

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 7(2) 375–660 (2025)



Cover

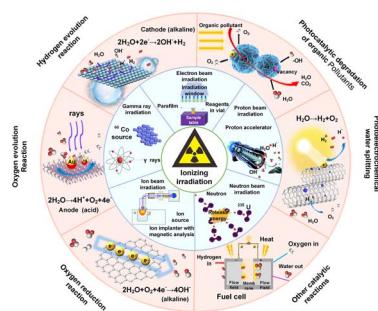
See Letizia Sambri et al.,
pp. 448–455. Image
reproduced by permission of
Letizia Sambri from *Nanoscale
Adv.*, 2025, 7, 448.

REVIEWS

384

Recent advances in irradiation-mediated synthesis and tailoring of inorganic nanomaterials for photo-/electrocatalysis

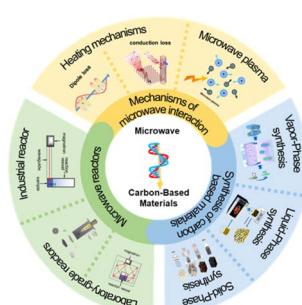
Shoushuang Huang,* Can Yue, Kajsa Uvdal
and Zhangjun Hu*



419

Advanced mechanisms and applications of microwave-assisted synthesis of carbon-based materials: a brief review

Zhaolong Li, Kaiming Peng, Nannan Ji, Wenlong Zhang,
Wenrou Tian and Zhenfei Gao*





GOLD
OPEN
ACCESS

RSC Applied Polymers

The application of polymers,
both natural and synthetic

Interdisciplinary and open access

rsc.li/RSCApplPolym

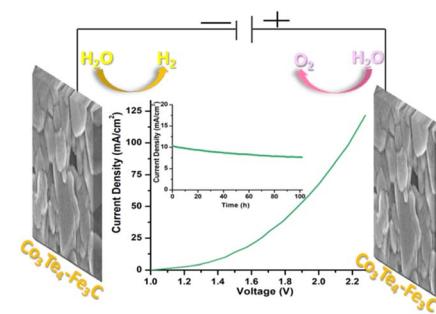
Fundamental questions
Elemental answers

COMMUNICATION

433

Facile synthesis of $\text{Co}_3\text{Te}_4\text{-Fe}_3\text{C}$ for efficient overall water-splitting in an alkaline medium

M. Abdul,* Miao Zhang, Tianjun Ma, Nouf H. Alotaibi, Saikh Mohammad and Yin-Sheng Luo

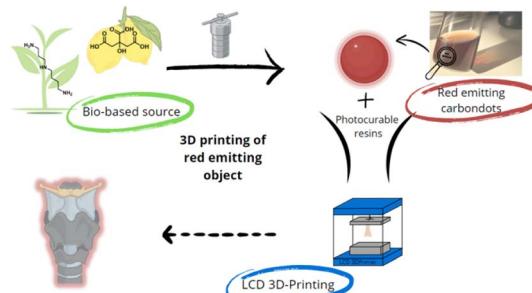


PAPERS

448

Long-chain surface-modified red-emitting carbon dots as fluorescent additives for 3D printing vat-photopolymerization

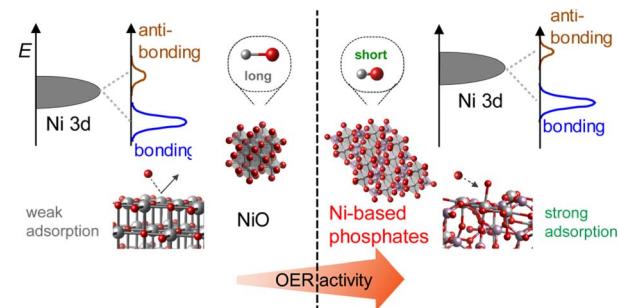
Simone Maturi, Andrea Baschieri, Erica Locatelli, Martina Bucciol, Mauro Comes Franchini and Letizia Sambrì*



456

Oxygen evolution activity of nickel-based phosphates and effects of their electronic orbitals

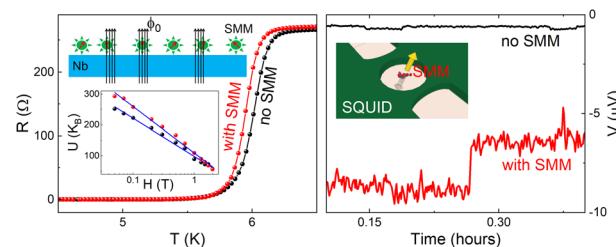
Yuuki Sugawara,* Yuto Nakase, Gopinathan M Anilkumar, Keigo Kamata* and Takeo Yamaguchi*



467

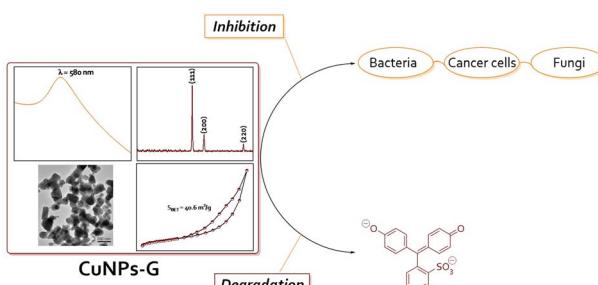
Interaction of Langmuir–Blodgett films of Mn_{12} single molecule magnets with superconducting micro-tracks and nano-SQUIDs

Bibekananda Das,* Tapas Senapati, Malaya K. Sahoo, Jogendra N. Behera* and Kartik Senapati*



PAPERS

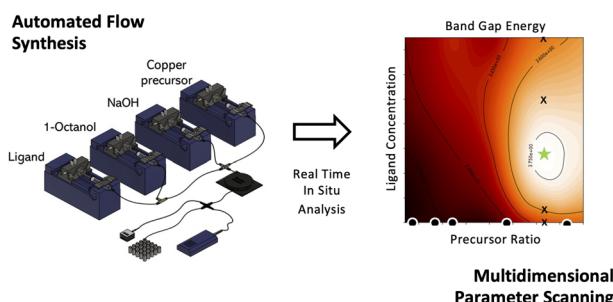
477



Studying the synthesis, antimicrobial activity, and phenol red removal of gelatin-stabilized copper nanoparticles

Trung Dien Nguyen,* Sang Thanh Ngo, Yen Hai Hoang, Nhung Thi Tuyet Thai, Huong Thi Thu Nguyen and Gia Thi Ngoc Trinh

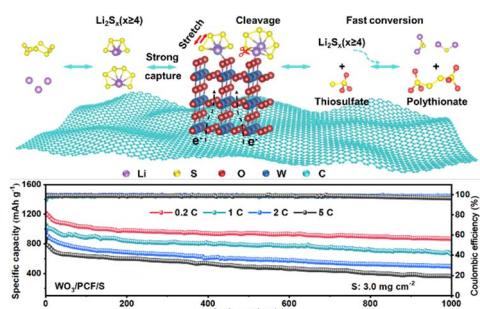
495



Flow synthesis and multidimensional parameter screening enables exploration and optimization of copper oxide nanoparticle synthesis

Neal Munyebvu, Zarina Akhmetbayeva, Steven Dunn and Philip D. Howes*

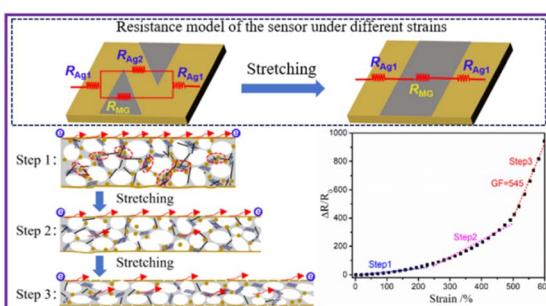
506



Tungsten oxide nanowire clusters anchored on porous carbon fibers as a sulfur redox mediator for lithium–sulfur batteries

Tongzhen Wang, Xiaofei Zhang, Jie Yang, Jiewu Cui, Jian Yan, Jiaqin Liu* and Yucheng Wu*

517



A high stretchability fiber based on a synergistic three-dimensional conductive network for wide-range strain sensing

Wei Shi, Xing Yang, Langhuan Lei, Xiaozhi Huang, Jiali Lin, Qiuyu Liang, Wei Li* and Jianrong Yang*

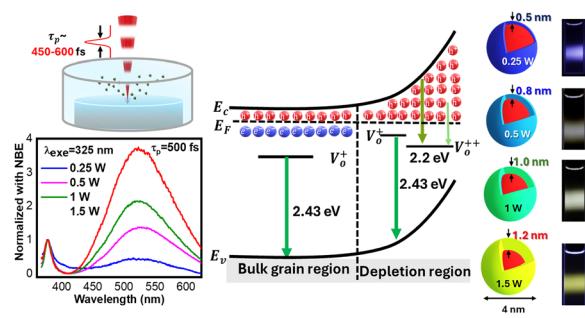


PAPERS

524

Facile control of giant green-emission in multifunctional ZnO quantum dots produced in a single-step process: femtosecond pulse ablation

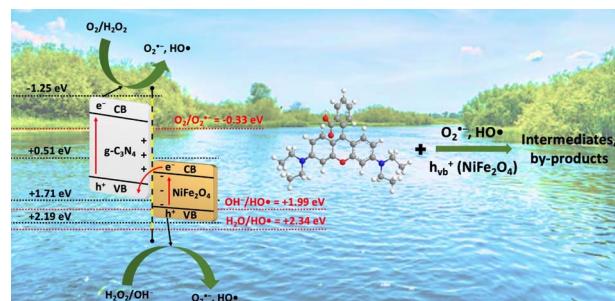
Anubhab Sahoo, Tejendra Dixit, Anshu Kumari, Sharad Gupta, R. Kothandaraman, P. P. Rajeev, M. S. Ramachandra Rao* and Sivarama Krishnan*



536

Synthesis of magnetic NiFe₂O₄/g-C₃N₄ heterojunction photocatalysts for boosting dye degradation performance under visible-light irradiation

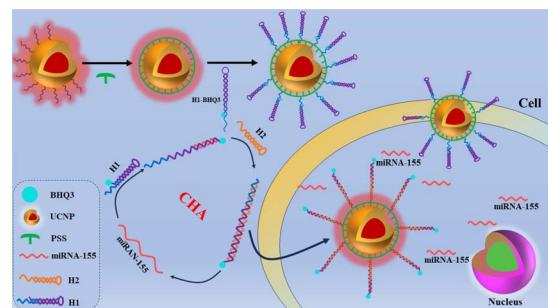
Loan Thi To Nguyen, Anh Thi Tu Duong, Nguyen Duc Bui, Viet Thi Mai Ngo, Hai Quang Nguyen, Hang Thi Thuy Nguyen, Giang Thanh Tran and Thuan Van Tran*



549

Near-infrared DNA biosensors based on polysulfonate coatings for the sensitive detection of microRNAs

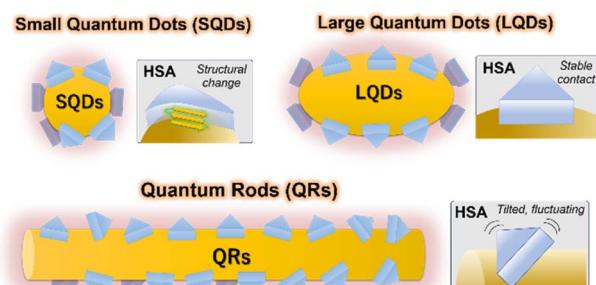
Xianghang Lin, Yang Yang, Wenzhang Zhu, Xiaorong He* and Yunliang Liu*



560

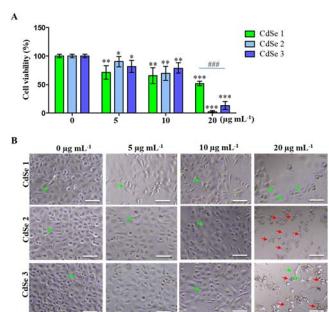
Protein corona formation on different-shaped CdSe/CdS semiconductor nanocrystals

Kunisato Kuroi,* Yuta Kanazawa, Akane Shinaridome, Yuna Yasuda, Minkyo Jung, Chan-Gi Pack and Fumihiro Fujii*



PAPERS

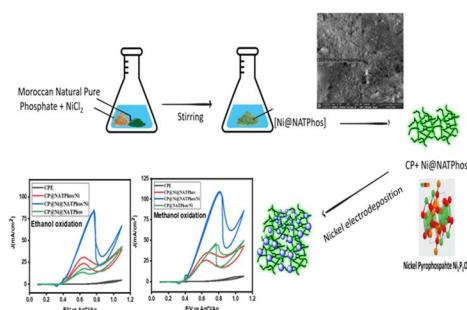
572



Chemically synthesized CdSe quantum dots induce apoptosis in AGS gastric cancer cells via ROS generation

L. T. T. Huong, N. P. Hung, N. T. Ha, N. T. Luyen, N. T. Hien, N. X. Ca and N. T. M. Thuy*

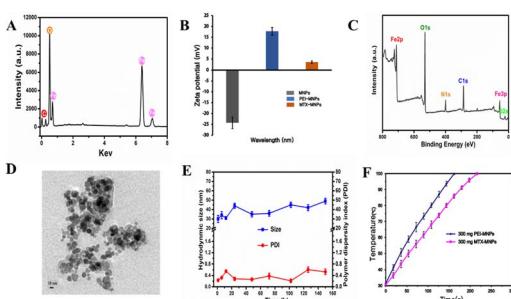
583



A sustainable approach using natural phosphates impregnated with nickel hydroxide nanoparticles: a cost-effective solution for alcohol oxidation*

Sanaa Chemchoub, Anas El Attar, Abdessamad Belgada, Saad Alami Younssi, Charafeddine Jama, Fouad Bentiss and Mama El Rhazi*

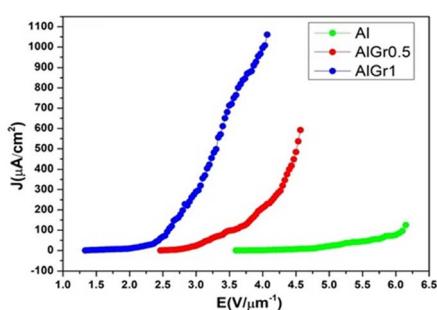
601



Study on the therapeutic effect and some immune factors by methotrexate modified superparamagnetic nanoparticles in rat mammary tumors

Li Huang, Xing Zhao, Jun Zhang, Jiquan Zhang, Weike Liao, Yanhua Fan, Jintian Tang,* Zhixu He, Fuping Gao and Weiwei Ouyang*

614



Field emission performance of graphene-incorporated aluminum-based metal matrix composite

Sunil Kumar Pradhan,* Pandiyarajan K., Shubham Patil, Padmakar G. Chavan, Raphael Longuinhos Monteiro Lobato, Jenaina Ribeiro-Soares* and Dattatray J. Late*

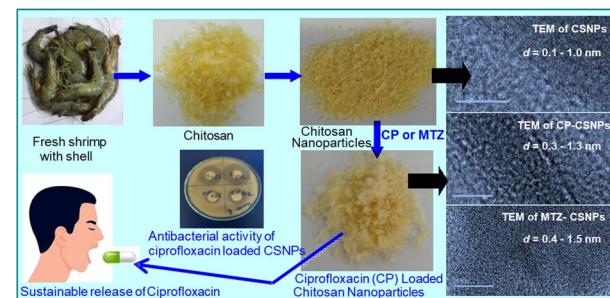


PAPERS

621

Electrostatic adsorptive loading of ciprofloxacin and metronidazole on chitosan nanoparticles to prolong the drug delivery process with preserved antibacterial activities: formulation and characterization

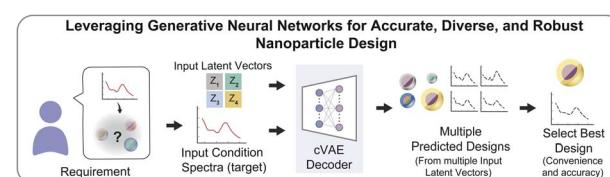
Fatema Tuj Jahura, Farhana Khanam Ferdousi, Abu Hena Mostofa Kamal, Anwar Ul-Hamid, Md. Qamrul Ehsan and Mohammad Abul Hossain*



634

Leveraging generative neural networks for accurate, diverse, and robust nanoparticle design

Tanzim Rahman, Ahnaf Tahmid, Shifat E. Arman, Tanvir Ahmed, Zarin Tasnim Rakhy, Harinarayan Das, Mahmudur Rahman, Abul Kalam Azad, Md. Wahadoszamen and Ahsan Habib*



643

Enzyme-free detection of creatinine as a kidney dysfunction biomarker using TiO₂ flow-through membranes

Nilem Khaliq, Ghafar Ali,* Muhammad Asim Rasheed,* Maaz Khan, Wazir Muhammad, Patrik Schmuki and Shafqat Karim

