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IN THIS ISSUE

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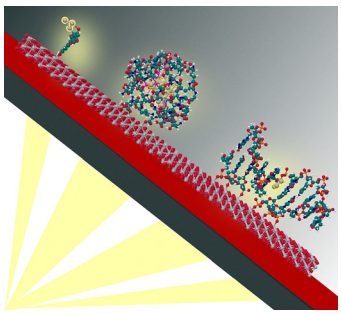
See Stefania R. Cicco *et al.*, pp. 7252–7260. Image reproduced by permission of Stefania R. Cicco from *Mater. Adv.*, 2025, **6**, 7252. Image created with assistance from Freepik.

PERSPECTIVE

7141

Beyond traditional photosensitizers in DSSCs: harnessing the optical properties of noble metal nanoclusters

Antonija Mravak, Margarita Bužančić Milosavljević and Martina Perić Bakulić*

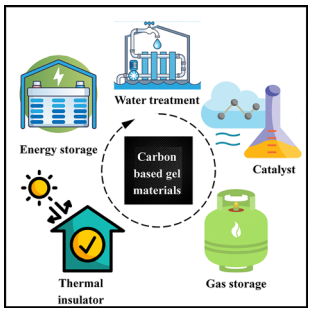


REVIEWS

7153

Carbon gel materials: synthesis, structural design, and emerging applications in energy and environmental technologies

Md Shariful Islam, Shreyase Kundu, Mst Samsunnahar, Tasmina Khandaker, Ahmed B. M. Ibrahim, Md Al Amin Mia Anik, Md. Kamrul Hasan and Muhammad Sarwar Hossain*



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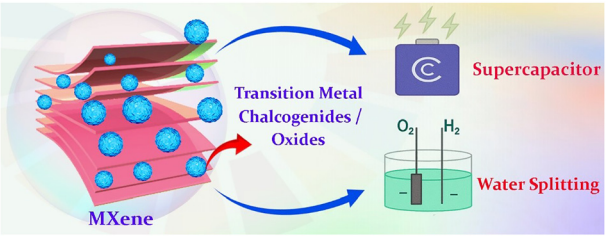
REVIEWS

7207

Transition metal oxide/chalcogenide-integrated MXene heterostructures: emerging materials for supercapacitors and water splitting

Sandra Mathew, Kalathiparambil Rajendra Pai Sunajadevi* and Dephan Pinheiro

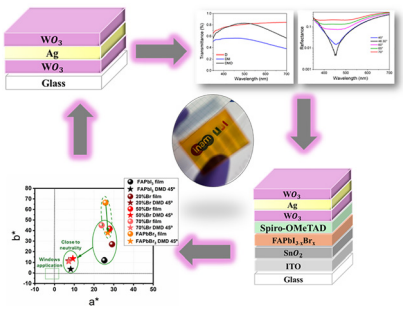


COMMUNICATION

7231

Spectroscopic matching in semitransparent solar cells with I–Br mixed halide perovskite and DMD electrode

Olfa Selmi, Antonella Lorusso, Marco Mazzeo, Jaume-Adrià Alberola-Borràs, Rosario Vidal, Eva M. Barea, Rafael S. Sánchez, Iván Mora-Seró* and Sofia Masi*

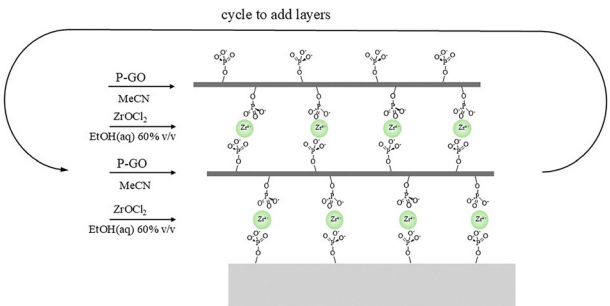


PAPERS

7243

Layer-by-layer growth of graphene oxide multilayers using robust interlayer linking chemistry. 1. Zr-bisphosphates

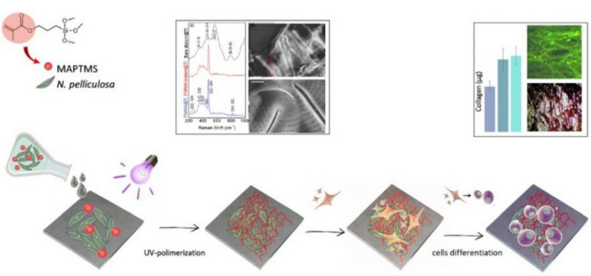
Neelanjana Mukherjee, Nancy S. Muyanja and G. J. Blanchard*



7252

Topographical modification of titanium using diatom biosilica to promote human mesenchymal stem cell proliferation and osteogenic differentiation

Rossella Labarile, Danilo Vona, Maria Michela Giangregorio, Roberto Gristina, Vincenza Armenise, Paola Albanese, Gianluca Maria Farinola and Stefania R. Cicco*



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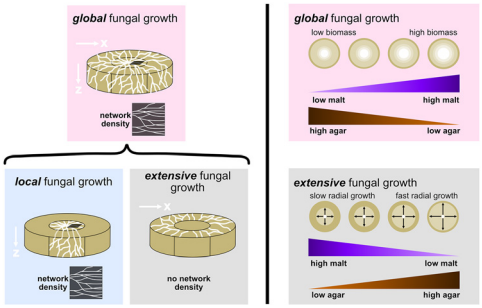
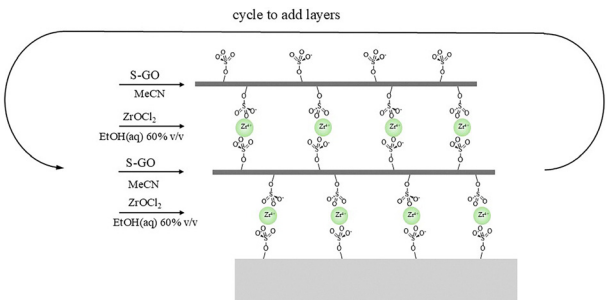
7261



Quantifying fungal growth in 3D: an ergosterol-based method to distinguish growth modes

Natalie Nussbaum,* Laura Balmelli, Nadja Steiger, Laura Nyström, Peter Fischer* and Patrick A. Rühs

7273



Layer-by-layer growth of graphene oxide multilayers using robust interlayer linking chemistry. 2 Zr–bissulfates

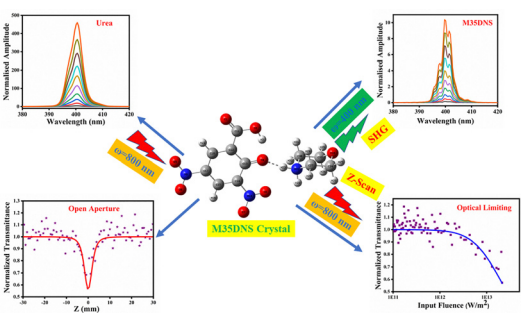
Neelanjana Mukherjee, Nancy S. Muyanja and G. J. Blanchard*

7282

Zinc-based metal organic framework loaded-electrospun PVA/PEO/L-arginine nanofibers as efficient antimicrobial scaffolds for burn skin wound healing

El-Refaie Kenawy, Zeinab S. Ghaly, Elbadawy A. Kamoun,* Wesam E. Yousuf, Abdel-baset M. Shokr, Youstina S. Salib and Eman E. Elmohamady

7297



Exploration of charge transfer interaction, terahertz analysis, Z-scan and nonlinear optical properties of morpholinium 3,5-dinitrosalicylate (M35DNS): a spectroscopic and computational approach

M. R. Kannan, Thiyagarajan Maadhu, Ajinkya Punjal, Ruturaj Puranik, Utkarsh Pandey, Shriganesh S. Prabhu, T. C. Sabari Girisun, Naini Bajaj, Amartya Sengupta, G. Vinitha and T. Vijayakumar*

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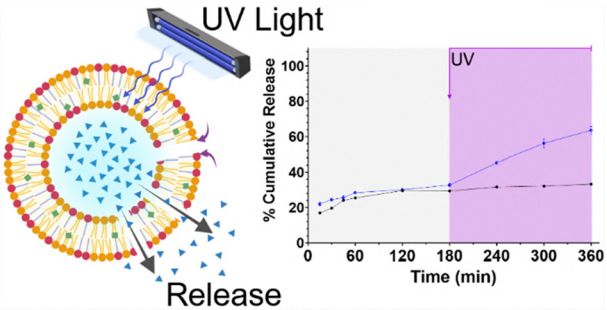
7312

On-demand photoresponsive liposomes-in-gel to prevent UV light-induced cellular damage

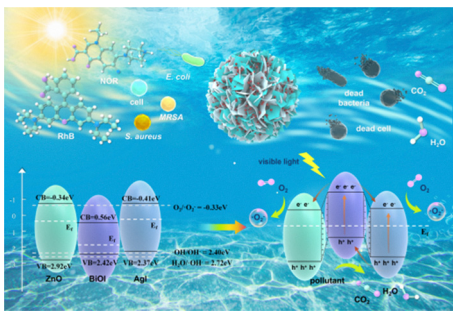
Patrick Pan, Shaun W. P. Rees, Darren Svirskis, David Barker, Geoffrey I. N. Waterhouse and Zimei Wu*



7332

A novel n–p–n type ZnO/BiOI/AgI ternary heterojunction with enhanced visible-light photocatalytic performance for pollutant degradation and antibacterial applications

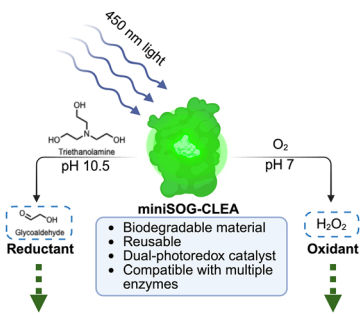
Xinxin Li, Lianjie Du, Zhou Wan, Doudou Xu* and Chen Liu*



7355

MiniSOG as a biodegradable heterogeneous photocatalyst for coupled redox biotransformations

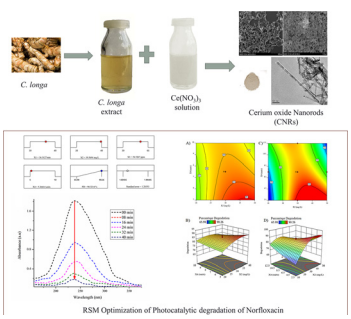
Emmanouil Broumidis and Francesca Paradisi*



7365

Green synthesized cerium oxide nanorods using *Curcuma longa* extract for response surface methodology-based photocatalytic degradation application

Jawayria Najeeb, Sadia Akram,* Sumaira Naeem, Hummera Rafique,* Muhammad Tayyab and Zara Mukaddas



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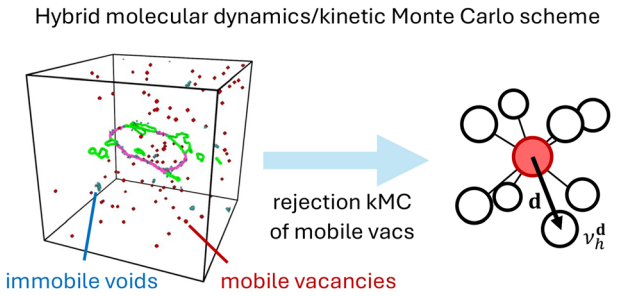
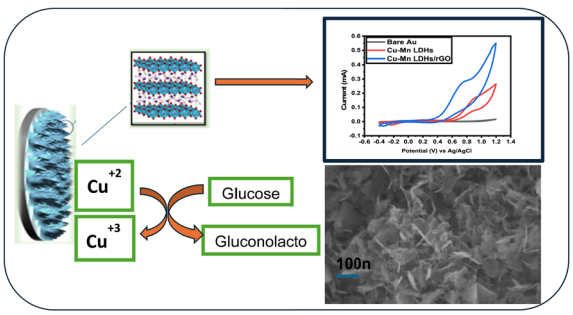
7379



Atomistic simulations of irradiation damage on the engineering timescale: examining the dose rate effect in tungsten

Max Boleininger,* Daniel R. Mason, Thomas Schwarz-Selinger and Pui-Wai Ma

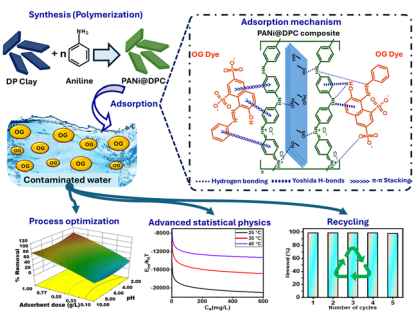
7395



Electrochemical detection of glucose and nitrophenol using a novel CuMn-LDHs/r-GO nanocomposite

Sumbal Tahir, Farhat Saira,* Hira Noor and Humaira Razzaq*

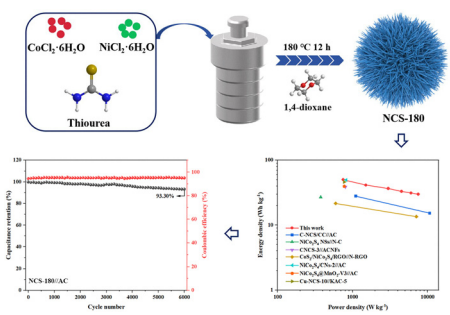
7409



A hybrid polyaniline/dolomite–palygorskite framework for environmental remediation: experimental design and molecular-level adsorption interpretation

Samira El Omari,* Abdelaziz Imgharn,* Youness Abdellaoui, Oscar May Tzuc, Abdallah Albourine, Lahcen Bazzi, Mohamed Laabd* and Karim Benhabib

7427



One-step solvothermal synthesis of nickel–cobalt sulfides in a low coordination 1,4-dioxane solvent for supercapacitors

Yao Lei, Qiwei Xu, Yiru Miao* and Jiarong Shi*

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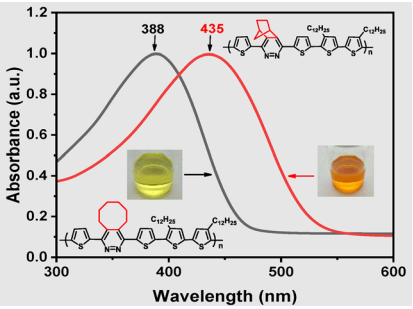
7436

Modification of electron acceptors with fused alicyclic rings through inverse electron-demand Diels–Alder reactions to tune the optical properties of conjugated polymers

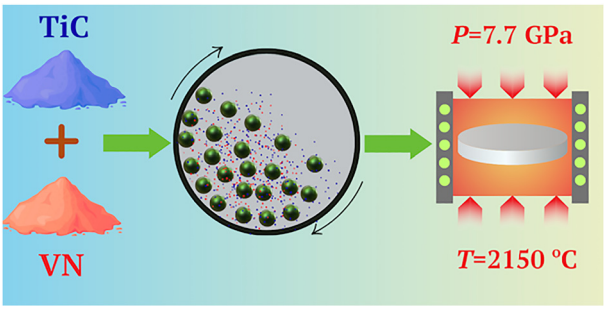
Dinghui Chen, Kang Le Osmund Chin, Xiang Yun Debbie Soo, Feng Xia Wei, Ke Li, Pin Jin Ong, Qiang Zhu, Xizu Wang, Teck Lip Dexter Tam, Zhuang Mao Png, Ming Hui Chua, Hong Meng* and Jianwei Xu*



7443

Formation of the (Ti,V)(C,N) solid solutions by HPHT sintering of mechanically alloyed TiC–VN powder mixtures

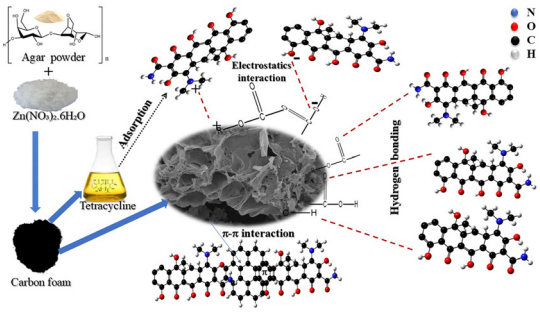
N. M. Belyavina, V. V. Kuryliuk,* A. M. Kuryliuk, D. A. Stratiichuk, S. P. Starik and O. I. Nakonechna



7450

Carbon foams derived from biomass with ultra-high adsorption capacity for the removal of tetracycline

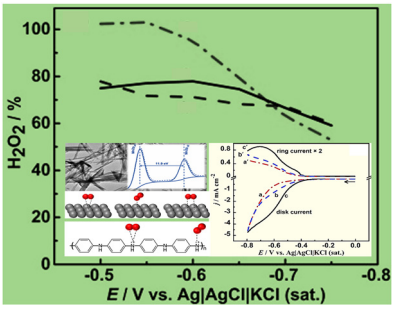
Meena Choudhary, Nandana Chakinala,* Pooja Saini, Praveen K. Surolia* and Anand Gupta Chakinala*



7469

Inverse nanocomposites of polyaniline/MnO_2 nanorods for efficient production of hydrogen peroxide through electrocatalytic oxygen reduction in acidic solution

Md Yeasin Pabel, Muhammed Shah Miran and Md. Mominul Islam*



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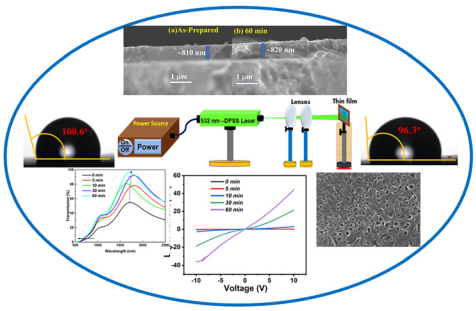
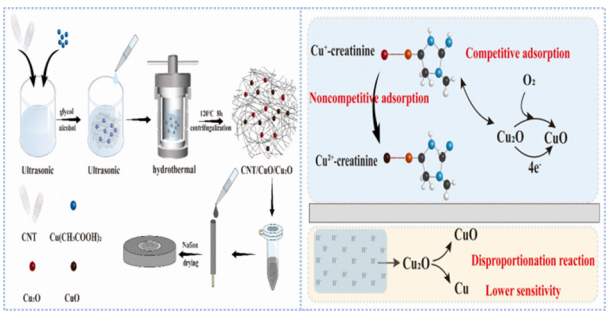


High photo detectivity and responsivity under time-dependent laser-irradiation of $Cu_{40}Sb_{40}S_{20}$ thin films for photodetector application

Laxmikanta Mahapatra, Prabhukrupa C. Kumar, P. Pradhan, D. Alagarasan, C. Sripan and R. Naik*

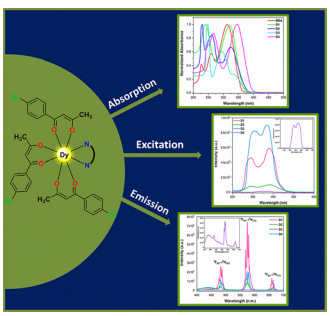
7494



Unveiling superior creatinine detection: advanced electrochemical biosensor with remarkable sensitivity

Taotao Liang,* Yan Zhang, Junfeng Guo, Jingtong Lv, Tao Hu, Xiaogang Guo,* Chuyue Tang* and Lin Guo*

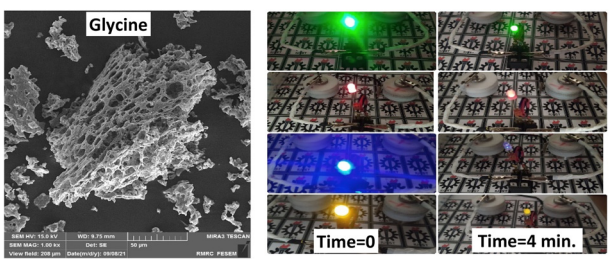
7505



Dysprosium(III) complexes as potential near-white light emitters: a comprehensive study on the influence of coordination environment

Sofia Malik, Komal Jakhar,* Devender Singh,* Swati Dalal, Vandana Aggarwal, Sumit Kumar, Parvin Kumar and Jayant Sindhu

7517



Facile synthesis of $CoFe_2O_4$ powders for aqueous charge storage

M. R. Manei and S. M. Masoudpanah*

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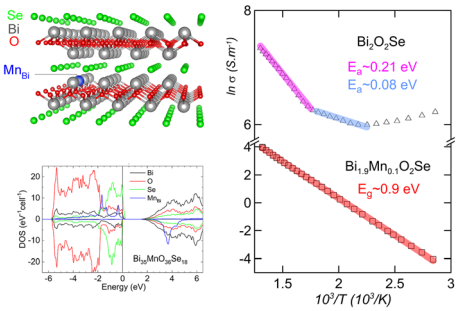
7526

Mn-doping reveals a thermal gap and natural p-type conductivity in Bi_2O_2Se

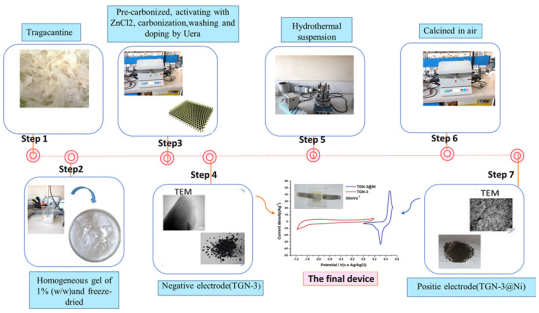
Antonín Sojka, Jan Zich, Tomáš Plecháček, Petr Levinský, Jiři Navrátil, Pavlína Ruleová, Stanislav Šlang, Ludvík Beneš, Karel Knížek, Václav Holý and Čestmír Drašar*



7535

Capacitive behavior of electrodes prepared using tragacanth gum modified at various ratios and temperatures

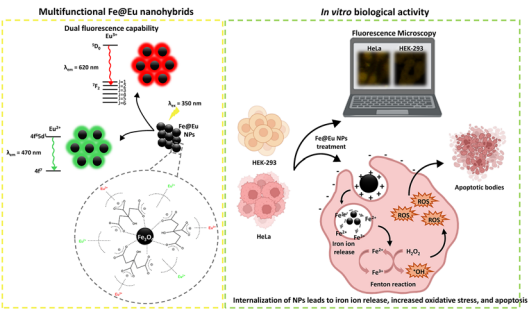
A. Aliabadi, M. S. Rahmanifar,* B. Sohrabi,* H. Aghaei and K. Zare



7552

Engineering of two-in-one Fe@Eu nanoparticles through hydrothermal synthesis: bimetallic hybrids for theranostic applications

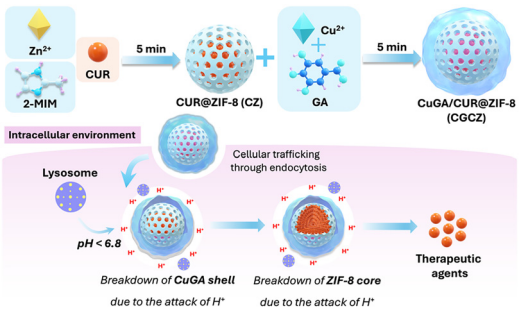
Evangelia Tsitsou, Danai Prokopiou, Athina Papadopoulou, Alexandros K. Bikogiannakis, Georgios Kyriakou, Elias Sakellis, Nikos Boukos, Marios Kostakis, Nikolaos S. Thomaidis and Eleni K. Efthimiadou*



7574

Exploring bioMOF-on-MOF hybrid nanostructure for controlled drug release: characterization, kinetic modeling, and *in vitro* evaluation

Luan Minh Nguyen, Giao Thuy Quynh Vu, Manh Hoang Tran, Thi My Huyen Nguyen, Tan Phat Nguyen, Qui Thanh Hoai Ta, Dieu Linh Tran and Dai Hai Nguyen*



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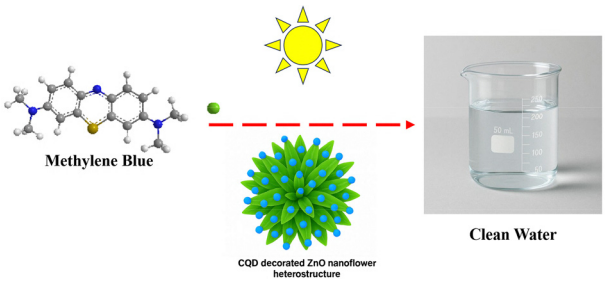
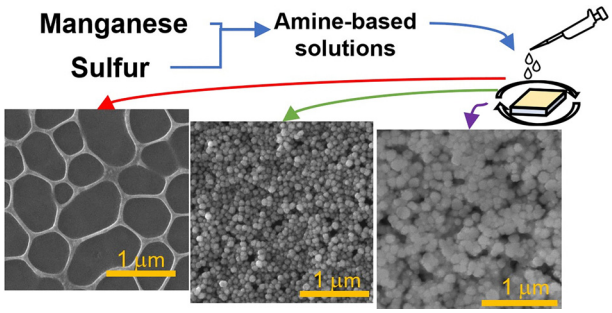


Nanoflower-like ZnO–carbon quantum dot heterostructures for solar-driven degradation of methylene blue: a high-performance and recyclable photocatalyst for sustainable wastewater treatment

Hitesh Bansal, Palkaran Sethi and Soumen Basu*

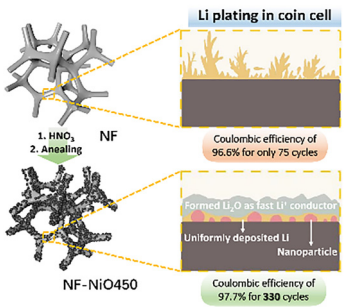
7599



Nanostructured MnS-based thin films deposited from propylamine solutions of elemental sulfur and manganese

Jiri Jancalek,* Michal Kurka, Jhonatan Rodriguez-Pereira, Stanislav Slang and Milos Krbal

7609



Nickel oxide-modified nickel foam current collectors for uniform lithium deposition at the anode

Hao He, Zhao Yu, Yongsheng Hu, Shenmin Zhu, Yanyu Li, Yanjie Liu, Yue Miao, Yao Li* and Di Zhang

CORRECTION

7618

Correction: Substitution-induced changes in the structure, vibrational, and magnetic properties of $BiFeO_3$

I. Kallel, Z. Abdelkafi,* N. Abdelmoula, H. Khemakhem, N. Randrianantoandro and E. K. Hlil

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