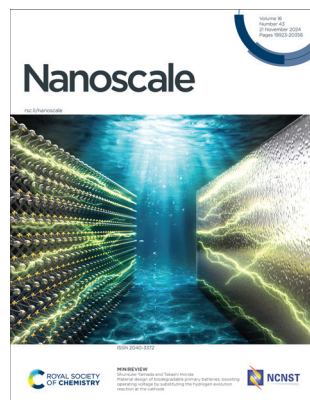


IN THIS ISSUE

ISSN 2040-3372 CODEN NANOHL 16(43) 19923–20358 (2024)



Cover

See Shunsuke Yamada and Takashi Honda, pp. 20027–20036.

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EDITORIAL

19936

Introduction to micro- and nano-motors

Li Zhang,* Martin Pumera,* Samuel Sánchez* and Xing Ma*

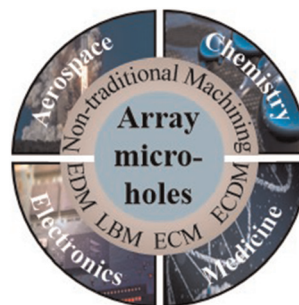


REVIEWS

19938

Developments, challenges and future trends in advanced sustainable machining technologies for preparing array micro-holes

Yang Liu, Pengfei Ouyang, Zhaoyang Zhang,* Hao Zhu,* Xiaolei Chen, Yufeng Wang, Benkai Li, Kun Xu, Jingtao Wang and Jinzhong Lu



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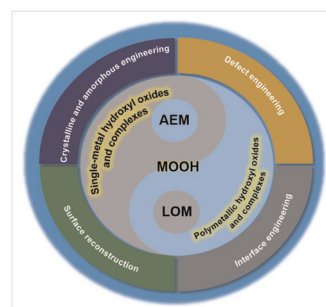
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REVIEWS

19970

Recent advances in the synthesis of transition metal hydroxyl oxide catalysts and their application in electrocatalytic oxygen evolution reactions

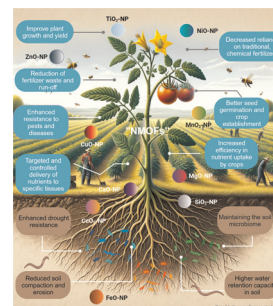
Zhi-Jie Zhang, Hui-Min Xu, Chen-Jin Huang, Ting-Yu Shuai, Qi-Ni Zhan and Gao-Ren Li*



19998

Nano-sized metal oxide fertilizers for sustainable agriculture: balancing benefits, risks, and risk management strategies

Raja Muthuramalingam Thangavelu,*
Washington Luis da Silva,* Nubia Zuverza-Mena,
Christian O. Dimkpa and Jason C. White

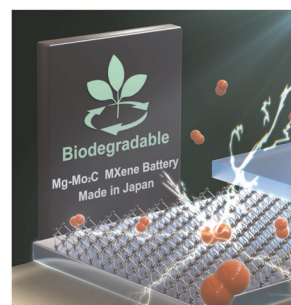


MINIREVIEWS

20027

Material design of biodegradable primary batteries: boosting operating voltage by substituting the hydrogen evolution reaction at the cathode

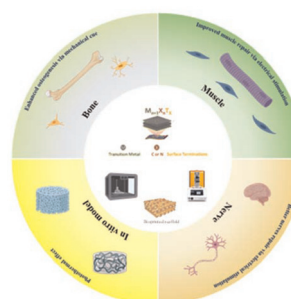
Shunsuke Yamada* and Takashi Honda



20037

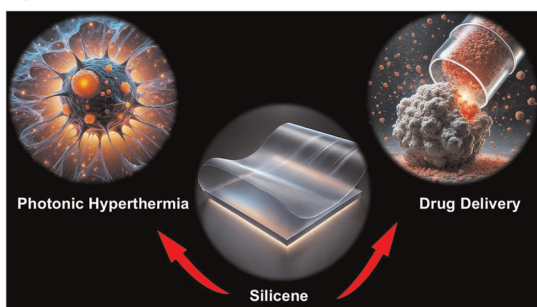
Unlocking new possibilities: application of MXenes in 3D bioprinting for advanced therapy

Yusuf Olatunji Waidi* and Nipun Jain



MINIREVIEWS

20048

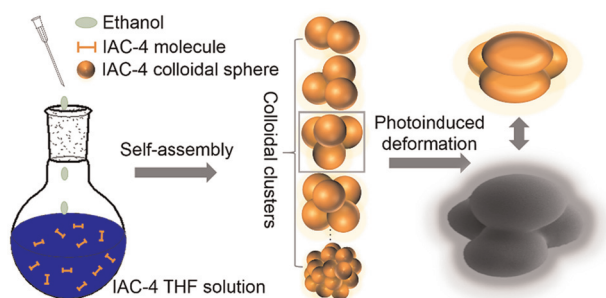


Two-dimensional silicene-based technologies in oncology: an emerging avenue

Joydip Sengupta and Chaudhery Mustansar Hussain*

COMMUNICATIONS

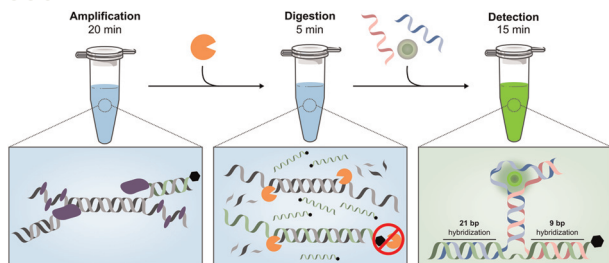
20060



Photomanipulatable colloidal clusters from the aggregation of azo molecular glass spheres

Bo Tang,* Lier Wang, Xitong Ai, Chuyi Liao, Zhiyuan Xiong, Yaning He and Xiaogong Wang*

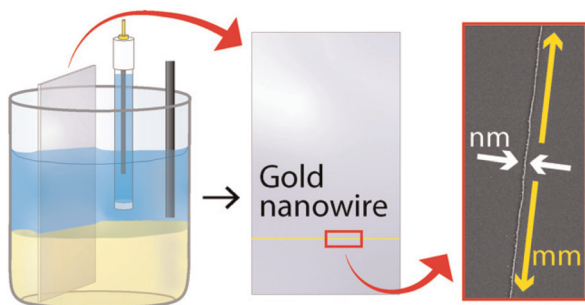
20067



Nucleic acid detection with single-base specificity integrating isothermal amplification and light-up aptamer probes

Jaekyun Baek, Jihyun Park and Youngeun Kim*

20073

Single gold nanowires with ultrahigh ($>10^4$) aspect ratios by triphasic electrodeposition

Guillermo Colón-Quintana, Thomas B. Clarke, Sakshi A. Ailawar and Jeffrey E. Dick*

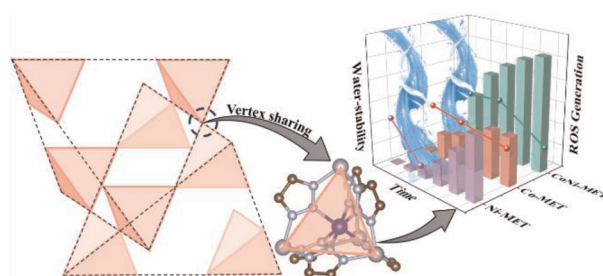


COMMUNICATIONS

20082

Dual metal centers within a water-stable Co/Ni bimetallic metal-triazolate framework contribute to durable photocatalysis for water treatment

Minling Zheng, Yubo Liu, Qifu Zhang, Wenjing Li, Yong Zhang, Guangxue Feng, Yating Hu* and Shaoming Huang

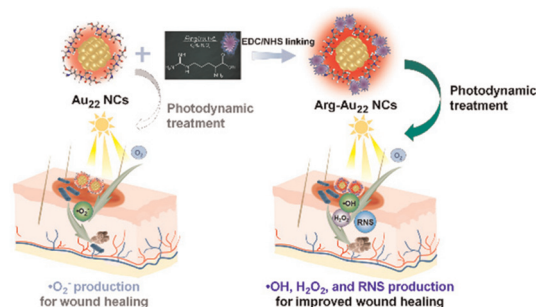


PAPERS

20089

Modulating the photodynamic modality of Au₂₂ nanoclusters through surface conjugation of arginine for promoted healing of bacteria-infected wounds

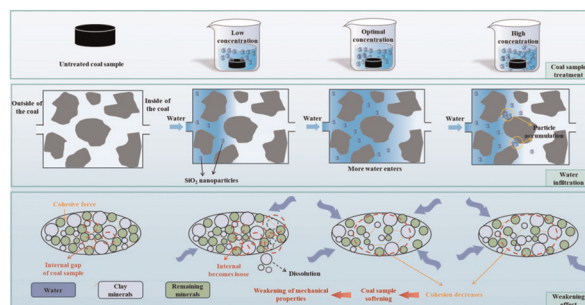
Xinyue Dou,* Sariah Saalah, Chel-Ken Chiam, Jianping Xie* and Coswald Stephen Sipaut*



20100

Effect of SiO₂ nanofluid concentration on micro-mechanical weakening behavior of coal

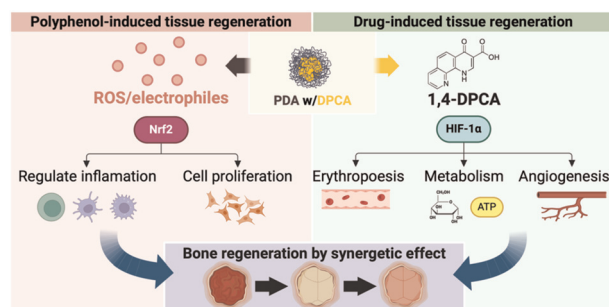
Quanle Zou, Bochao Xu,* Weizhi Wang, Yulin Hu, Ting Liu,* Qingsong Li, Tengfei Ma, Haolong Zheng and Zixuan Huo



20118

Synergistic effect of ROS-generating polydopamine on drug-induced bone tissue regeneration

Hyeju Han, Bongkyun Kang, Shazid Md. Sharker, Tabassum Binte Kashem, Yuejin Kim, Jeehee Lee, Minok Park, Eunjeong Kim, YunJae Jung, Jinkyu Lim,* Seungwon Ryu* and Kyueui Lee*



The diagram illustrates the proposed nanomedicine for EAC treatment. It shows the synthesis of FA-@-PLGA-PEG-CONH₂, its conjugation with Pirarubicin and Salinomycin, and its application in EAC-bearing mice. The nanomedicine is internalized via Nanoregistration, then binds to Folate receptors (Folatecic) and is internalized via Folatecic. It then enters the cell, where it is internalized via Endocytosis (pH 5-6), leading to Early endosome and Endo-lysosome formation. The nanomedicine then enters the Nucleus, where it triggers the destabilization of the nucleus, releasing Pirarubicin and Salinomycin, which then enter the Cytoplasm and Mitochondria (pH 7-10) to target the Cell cytoplasm and Mitochondria.

Priya Gupta, Ankushi Bansal,* Harshdeep Kaur,
Mohd Anees, Neetu Singh and Harpal Singh*

Priya Gupta, Ankushi Bansal,* Harshdeep Kaur,
Mohd Anees, Neetu Singh and Harpal Singh*

Hongmae Heo, Seonghyeon Cho, Yuhyeon Kim,
Soomin Ahn, Jeong-hun Mok, Hookeun Lee* and
Donggil Lee*

Hongmae Heo, Seonghyeon Cho, Yuhyeon Kim,
Soomin Ahn, Jeong-hun Mok, Hookeun Lee* and
Donggil Lee*

Polycaprolactone Pellets

Dissolution

Viscous Slurry

Dispersion

Graphite powder conductive filler

Solution Casting

drying

PCl4Gr6 Electrodes as current collectors

Electrodeposition of Polyaniline

Supercapacitor Testing

Potential (V) vs Time (s)

Legend: 10 A/g, 5 A/g, 2 A/g, 1 A/g, 0.5 A/g

The graph shows that the potential increases with time, with higher A/g ratios resulting in higher potential values.

Rajeev Gupta* and Monika Singhal

Rajeev Gupta* and Monika Singhal

Vapour-Solid synthesis

24h

ΔT

Ni-Te/C

Ni-Te/C for HER

Daniel Garstenauer, Patrick Guggenberger,
Ondřej Zobač, Franz Jirsa and Klaus W. Richter*

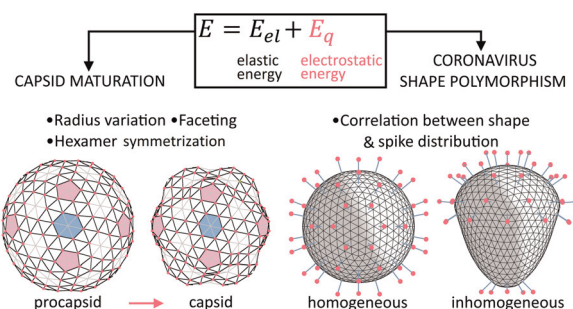
Daniel Garstenauer, Patrick Guggenberger,
Ondřej Zobač, Franz Jirsa and Klaus W. Richter*

PAPERS

20182

Electrostatic interactions and structural transformations in viral shells

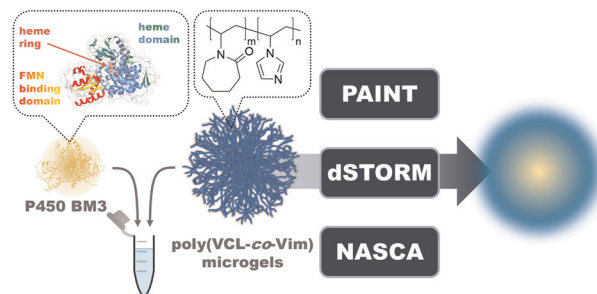
Ivan Yu. Golushko, Daria S. Roshal, Olga V. Konevtsova, Sergei B. Rochal* and Rudolf Podgornik*



20194

Nanoscopic visualization of microgel-immobilized cytochrome P450 enzymes and their local activity

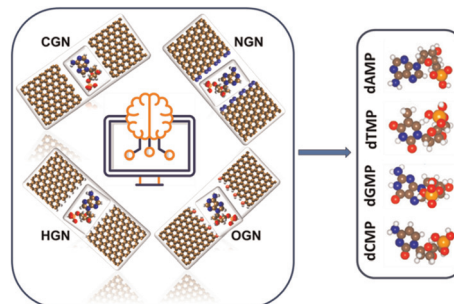
Lukas Schubert, Chiara Nenninger, Maximilian Nöth, Thomke Belthle, Robert Dirk de Lange, Andrij Pich, Ulrich Schwaneberg and Dominik Wöll*



20202

Effect of graphene electrode functionalization on machine learning-aided single nucleotide classification

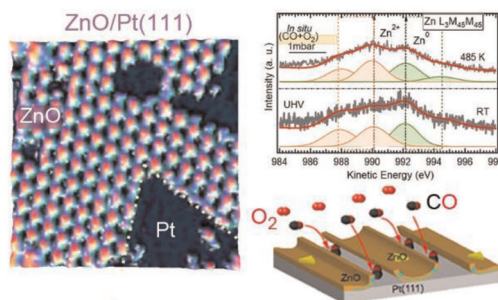
Mohd Rashid, Milan Kumar Jena, Sneha Mittal and Biswarup Pathak*



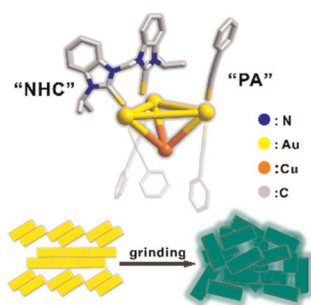
20216

Morphology–electronic effects in ultra-model nanocatalysts under the CO oxidation reaction: the case of ZnO ultrathin films grown on Pt(111)

Hang Liu, Lei Zhang, Sébastien Lebègue, Fabrice Bournel, Jean-Jacques Gallet and Ahmed Naitabdi*



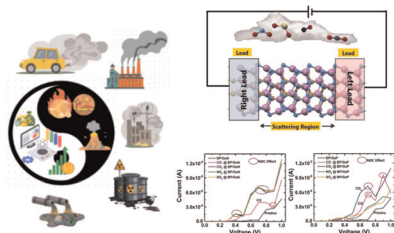
20228



N-Heterocyclic carbene-stabilized gold–copper nanoclusters: synthesis, bonding and mechanochromism

Dongjie Zuo, Huifang Guo, Qinghua Xu, Ayisha He, Zilin Li, Simin Li* and Hui Shen*

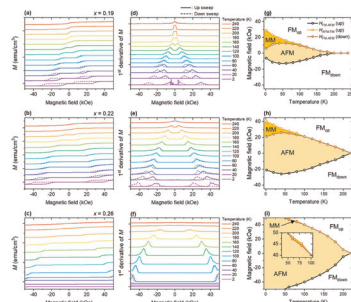
20235



BP/GaN and BP/GaP core/shell nanowires: theoretical insights into photovoltaic and gas-sensing abilities

Rishit S. Shukla, Vidit B. Zala, Sanjeev K. Gupta* and P. N. Gajjar*

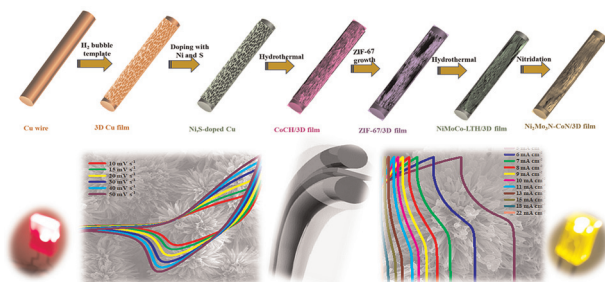
20252



Metamagnetic transition and meta-stable magnetic state in Co-doped Fe₃GaTe₂

Hyo-Bin Ahn, Hyunjong Lim, Jaegu Song, Jisung Lee, Seung-Young Park, Minwoong Joe, Chang-Jong Kang, Kyoung-Whan Kim, Tae-Eon Park, Tuson Park and Changgu Lee*

20260



Ni,S co-doped Cu dendrites decorated with core–shell architecture assisted by MOF and Fe_{0.92}Co_{0.08}S nanoflakes on nanocellulose/graphene fibers for fabrication of flexible wire-type micro-supercapacitor

Leila Naderi and Saeed Shahrokhian*

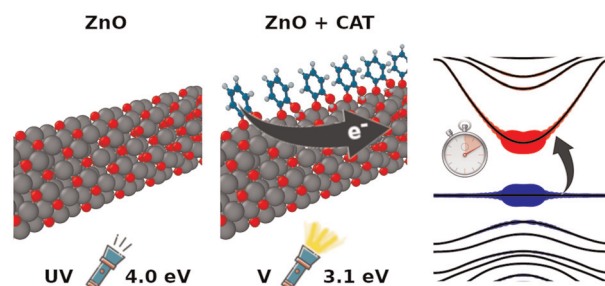


PAPERS

20280

Rationalization of the light-induced electron injection mechanism in a model 1D ZnO nanowire-dye complex: insights from real-time TD-DFTB simulations

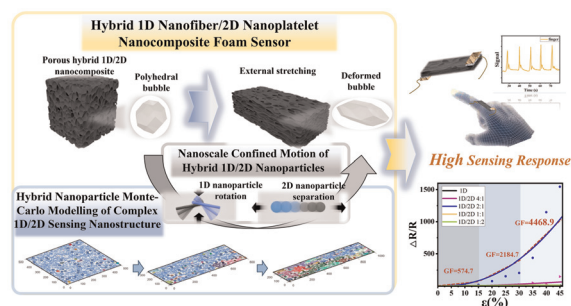
Dalma M. Márquez, Carlos R. Lien-Medrano,*
Germán J. Soldano and Cristián G. Sánchez*



20288

High sensing performance flexible nanocomposite sensor with a hybrid nanostructure constructed via nanoscale confined motion of nanofibers and nanoplatelets

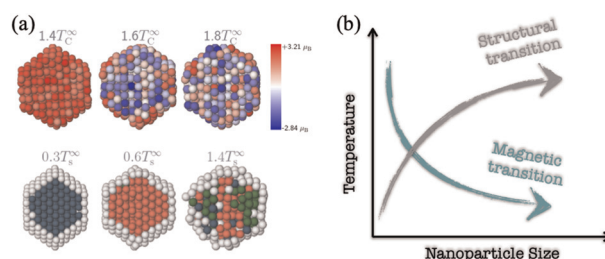
Zhenghui Xie, Feiran Meng, Junlong Yang,
Yuhong Wang, Chul B. Park, Pengjian Gong* and
Guangxian Li



20304

Size effect on the structural and magnetic phase transformations of iron nanoparticles

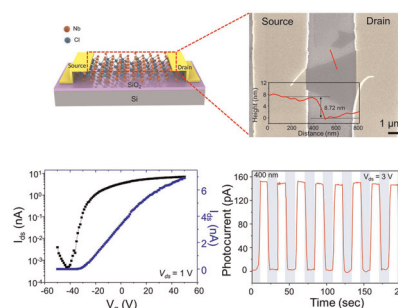
Alexis Front, Georg Daniel Förster, Chu Chun Fu,
Cyrille Barreteau and Hakim Amara



20312

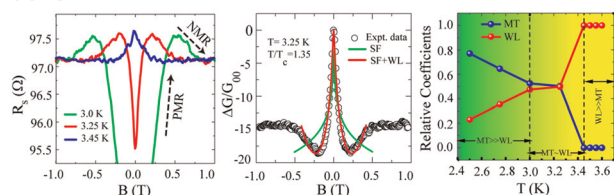
A negative photoconductivity photodetector based on two-dimensional Nb₃Cl₈

Bom Lee, Xiaojie Zhang, Jinsu Kang, Byung Joo Jeong,
Sooheon Cho, Kyung Hwan Choi, Jiho Jeon,
Sang Hoon Lee, Dahoon Kim, Yeong Hyeop Kim,
Ji-Hee Kim,* Hak Ki Yu* and Jae-Young Choi*



PAPERS

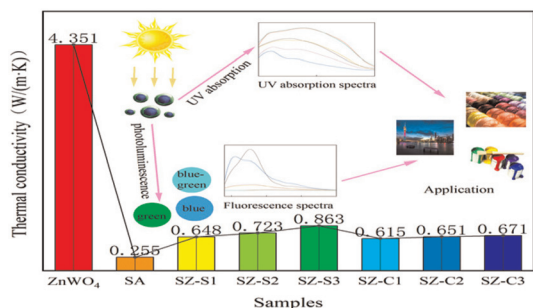
20319



Interplay between superconducting fluctuations and weak localization in disordered TiN thin films

Sachin Yadav, Bikash Gajar, R. P. Aloysius and Sangeeta Sahoo*

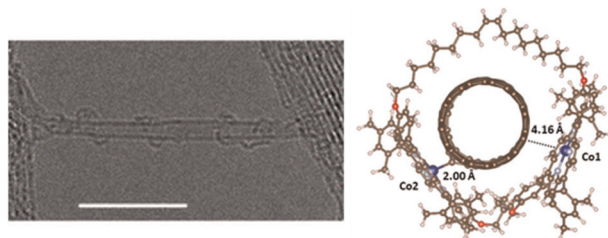
20331



Preparation and application of high thermal conductivity phase change microcapsules with fluorescence characteristics based on a ZnWO₄ shell

H. Cheng, B. Tang,* H. Y. Bao, F. Shan and C. X. Lu

20342



Magnetic dimeric metal–porphyrin rings mechanically bonded around carbon nanotubes: the role of nanotube defects modulating magnetic properties

Rocío Sánchez-de-Armas,* Nicolás Montenegro-Pohlhammer, Emilio M. Pérez, Enrique Burzurí and Carmen J. Calzado

CORRECTION

20354

Correction: Ce6-Conjugated and polydopamine-coated gold nanostars with enhanced photoacoustic imaging and photothermal/photodynamic therapy to inhibit lung metastasis of breast cancer

Ziwei Li, Fan Yang, Di Wu,* Yanhong Liu, Yang Gao, Haichen Lian, Hongxin Zhang, Zhibin Yin, Aiguo Wu* and Leyong Zeng*



RETRACTION

20356

Retraction: Enhanced activity of vancomycin by encapsulation in hybrid magnetic nanoparticles conjugated to a cell-penetrating peptide

Wenjia Zhang, Reza Taheri-Ledari, Zoleikha Hajizadeh, Ehsan Zolfaghari, Mohammad Reza Ahghari, Ali Maleki,*
Michael R. Hamblin* and Ye Tian*

