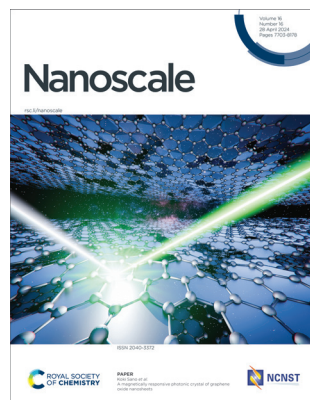


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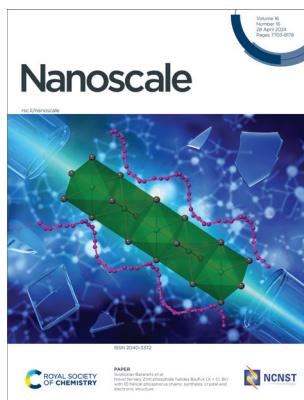
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Cover

See Koki Sano *et al.*, pp. 7908–7915.

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Inside cover

See Sviatoslav Baranets *et al.*, pp. 7916–7925.

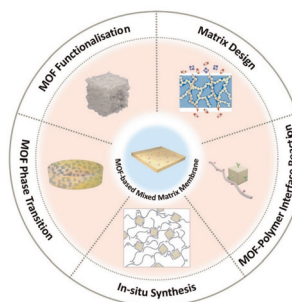
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Recent advances in the interfacial engineering of MOF-based mixed matrix membranes for gas separation

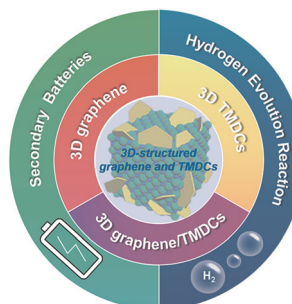
Shuwen Yu, Conger Li, Shuke Zhao, Milton Chai, Jingwei Hou* and Rijia Lin*



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Chemical vapor deposition growth of graphene and other nanomaterials with 3D architectures towards electrocatalysis and secondary battery-related applications

You Peng, Jingyi Hu, Yahuan Huan and Yanfeng Zhang*



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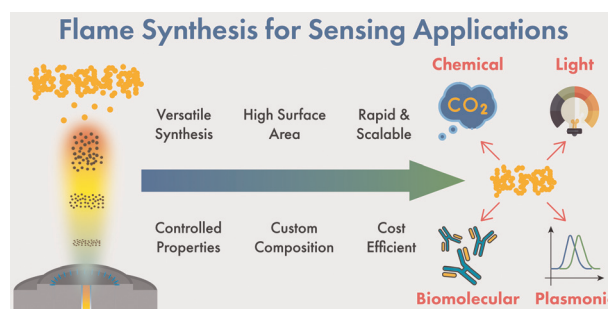
**Fundamental questions
Elemental answers**

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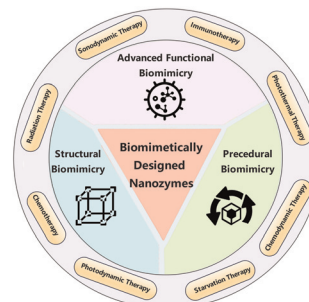
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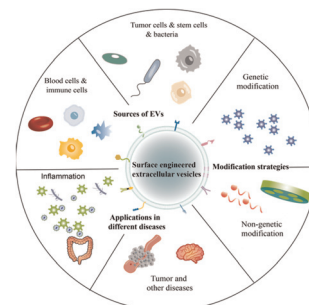


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Recent advances in therapeutic engineered extracellular vesicles

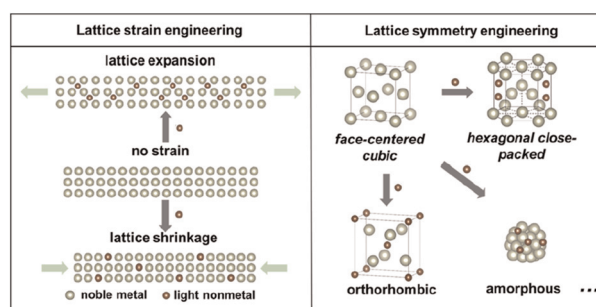
Chenlu Yao, Hong Zhang* and Chao Wang*



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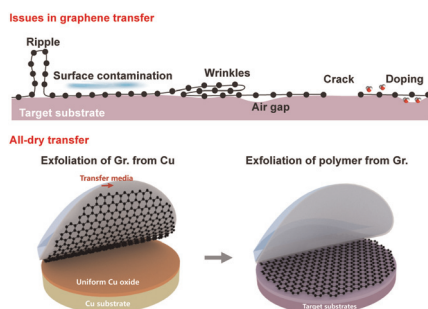
Lattice engineering of noble metal-based nanomaterials via metal–nonmetal interactions for catalytic applications

Long Zheng, Lei Xu, Ping Gu and Ye Chen*



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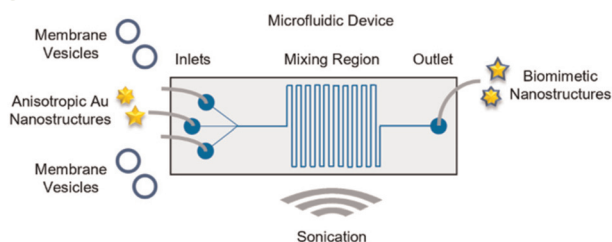


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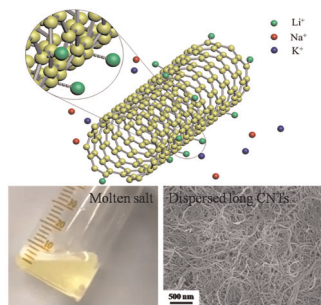
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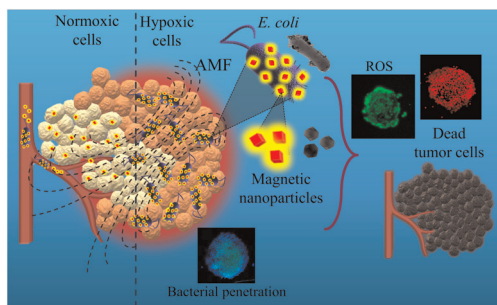
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Dongyu Guo, Yuying Li, Tao Chen, Hongyan Li, Liang Han and Xilai Jia*

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Self-propelling bacteria-based magnetic nanoparticles (BacMags) for targeted magnetic hyperthermia therapy against hypoxic tumors

Tashmeen Kaur and Deepika Sharma*

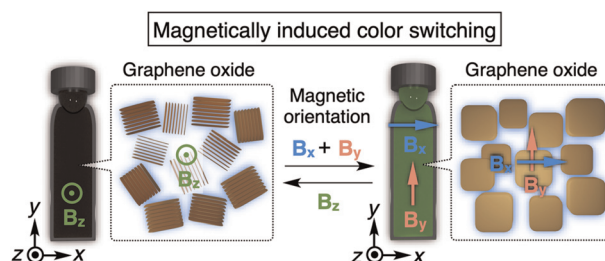


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A magnetically responsive photonic crystal of graphene oxide nanosheets

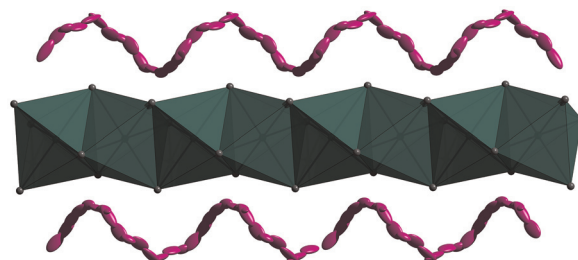
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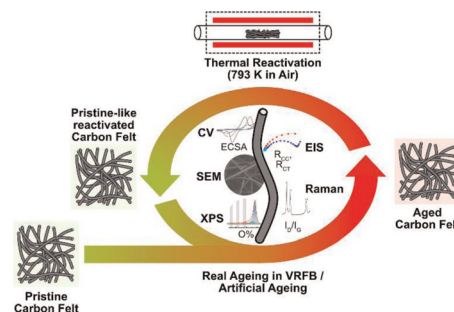
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Extending the lifetime of vanadium redox flow batteries by reactivation of carbon electrode materials

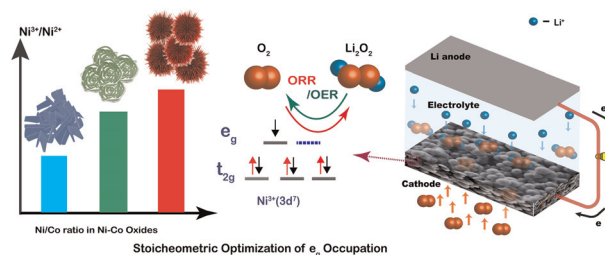
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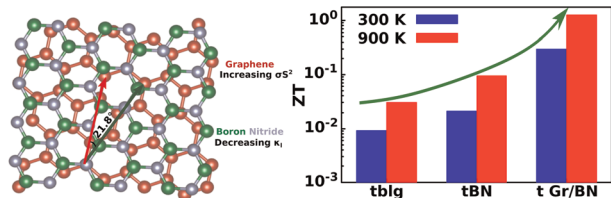
Stoichiometrically optimized e_g orbital occupancy of Ni–Co oxide catalysts for Li–air batteries

Shadeepa Karunarathne, Yasun Y. Kannangara, Chirag R. Ratwani, Chanaka Sandaruwan, W. P. S. L. Wijesinghe, Ali Reza Kamali and Amr M. Abdelkader*



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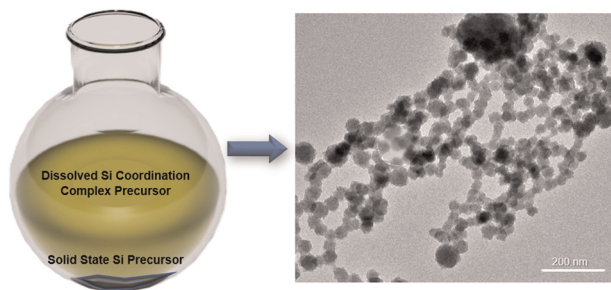
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Enhanced thermoelectric performance of a wide-bandgap twisted heterostructure of graphene and boron nitride

Naveen Kumar and Chandan Bera*

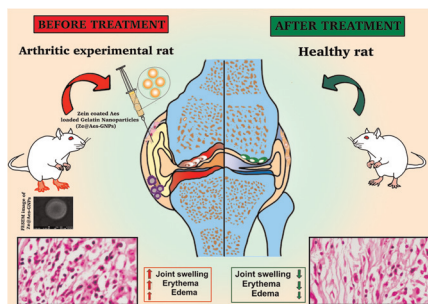
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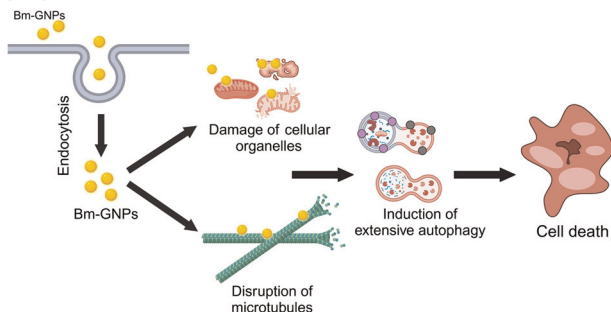
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Biomaterial-based combinatorial approach of aescin-comprised zein-coated gelatin nanoparticles alleviates synovial inflammation in experimental inflammatory arthritis

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Induction of autophagy-dependent and caspase- and microtubule-acetylation-independent cell death by phytochemical-stabilized gold nanopolygons in colorectal adenocarcinoma cells

Kimaya Meher, Gudapureddy Radha and Manu Lopus*

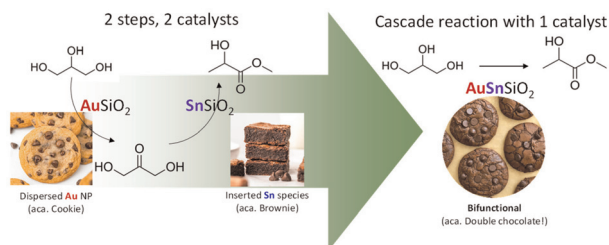


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Bifunctional Au–Sn–SiO₂ catalysts promote the direct upgrading of glycerol to methyl lactate

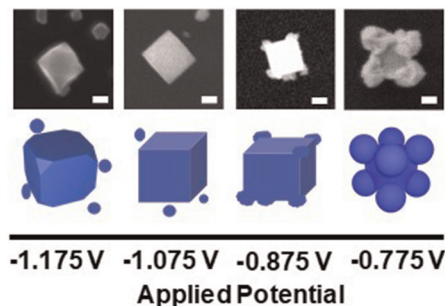
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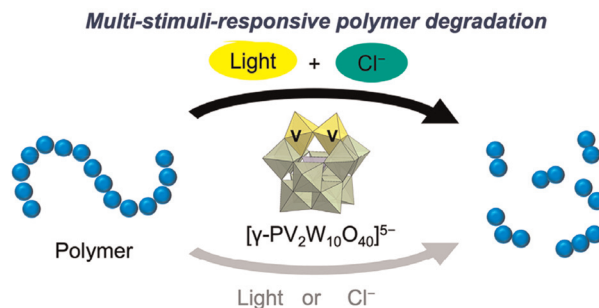
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Multi-stimuli-responsive polymer degradation by polyoxometalate photocatalysis and chloride ions

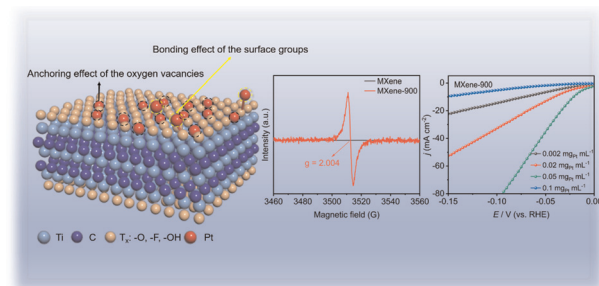
Chen Gu, Chifeng Li, Noriyuki Minezawa, Susumu Okazaki,* Kazuya Yamaguchi and Kosuke Suzuki*



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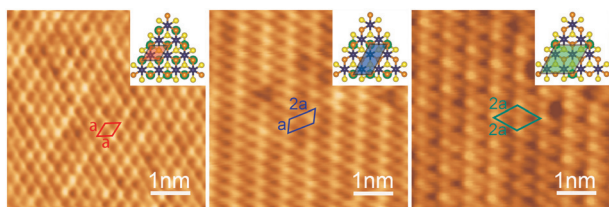
Pt nanoparticles anchored by oxygen vacancies in MXenes for efficient electrocatalytic hydrogen evolution reaction

Qin Zhao, Yue Zhang, Changwang Ke, Weilin Yang, Jianshu Yue, Xiaofei Yang and Weiping Xiao*



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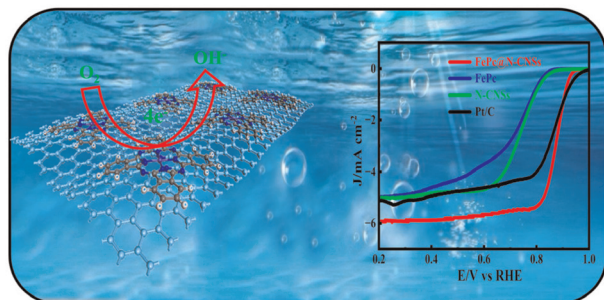
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Jinding Zhang, Yulong Xiao, Kaihui Li, Ying Chen, Songlong Liu, Wenjie Luo, Xueying Liu, Shiyong Liu, Yiliu Wang, Si-Yu Li* and Anlian Pan*

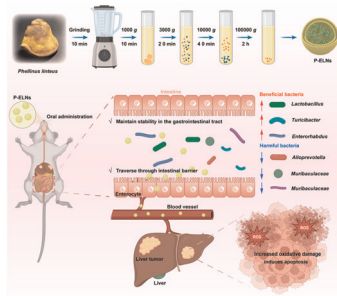
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Regulating the frontier orbital of iron phthalocyanine with nitrogen doped carbon nanosheets for improving oxygen reduction activity

Xilin Zhang, Rui Zheng, Qingfang Chang,* Zhongjun Ma* and Zongxian Yang*

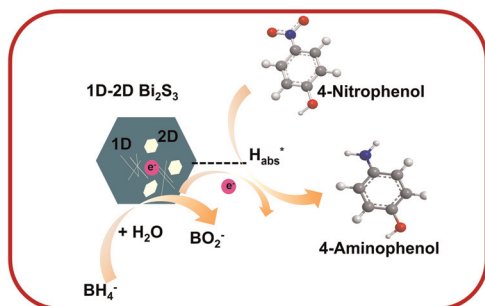
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Oral exosome-like nanovesicles from *Phellinus linteus* suppress metastatic hepatocellular carcinoma by reactive oxygen species generation and microbiota rebalancing

Menghang Zu, Ga Liu, Nanxi Chen, Li Chen, Qiang Gao, Rui L. Reis, Subhas C. Kundu, Meilan Jin,* Bo Xiao* and Xiaoxiao Shi*

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Deciphering the mechanistic insights of 4-nitrophenol reduction catalyzed by a 1D–2D Bi₂S₃ nanostructured catalyst

Bhagirath Mahto, Ashok Barhoi, Haider Ali and Sahid Hussain*

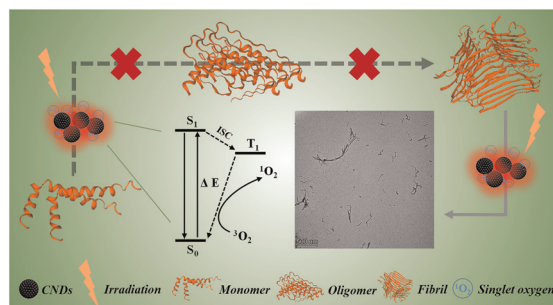


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Novel photocatalytic carbon dots: efficiently inhibiting amyloid aggregation and quickly disaggregating amyloid aggregates

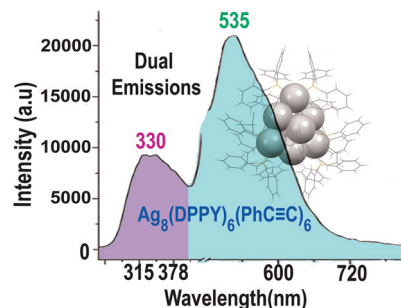
Xu Shao, Chao Wang, Chaoli Wang, Mengyao Bai, Tongtong Hou, Xin Wang, Chaoren Yan,* Ping Guan* and Xiaoling Hu*



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A luminescent $\text{Ag}_8(\text{DPPY})_6(\text{PhC}\equiv\text{C})_6$ cluster with a triangular superatomic Ag_8 core

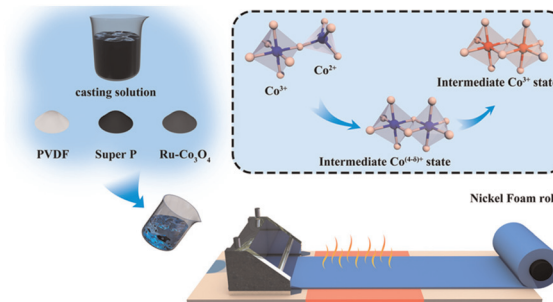
Blessing D. Peter, Wei Pei, Gaya N. Andrew, Si Zhou* and Zhixun Luo*



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Ruthenium single-atom doping-driven modulation of Co_3O_4 spinel tetrahedral site 3d-orbital occupancy in lithium–oxygen batteries

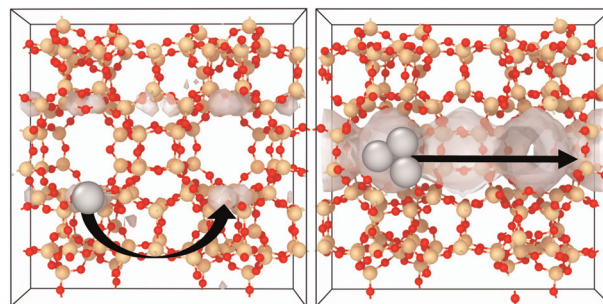
Yining Fan, Ting Li, Bin Li, Anjun Hu,* Dongfen Li, Kun Li, Borui Yang, Yu Pan, Jing Liu* and Jianping Long*



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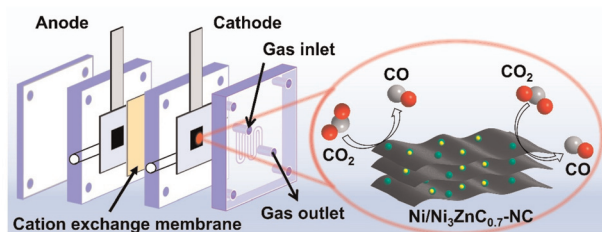
Migration of zeolite-encapsulated subnanometre platinum clusters *via* reactive neural network potentials

Christopher J. Heard,* Lukáš Grajciar and Andreas Erlebach



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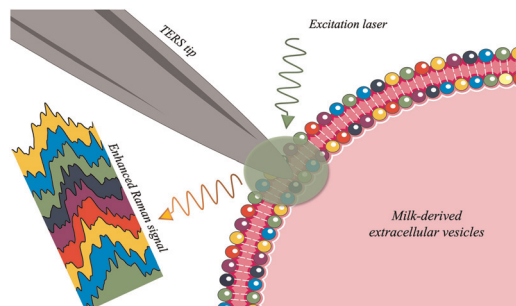
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Three-dimensional N-doped carbon nanosheets loaded with heterostructured Ni/Ni₃ZnC_{0.7} nanoparticles for selective and efficient CO₂ reduction

Li Liao, Chunguang Jia, Songjiang Wu, Shenjie Yu, Zhenhai Wen* and Suqin Ci*

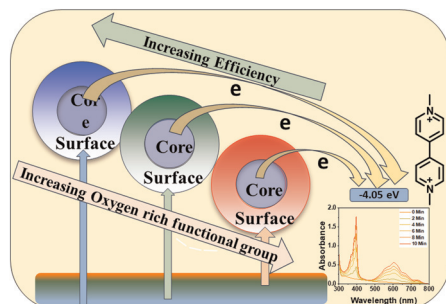
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Toward the nanoscale chemical and physical probing of milk-derived extracellular vesicles using Raman and tip-enhanced Raman spectroscopy

Luca Buccini, Anacleto Proietti, Giancarlo La Penna, Chiara Mancini, Francesco Mura, Stefano Tacconi, Luciana Dini, Marco Rossi and Daniele Passeri*

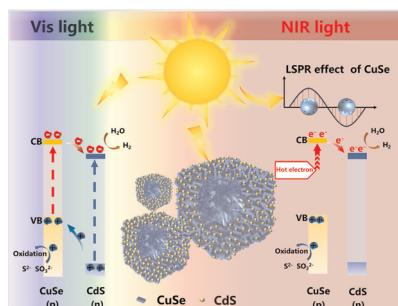
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Delineating the core and surface state heterogeneity of carbon dots during electron transfer

Umarfaruk S. Sayyad, Himanshu Bhatt, Hirendra N. Ghosh and Somen Mondal*

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Ning Li,* Linping Li, Yanping Qiu, Xuhui Liu, Jiatong Zhang, Yangqin Gao and Lei Ge*



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Xinmeng Zhang,* Mingyue Bai, Lei Ge and Yuanyuan Yao

