsaffar



17993

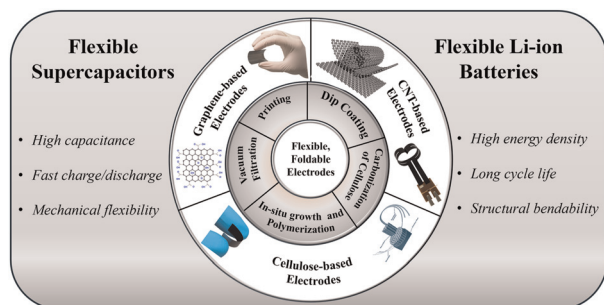
**Nanoparticle-based biosensors for virus detection in food systems: from farm to fork**

Riann Martin Sarza, Laura Sutarlie, Sam Fong Yau Li\* and Xiaodi Su\*



## REVIEWS

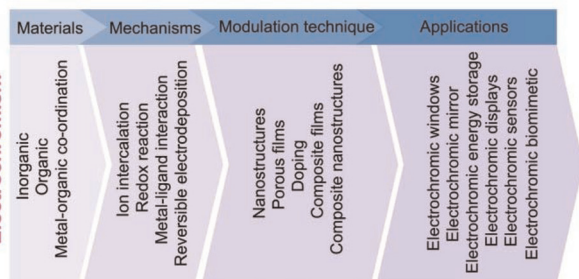
18016



### Flexible electrodes for high-performance energy storage: materials, conductivity optimization, and scalable fabrication

Muhammad Shoaib Tahir, Iqra Kainat, Hammad Ghazanfar and Young Soo Seo\*

18049

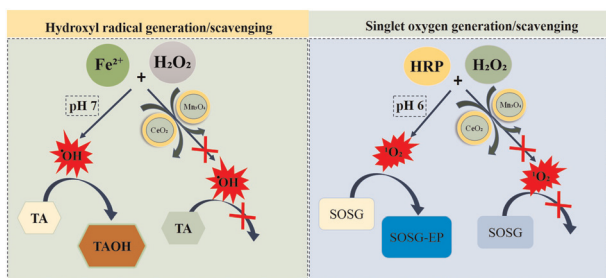


### Materials, mechanisms, and emerging applications of electrochromic systems

Taimur Ahmed,\* Aishani Mazumder, Sruthi Kuriakose, Aditya Dubey, Aaron Elbourne, Jiawen Ren, Vaishnavi Krishnamurthi, Everson Kandare, Irfan Haider Abidi, Enrico Della Gaspera, Sivacarendran Balendhran\* and Sumeet Walia\*

## COMMUNICATIONS

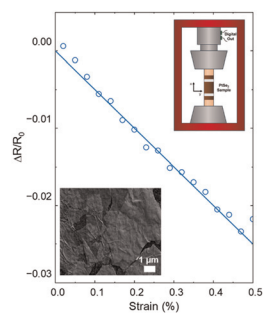
18077



### CeO<sub>2</sub>- and Mn<sub>3</sub>O<sub>4</sub>-based nanozymes exhibit scavenging of singlet oxygen species and hydroxyl radicals

Krishnendu M. R., Divya Mehta and Sanjay Singh\*

18083



### Solution-processed negative gauge factor PtSe<sub>2</sub> strain sensors

Cansu Ilhan, Eoin Caffrey, Shixin Liu, Jose Munuera, Zdeněk Sofer, Iva Plutnarová, Michael A. Morris, Jonathan N. Coleman\* and Tian Carey\*

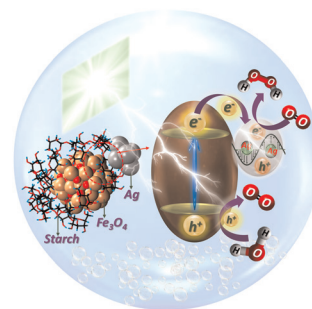


## COMMUNICATIONS

18092

### Silver nanostructure-loaded starch functionalized magnetite (Ag/s-Fe<sub>3</sub>O<sub>4</sub>) photocatalyst for H<sub>2</sub>O<sub>2</sub> production: experimental and molecular dynamics studies

Uttam Kumar, Jyoti Kuntail, Shaili Pal, Mrinal R. Pai, Xenophon Krokidis, Andreas Bick and Indrajit Sinha\*

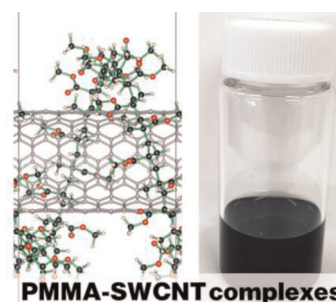


## PAPERS

18105

### Dispersion of carbon nanotubes triggered by the helical self-assembly of poly(methyl methacrylate)

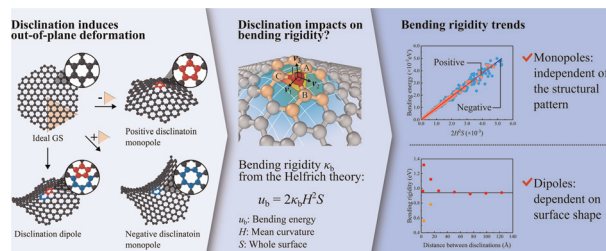
Ayaka D. Inoue, Kazuhiro Yoshida, Tsuyoshi Ando, Shuta Fukuura, Takashi Yumura, Hiroharu Ajiro, Tsuyoshi Kawai and Yoshiyuki Nonoguchi\*



18112

### A new computational approach for evaluating bending rigidity of graphene sheets incorporating disclinations

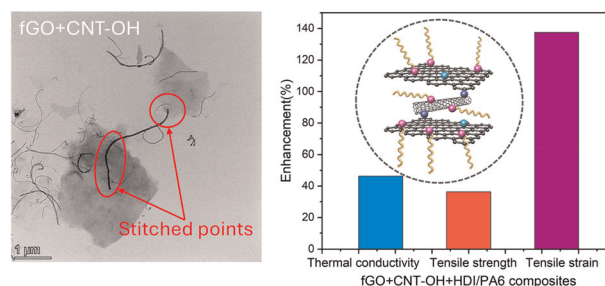
Yushi Kunihiro, Xiao-Wen Lei,\* Takashi Uneyama and Toshiyuki Fujii



18127

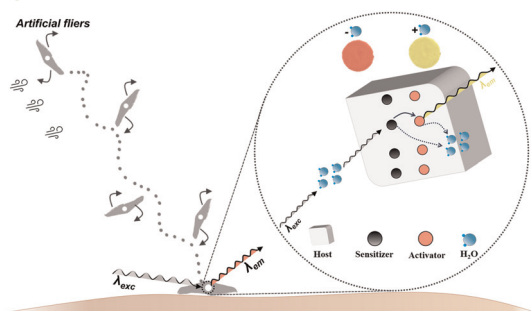
### Covalently bonded graphene oxide–carbon nanotube hybrid nanofillers for achieving high-performance polyamide 6 composites with superior mechanical properties and thermal conductivity

Guanjun Liu,\* Yan Liu, Meng Zhang, Danyang Zhao, Ping Liu, Lu Wang, Lizhi Li and Meiling Yan\*



## PAPERS

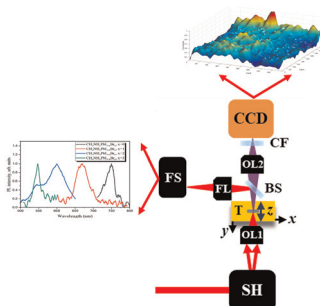
18143



### Sensing relative humidity with a fluorescent seed-like biodegradable flier

Albenc Nexha, Stefano Mariani, Kliton Cikalleshi, Thomas Kister, Barbara Mazzolai\* and Tobias Kraus\*

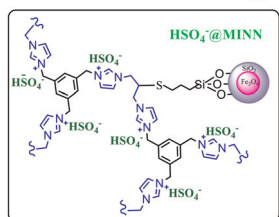
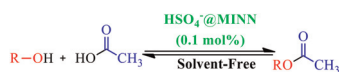
18153



### Novel microscopy based on simultaneous utilization of third harmonic generation and photoluminescence microscopy for thin film analysis and molecular detection

Mostafa A. Nasr,\* Hamzeh Sabouni, Ganjaboy Boltsev and Ali S. Alnaser

18161

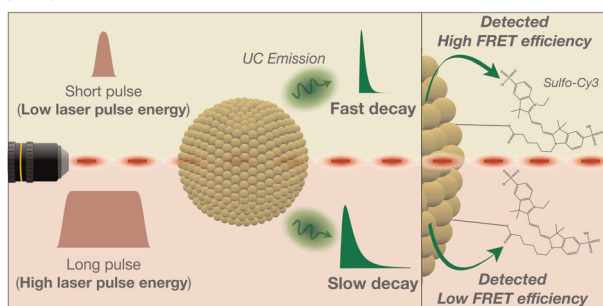


MINN: Magnetic Ionic Network Nanoparticles

### A magnetic hybrid sol-gel ionic network catalyst for direct alcohol esterification under solvent-free conditions

Maryam Faraji, Fariborz Mansouri,\* Babak Karimi\* and Hojatollah Vali

18173



### Influence of excitation pulse duration on the efficiency of upconversion nanoparticle-based FRET

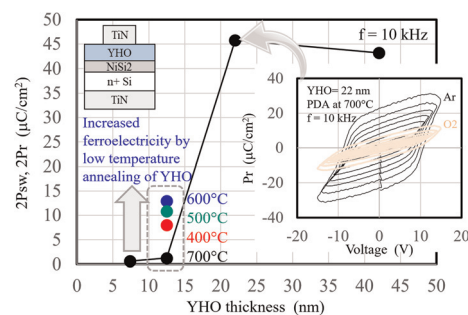
Alejandro Casillas-Rubio, Khoulood Hamraoui, Diego Mendez-Gonzalez, Marco Laurenti, Jorge Rubio-Retama, Oscar G. Calderón\* and Sonia Melle\*



18185

### Ferroelectric recovery of scaled-down Y-doped HfO<sub>2</sub> thin films on NiSi<sub>2</sub> after annealing

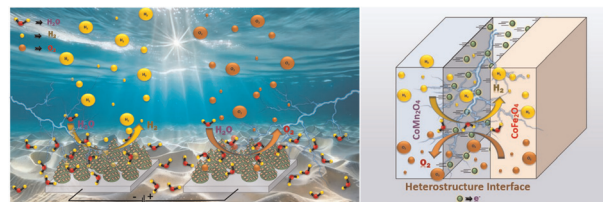
Joel Molina-Reyes



18190

### Heterostructure interface-engineered 3D/2D CoMn<sub>2</sub>O<sub>4</sub>/CoFe<sub>2</sub>O<sub>4</sub>/NF core/shell Bi-functional electrocatalytic nanomaterials for efficient overall water splitting application in alkaline media

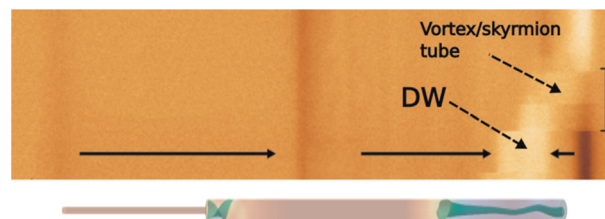
Moorthy Krishnamachari, Mohanraj Kumar, Muthu Senthil Pandian and Jih-Hsing Chang\*



18202

### Field-induced demagnetisation of bisegmented cylindrical ferromagnetic nanowires mediated by skyrmion tubes

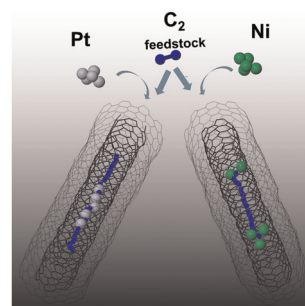
João Fradet,\* Victor Vega, Yolanda Álvarez, Javier García, Cristina Bran, Victor M. Prida, Agustina Asenjo and Oksana Chubykalo-Fesenko



18211

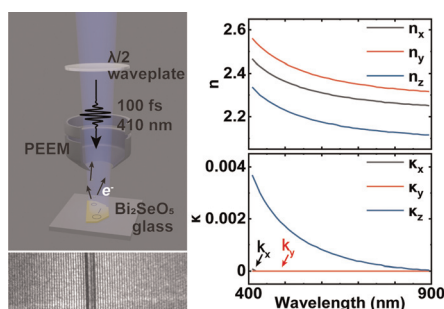
### Driving catalytic carbyne formation within endohedral DWCNTs: the role of Ni vs. Pt

Kamoliddin Mehmonov, Aziza Ergasheva, S. Mehdi Vaez Allaei, Erik C. Neyts and Umedjon Khalilov\*



## PAPERS

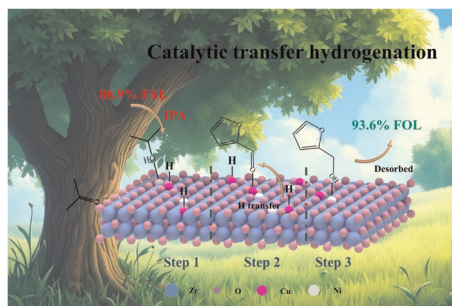
18220



### Optical anisotropy of $\text{Bi}_2\text{SeO}_5$ and near-field characterization of its waveguide modes

Jinglin Tang, Yaolong Li,\* Jingyue Wang,\* Yongchao Zhu, Xiaofang Li, Pengzuo Jiang, Jingying Xiao, Yuxin Zhang, Qinyun Liu, Minghao Deng, Guanyu Zhang, Zini Cao, Shufeng Wang, Hong Yang, Xiaoyong Hu,\* Han Gao,\* Hailin Peng,\* Guowei Lyu\* and Qihuang Gong

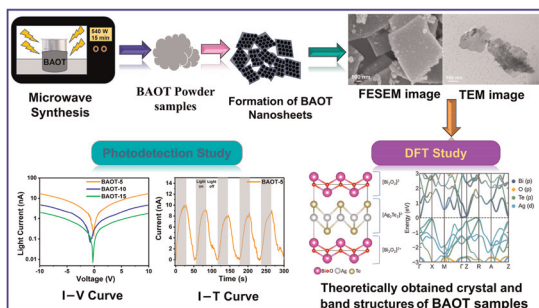
18229



### Synergistic effects of bimetallic $\text{CuNi-ZrO}_2$ catalysts in catalytic transfer hydrogenation of furfural

Chenghu Zhang, Zezhou Xing, Ying Li, Tong Xu, Yinghui Sun\* and Jie Bai\*

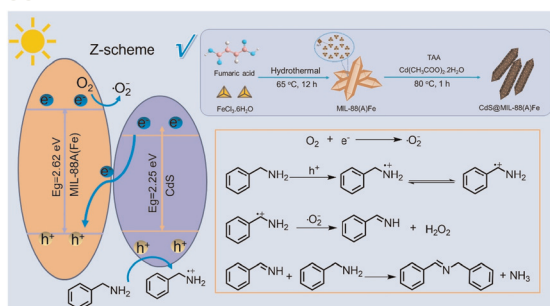
18240



### $\text{BiAgOTe}$ nanosheets with enhanced photoresponse ability: an experimental and computational study

Prabhukrupa Chinmay Kumar, Jnanranjan Panda, Lokanath Patra, Subhashree Mohanty, Sripan Chinnaiyah and Ramakanta Naik\*

18255



### Core-shell-structured Z-scheme $\text{CdS@MIL-88(A)Fe}$ heterojunctions for efficient visible light photocatalytic oxidative coupling of benzylamines to imines

Xueqing Xu,\* Wenwen Lu, Xuan Sun, Xiaorong Yang, Yezi Zhao, Ziqiang Lei and Zhiwang Yang\*

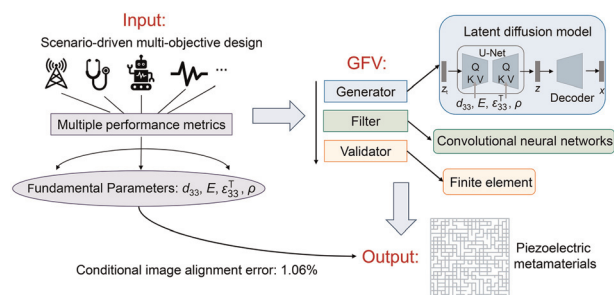


## PAPERS

18265

### A generative diffusion model enables multi-objective on-demand inverse design of piezoelectric metamaterials

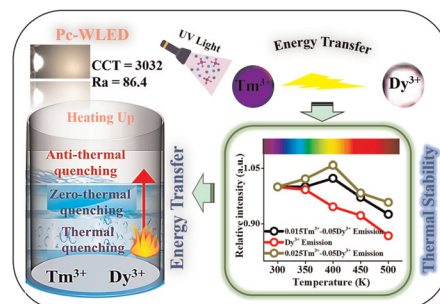
Chun-Yu Lei, Jian Wang, Run-Lin Liu, Meng-Jun Zhou and Zhong-Hui Shen\*



18279

### Modulating anti-thermal and concentration quenching for enhanced dysprosium emission

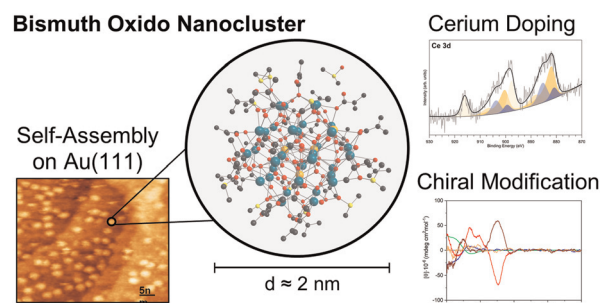
Wasim Ullah Khan, Haris Zaman, Waheed Ullah Khan and Haiou Zhu\*



18291

### Atomically precise bismuth oxido nanoclusters: cerium doping for optical modification and supramolecular self-assembly on Au(111)

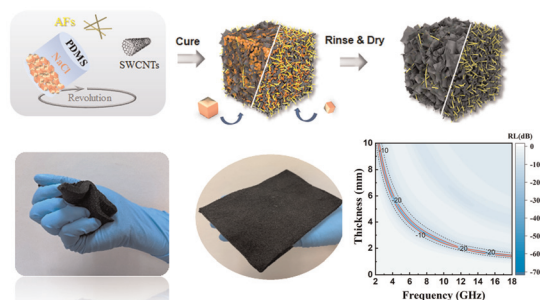
Rico Thomas, Thi Ngoc Ha Nguyen, Marcus Weber, Tobias Rüffer, Fabian Göhler, Antareekshya Deka, Andreas Pöpl, Thomas Seyller, Christoph Tegenkamp and Michael Mehring\*



18305

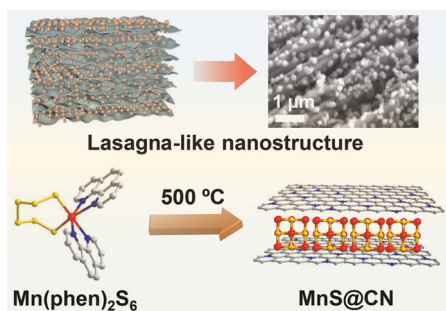
### Super-compressible aramid fiber-reinforced carbon nanotube/polydimethylsiloxane foams with high frequency tunable microwave attenuation and adjustable mechanical properties

Hui Ji, Junru Yao, Jichen Zhao, Yijing Zhao, Sreekanth Ginnaram, Jiaqi Tao, Khoo Boo Cheong and Yong Yang\*



## PAPERS

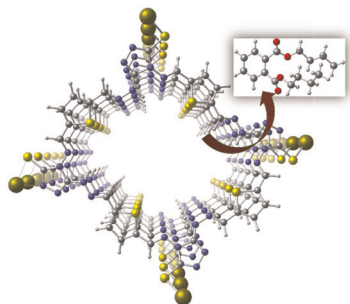
18315



### Preparing an MnS@CN composite with lasagna-like nanostructure through pyrolysis of an organic hybrid manganese sulfide for electrochemical lithium storage

Yanqi Wang, Longfei Zhai\* and Wei-Wei Xiong\*

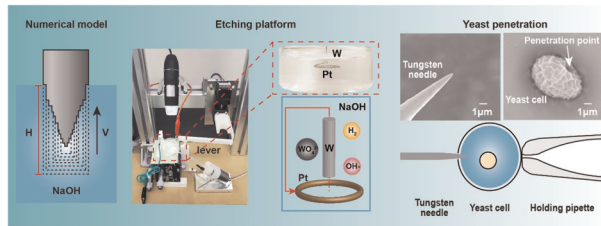
18325



### Nanohoop anchored plasmonic surfaces for polarity-dependent ultrasensitive sensing

Ashish Kumar Dhillon, Rabindranath Lo, Sanmitra Barman,\* Kolleboyina Jayaramulu\* and Soumik Siddhanta\*

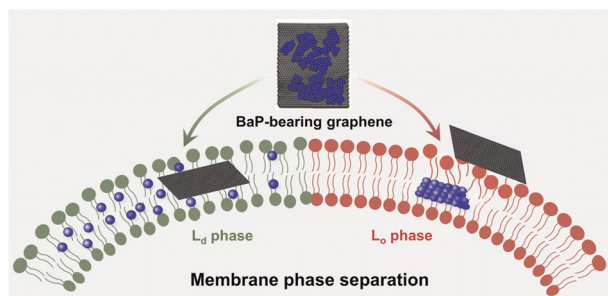
18336



### Numerically controlled electrochemical etching of tungsten nano-needles for penetrating the tough yeast cell wall

Zuokun Yin, Wenhong Zhang, Wende He, Weiguang Su, Jing Wang, Jun Chen\* and Li Wang\*

18345



### Phase separation-driven modulation of cell membrane interactions with benzo[a]pyrene-bearing graphene nanosheets: molecular insights into combined toxicity

Hongxia Ma, Xiaoyang Zhang, Jing Liu, Jie Chen and Tongtao Yue\*

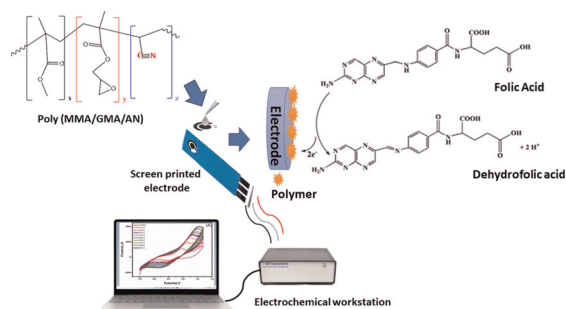


## PAPERS

18359

### Innovative formulation of a functional nanocopolymer derived from glycidyl methacrylate and acrylonitrile as an exceptionally sensitive and selective electrochemical sensor for folic acid detection in pharmaceutical and food samples

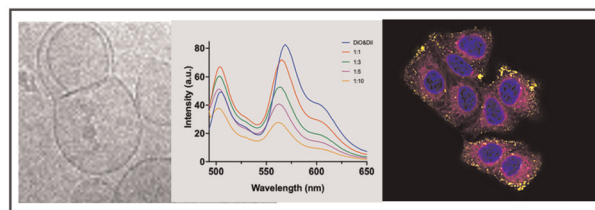
Rokaya A. Sobh\* and Hend S. Magar\*



18377

### Fusion of liposomes incorporating $\alpha$ -linolenic acid with the cell plasma membrane is site-restricted

Abdullah Aljasser, Ramy Elbahr, Cynthia Bosquillon and Snow Stolnik\*



## CORRECTION

18392

### Correction: Membrane-localized magnetic hyperthermia promotes intracellular delivery of cell-impermeant probes

Javier Idiago-López, Daniela Ferreira, Laura Asín, María Moros, Ilaria Armenia, Valeria Grazú, Alexandra R. Fernandes, Jesús M. de la Fuente, Pedro V. Baptista\* and Raluca M. Fratila\*

