

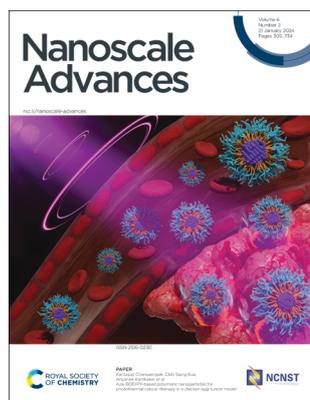
Nanoscale Advances

An open access journal publishing across the breadth of nanoscience and nanotechnology
rsc.li/nanoscale-advances

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

IN THIS ISSUE

ISSN 2516-0230 CODEN NAADAI 6(2) 305–734 (2024)



Cover
See Kantapat Chansaenpak, Chin Siang Kue, Anyanee Kamkaew *et al.*, pp. 406–417. Image reproduced by permission of Kantapat Chansaenpak from *Nanoscale Adv.*, 2024, 6, 406.



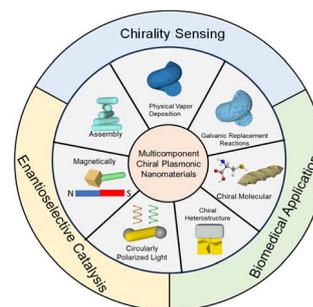
Inside cover
See Xiaojuan Sun, Dabing Li *et al.*, pp. 418–427. Image reproduced by permission of Ke Jiang, Xiaojuan Sun, Dabing Li from *Nanoscale Adv.*, 2024, 6, 418.

REVIEWS

318

Multicomponent chiral plasmonic hybrid nanomaterials: recent advances in synthesis and applications

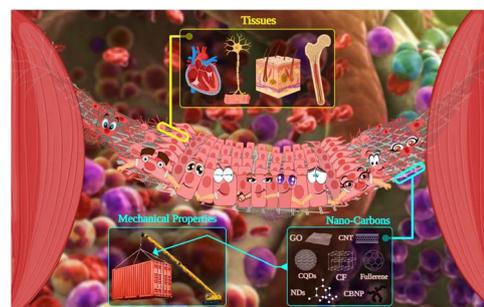
Guizeng Yang, Lichao Sun* and Qingfeng Zhang*



337

Effects of mechanical properties of carbon-based nanocomposites on scaffolds for tissue engineering applications: a comprehensive review

Reza Eivazzadeh-Keihan,* Zahra Sadat, Farnaz Lalebeigi, Nooshin Naderi, Leila Panahi, Fatemeh Ganjali, Sakineh Mahdian, Zahra Saadatizaji, Mohammad Mahdavi, Elham Chidar, Erfan Soleimani, Azadeh Ghaee, Ali Maleki* and Iman Zare*



RSC Applied Polymers

GOLD
OPEN
ACCESS

The application of polymers,
both natural and synthetic

Interdisciplinary and open access

rsc.li/RSCApplPolym

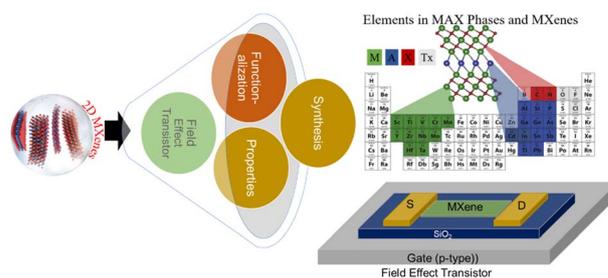
Fundamental questions
Elemental answers

REVIEWS

367

Future prospects of MXenes: synthesis, functionalization, properties, and application in field effect transistors

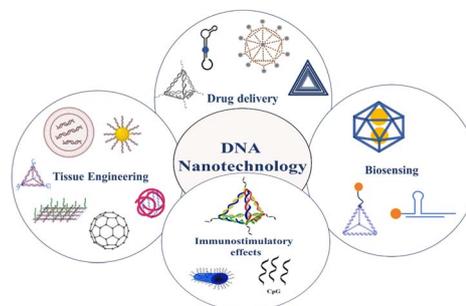
Maisha Rahman and Muhammad Shamim Al Mamun*



386

Structural DNA nanotechnology at the nexus of next-generation bio-applications: challenges and perspectives

Sanjay Kosara, Ramesh Singh* and Dhiraj Bhatia*

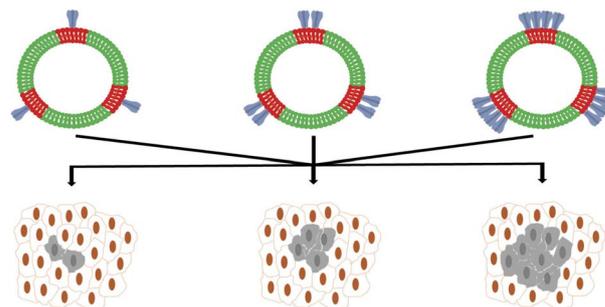


COMMUNICATION

402

Tuning of TRAIL clustering on the surface of nanoscale liposomes by phase separation

Zhenjiang Zhang and Michael R. King*

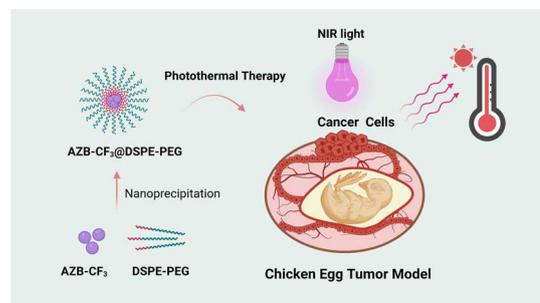


PAPERS

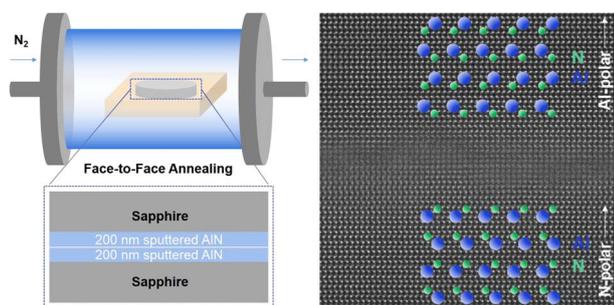
406

Aza-BODIPY-based polymeric nanoparticles for photothermal cancer therapy in a chicken egg tumor model

Kantapat Chansaenpak,* Gong Yi Yong, Anawin Prajit, Peraya Hiranmartsuwan, Shaamini Selvapaandian, Bongkot Ouengwanarat, Tunyawat Khrootkaew, Piyanut Pinyou, Chin Siang Kue* and Anyanee Kamkaew*



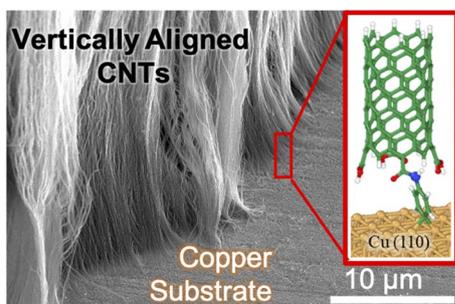
418



The AlN lattice-polarity inversion in a high-temperature-annealed c-oriented AlN/sapphire originated from the diffusion of Al and O atoms from sapphire

Ke Jiang, Jianwei Ben, Xiaojuan Sun,* Zhiming Shi, Xianjun Wang, Tong Fang, Shanli Zhang, Shunpeng Lv, Yang Chen, Yiping Jia, Hang Zang, Mingrui Liu and Dabing Li*

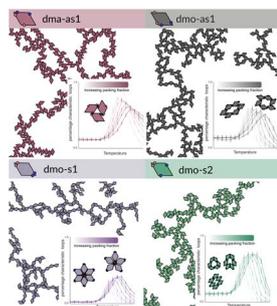
428



Creating covalent bonds between Cu and C at the interface of metal/open-ended carbon nanotubes

Chaminda P. Nawarathne, Diego Galvez Aranda, Abdul Hoque, Gabrielle R. Dangel, Jorge M. Seminario* and Noe T. Alvarez*

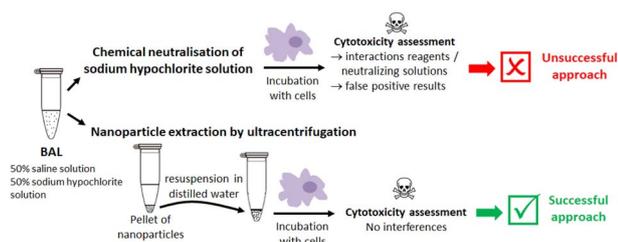
443



Anisotropic functionalized platelets: percolation, porosity and network properties

Carina Karner* and Emanuela Bianchi*

458



Development of a protocol of isolation of nanoparticles from patients' broncho-alveolar lavages for their *in vitro* toxicity assessment

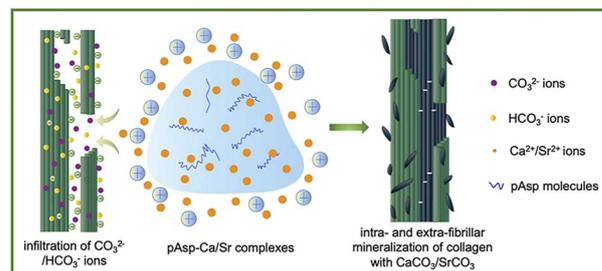
Kévin Bernal, Ozge Kose, Lara Leclerc, Jean-Michel Vergnon, Jérémie Pourchez and Valérie Forest*



467

Intrafibrillar mineralization of type I collagen with calcium carbonate and strontium carbonate induced by polyelectrolyte–cation complexes

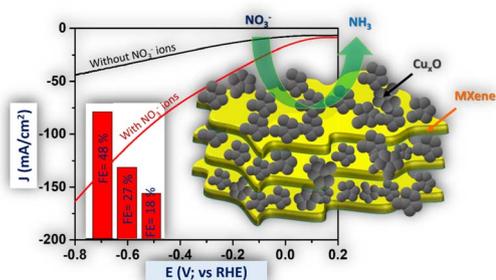
Yizhou Zhang, Yiru Wang, Zhengyi Zhang, Zhe Wang, Changyu Shao, Matthias Hannig, Zihuai Zhou* and Baiping Fu*



481

In situ growth of copper oxide on MXene by combustion method for electrochemical ammonia production from nitrate

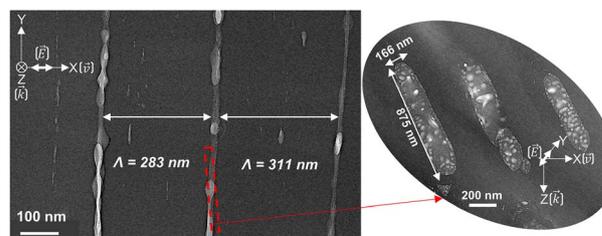
Sagar Ingavale, Phiralang Marbaniang, Manoj Palabathuni and Nimai Mishra*



489

Nanoscale investigations of femtosecond laser induced nanogratings in optical glasses

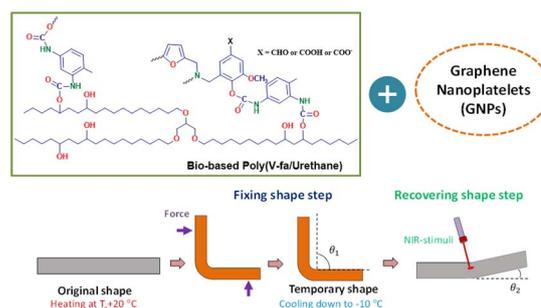
Qiong Xie, Nadezhda Shchedrina, Maxime Cavillon, Bertrand Pommellec and Matthieu Lancry*



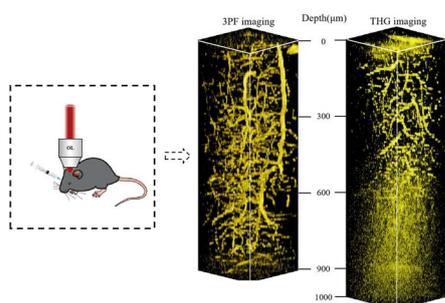
499

Development of NIR light-responsive shape memory composites based on bio-benzoxazine/bio-urethane copolymers reinforced with graphene

Weerapong Jamnongpak, Sunan Tiptipakorn, Hariharan Arumugam, Krittapas Charoensuk, Panagiotis Karagiannidis and Sarawut Rimdusit*



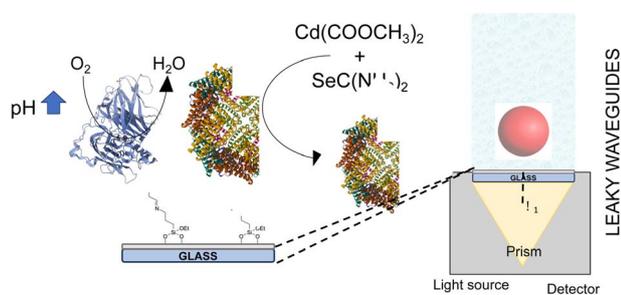
511



Comparison of the penetration depth in mouse brain *in vivo* through 3PF imaging using AIE nanoparticle labeling and THG imaging within the 1700 nm window

Yingxian Zhang, Jincheng Zhong, Hui Cheng, Jie Huang, Zhenhui Li, Chi Zhang, Zhiang Gao, Zhou Rui Xu, Gaixia Xu, Ping Qiu* and Ke Wang*

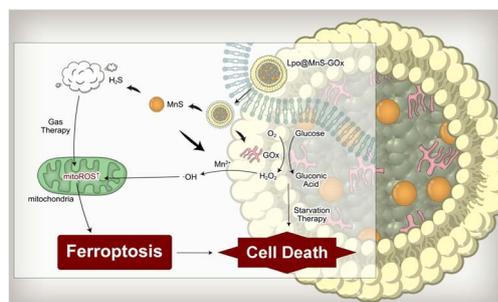
516



Bioelectrochemically triggered apoferritin-based bionanoreactors: synthesis of CdSe nanoparticles and monitoring with leaky waveguides

Angelo Tricase, Bushra Alhenaki, Verdiana Marchianò, Luisa Torsi, Ruchi Gupta* and Paolo Bollella*

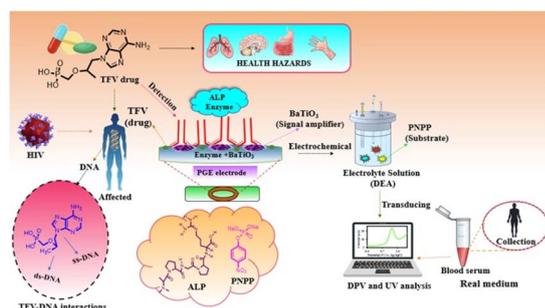
524



Liposome-coated nanoparticle triggers prostate cancer ferroptosis through synergetic chemodynamic-gas therapy

Yingkai Hong, Wenli Hou, Dehua Ou, Mingen Lin, Mayao Luo and Qiang Wei*

534



An ALP enzyme-based electrochemical biosensor coated with signal-amplifying BaTiO₃ nanoparticles for the detection of an antiviral drug in human blood serum

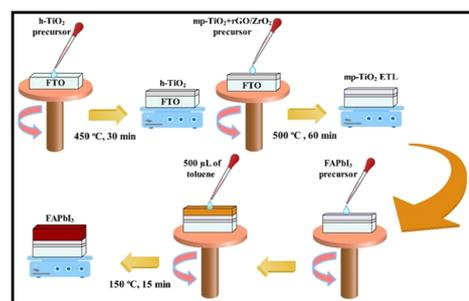
Muhammad Umar Draz, Muhammad Zia Ul Haq, Akhtar Hayat* and Huma Ajab*



548

Enhancing the stability and efficiency of carbon-based perovskite solar cell performance with ZrO₂-decorated rGO nanosheets in a mesoporous TiO₂ electron-transport layer

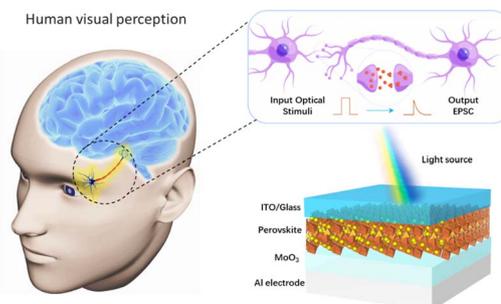
Anjan Kumar, M. I. Sayyed, Anmar Ghanim Taki,*
Vanessa Valverde and Eduardo Hernández



559

Optoelectronic synapses based on a triple cation perovskite and Al/MoO₃ interface for neuromorphic information processing

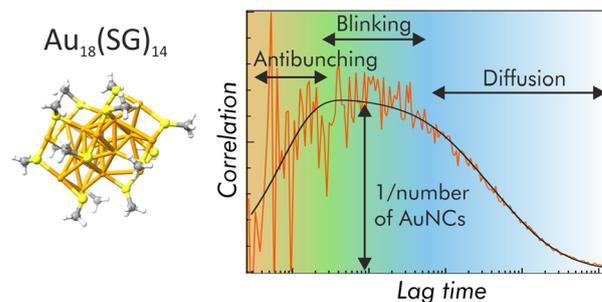
Haoliang Sun, Haoliang Wang, Shaohua Dong,* Shijie Dai,
Xiaoguo Li, Xin Zhang, Liangliang Deng, Kai Liu,
Fengcai Liu, Hua Tan, Kun Xue, Chao Peng, Jiao Wang,
Yi Li, Anran Yu,* Hongyi Zhu* and Yiqiang Zhan*



570

Unveiling the photoluminescence dynamics of gold nanoclusters with fluorescence correlation spectroscopy

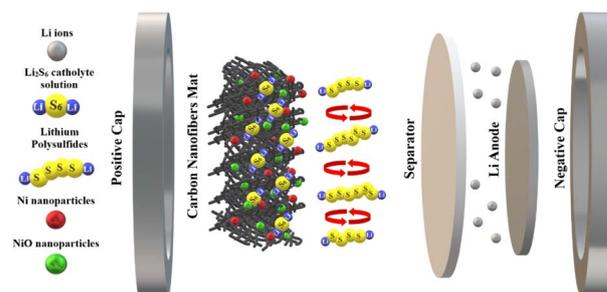
Malavika Kayyil Veedu, Julia Osmólska, Agata Hajda,
Joanna Olesiak-Bańska and Jérôme Wenger*



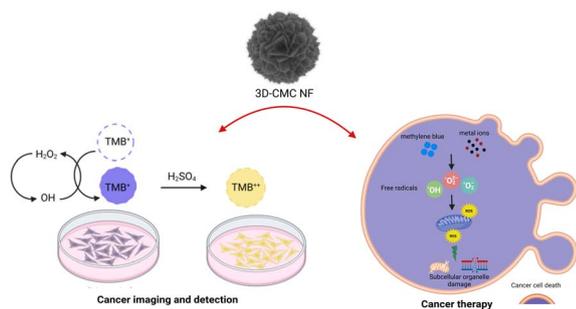
578

Nickel and nickel oxide nanoparticle-embedded functional carbon nanofibers for lithium sulfur batteries

Islam Rakhimbek, Nurzhan Baikalov, Aishuak Konarov,
Almagul Mentbayeva, Yongguang Zhang
and Zhumabay Bakenov*



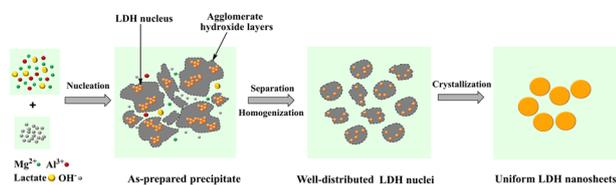
590



A self-assembled three-dimensional hierarchical nanoflower: an efficient enzyme-mimetic material for cancer cell detection that improves ROS generation for therapy

Chandran Murugan, Hyoryong Lee and Sukho Park*

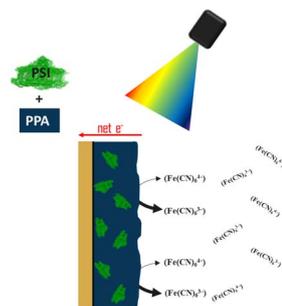
606



Controllable synthesis of layered double hydroxide nanosheets to build organic inhibitor-loaded nanocontainers for enhanced corrosion protection of carbon steel

Minh Vuong Phan,* Thi Kim Thoa Tran, Quynh Nhu Pham, Manh Huy Do, Thi Hong No Nguyen, Minh Ty Nguyen, Thanh Thao Phan and Thi Xuan Hang To

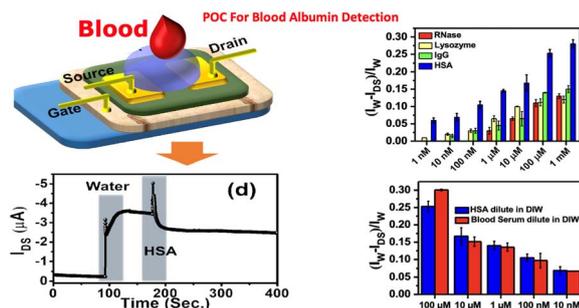
620



Interfacing poly(*p*-anisidine) with photosystem I for the fabrication of photoactive composite films

Marc A. Nabhan, Allison V. Cordova-Huaman, David E. Cliffel and G. Kane Jennings*

630



Precise and rapid point-of-care quantification of albumin levels in unspiked blood using organic field-effect transistors

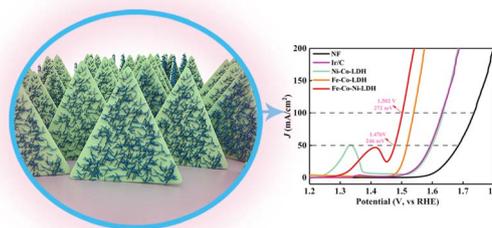
Ajoy Mandal, Suman Mandal, Samik Mallik, Sovantal Mondal, Subhendu Sekhar Bag and Dipak K. Goswami*



638

Synergistic effect of composition gradient and morphology on the catalytic activity of amorphous FeCoNi-LDH

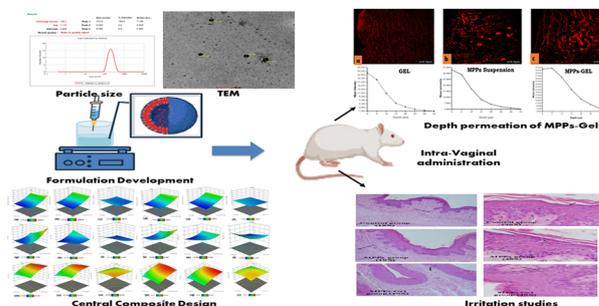
Yuan-Yuan Li,* Xiao Nan Fu, Lin Zhu, Ying Xie, Gong Lei Shao, Bing-Xin Zhou, Wei-Qing Huang, Gui-Fang Huang and Na Wang



648

In silico and *in vitro* assessment of an optimized QbD-guided myoinositol and metformin-loaded mucus-penetrating particle-based gel for the amelioration of PCOS

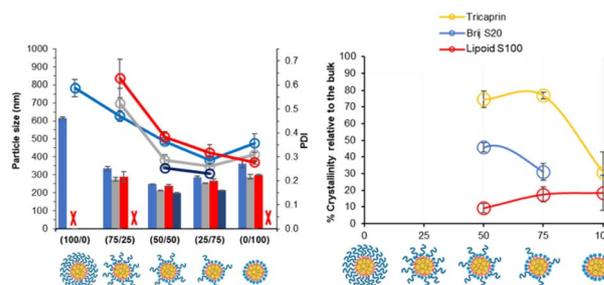
Uzma Farooq, Mohd Aamir Mirza, Abdullah Alshetali, Sradhanjali Mohapatra, Pooja Jain, Nazia Hassan, Zeenat Iqbal* and Asgar Ali*



669

Navigating the challenges of lipid nanoparticle formulation: the role of unpegylated lipid surfactants in enhancing drug loading and stability

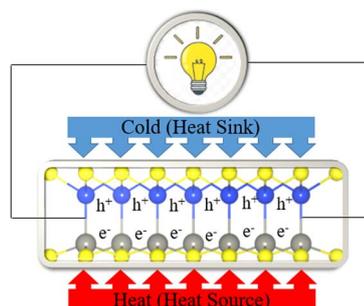
Cameron Hogarth, Keith Arnold, Steve Wright, Heba Elkateb, Steve Rannard and Tom O. McDonald*



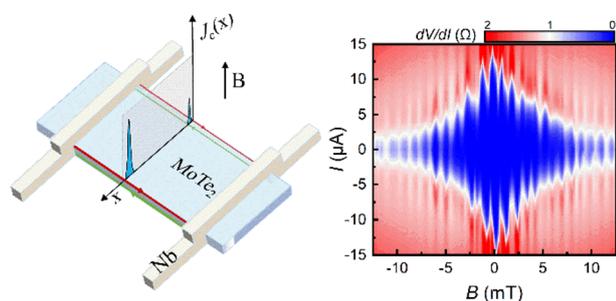
680

Optical and thermoelectric properties of new Janus ZnMN₂ (M = Ge, Sn, Si and N = S, Se, Te) monolayers: a first-principles study

Basit Ali, Muhammad Idrees, Tahani A. Alrebdi, Bin Amin and Qaisar Alam*



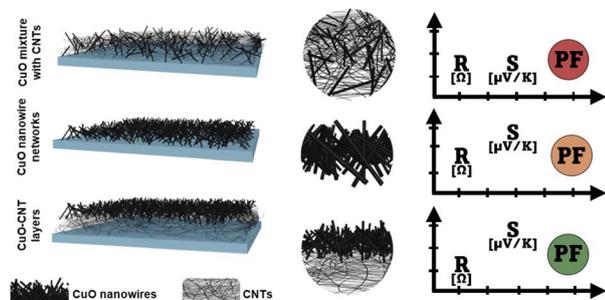
690



Asymmetric edge supercurrents in MoTe₂ Josephson junctions

Pingbo Chen, Jinhua Wang, Gongqi Wang, Bicong Ye, Liang Zhou, Le Wang, Jiannong Wang, Wenqing Zhang, Weiqiang Chen, Jiawei Mei and Hongtao He*

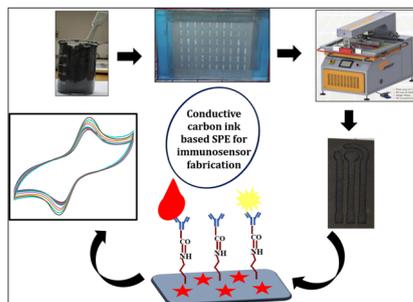
697



Synthesis and enhanced room-temperature thermoelectric properties of CuO-MWCNT hybrid nanostructured composites

Raitis Sondors, Davis Gavars, Elmars Spalva, Artis Kons, Rynno Lohmus, Margarita Volkova, Raimonds Meija and Jana Andzane*

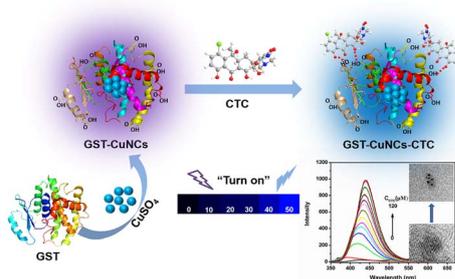
705



Nano-modified screen-printed electrode-based electrochemical immunosensors for oral cancer biomarker detection in undiluted human serum and saliva samples

Payal Gulati, Avinash Kumar Singh, Amit K. Yadav, Kiran Pasbala, Perna Pandey, Rinu Sharma, Alok Thakar and Pratima R. Solanki*

722



Glutathione S-transferase templated copper nanoclusters as a fluorescent probe for turn-on sensing of chlorotetracycline

Jiayi Wang, Wenting Chen, Lei Cao, Mengyan Zhou, Yongkang Geng, Yifei Liu, Shushu Ding* and Ding-Yi Fu*



732

Correction: A novel study on the preferential attachment of chromophore and auxochrome groups in azo dye adsorption on different greenly synthesized magnetite nanoparticles: investigation of the influence of the mediating plant extract's acidityKaouthar Ahmouda,^{*} Moussa Boudiaf and Boubaker Benhaoua