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IN THIS ISSUE

ISSN 2633–5409 CODEN MAADC9 5(8) 3069–3520 (2024)

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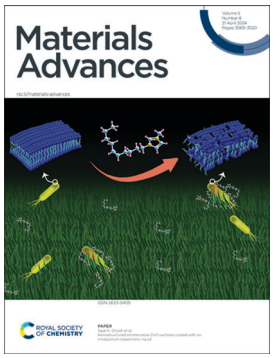

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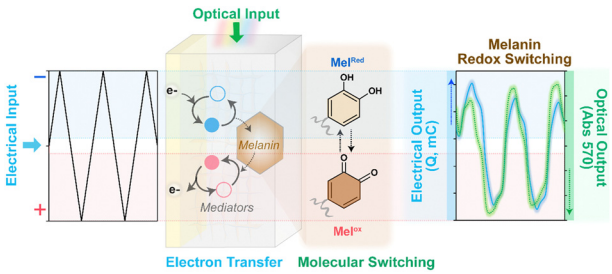
REVIEWS

3082

Enlisting electrochemistry to reveal melanin's redox-related properties

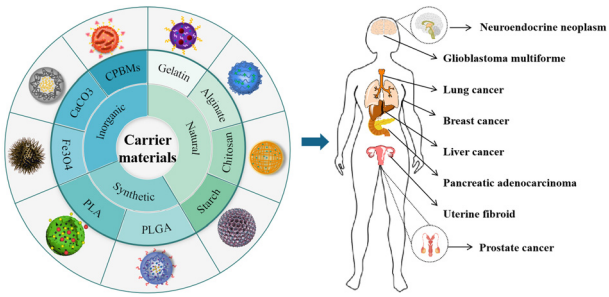
Eunkyoung Kim, Zheng Wang, Jun Wei Phua, William E. Bentley, Ekaterina Dadachova, Alessandra Napolitano and Gregory F. Payne*



3094

Application of biodegradable microsphere injections: an anticancer perspective

Huanhuan Cai, Aixue Li, Fu Qi, Rongmei Liu, Xiaomeng Tang, Dan Li, Yongwei Gu* and Jiyong Liu*



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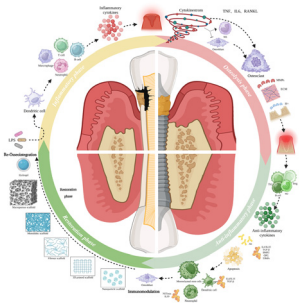
REVIEWS

3113

Harnessing osteoimmunity to treat peri-implant inflammatory osteolysis

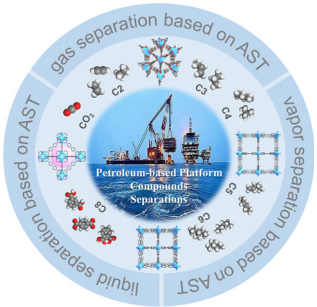
Zijun Chen, Yuxi Wang, Rui Yang, Xiangdong Liu, Guanhua Zhang, Qun Lu,* Wei Ma* and Yingliang Song*



3135

Metal–organic frameworks for petroleum-based platform compound separations

Xiaolai Zhang, Xiaokang Wang, Fei Gao, Yue Chen, Hongyan Liu, Pengfei Zhou, Zixi Kang, Yutong Wang* and Weidong Fan*

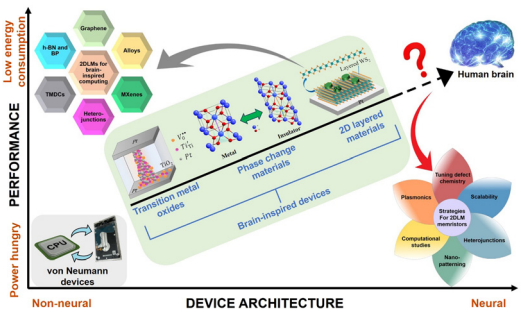


PERSPECTIVE

3158

Brain-inspired computing: can 2D materials bridge the gap between biological and artificial neural networks?

Deependra Kumar Singh* and Govind Gupta*

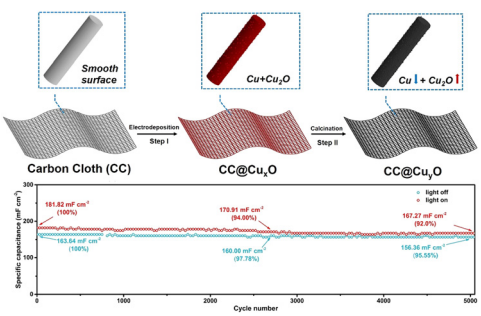


COMMUNICATION

3173

Modulation of Cu/Cu_2O nanoparticles to promote the photocurrent response for light-enhanced pseudocapacitive charge storage

Jing Xie, Yuhao Zhong, Weiting Meng, Xiaobo Feng and Ting Zhu*



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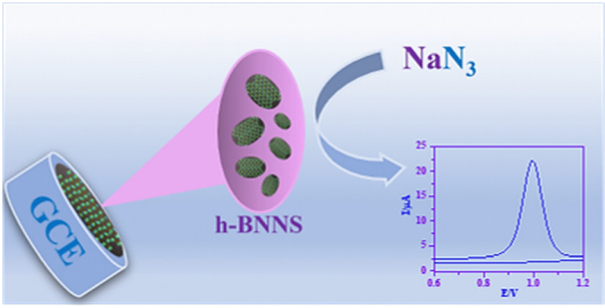
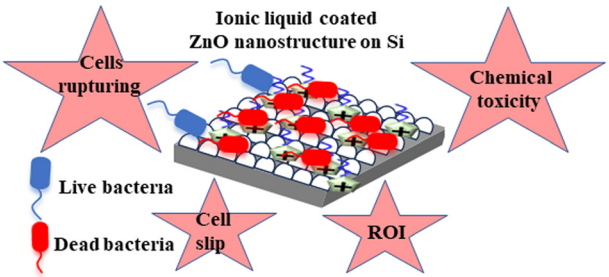


Nanomolar level electrochemical sensing of explosive material sodium azide by a hexagonal boron nitride modified glassy carbon electrode

Arya Nair J. S. and Sandhya K. Y.*

3186



Nanostructured antimicrobial ZnO surfaces coated with an imidazolium-based ionic liquid

Ajit Seth, Meet Raval, Bishwajit Mandal, Prashant Hitaishi, Priya Mandal, Samarendra P. Singh and Sajal K. Ghosh*

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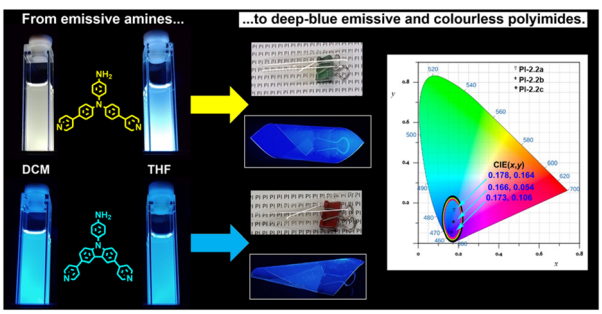
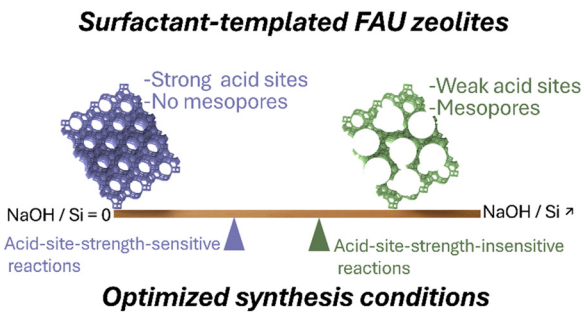


Deep-blue emissive and colourless polyimides: optical property tuning by triphenylamino and carbazole chromophores

Pavel Šimon, Jakub Štrojsa, Milan Klikar, Zuzana Burešová, Aleš Růžička, Jiří Zelenka, Jiří Kulhánek and Jiří Tydlitát*

3207



Correlating mesoporosity/acidity with catalytic performances for surfactant-templated mesoporous FAU zeolites

Yong Zhou, Anne Galarneau,* Jeremy Rodriguez, Maksym Opanasenko and Mariya Shamzhy*

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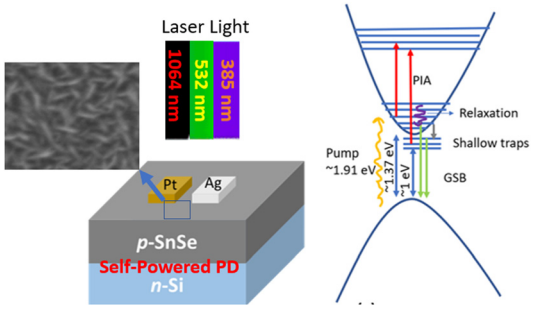
Detrapping of the carriers from shallow states in a highly responsive, fast, broadband (UV-vis-NIR), self-powered SnSe/Si photodetector with asymmetric metal electrodes

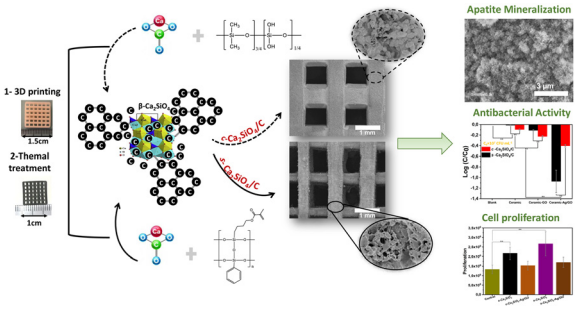
Manoj Kumar, Sanju Rani, Kuldeep Singh Gour, Kapil Kumar, Reena Yadav, Sudhir Husale, Mahesh Kumar and Vidya Nand Singh*



3228

3D printed bioactive calcium silicate ceramics as antibacterial scaffolds for hard tissue engineering

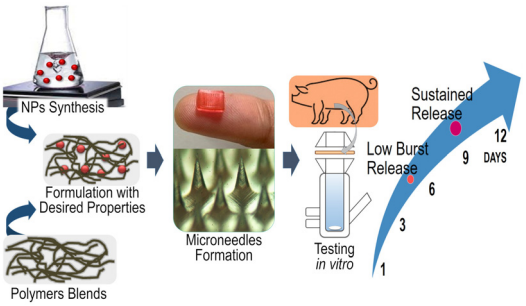
Joelle El Hayek, Habib Belaid, Louis Cornette de Saint Cyr, Ghenwa El Chawich, Emerson Coy, Igor Iatsunskyi, Christel Gervais, Jeevithan Elango, Camilo Zamora-Ledezma, Mikhael Bechelany, Michel Nakhl, Damien Voiry, Philippe Miele, Mirvat Zakhour, Laurence Soussan and Chrystelle Salameh*



3247

A microneedle transdermal patch loaded with iron(II) nanoparticles for non-invasive sustained delivery to combat anemia

Bhavya Surekha, Parimal Misra, Anitha C. Thippaiah, Bindiganavale R. Shamanna, Aiswarya Madathil and Marina Rajadurai*



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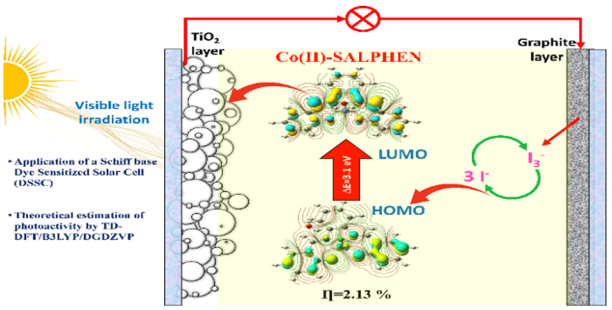
Effect of metal ions in the electron-transfer mechanism on the photovoltaic performance of SALPHEN-based DSSC: experimental and theoretical studies

José Guadalupe Hernández, Carlos Alberto Huerta Aguilar, Jayanthi Narayanan,* Eduardo Daniel Tecuapa Flores, Pandiyan Thangarasu,* Aldo Hernández Ramírez, Karthika Shanmugam and Mayra Margarita Luna Martinez



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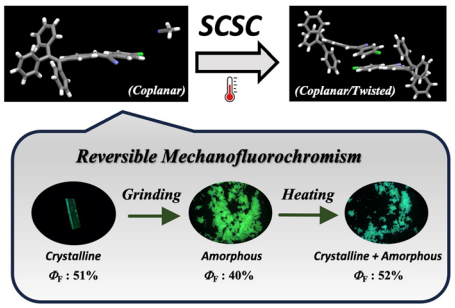

Halogen substituted tetraphenylethylene AIEgens: facile single-crystal-to-single-crystal transformation, polymorphism and mechanofluorochromism

Yong Cao, Chengjun Pan* and Jinjia Xu*

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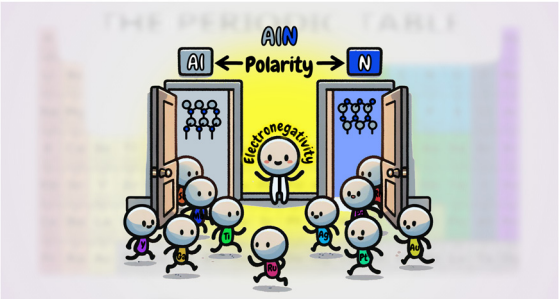

Unravelling the polarity preference and effects of the electrode layer on wurtzite aluminum nitride for piezoelectric applications

Zicong Marvin Wong, Gang Wu and Ramanarayan Hariharaputran*

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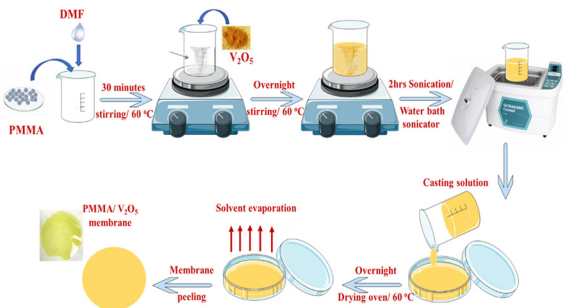

Advantages incorporating V_2O_5 nanoparticles into PMMA composite membranes for the structural, optical, electrical, and mechanical properties for conductive polymeric membrane applications

Mabkhoot A. Alsaiari, Mohamed Morsy, Mona Samir, Abdulaziz Al-Qahtani, Rami Aslsaiari, Ali Alsaiari, Elbadawy A. Kamoun,* Ahmed I. Ali* and Galal H. Ramzy

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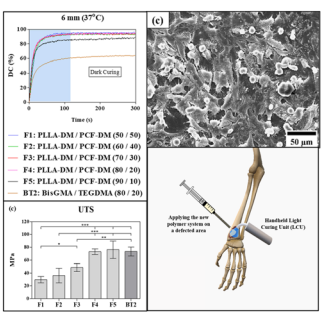

Design and development of a new flowable and photocurable lactide and caprolactone-based polymer for bone repair and augmentation

A. S. Hamidi, M. A. Hadis, R. L. Williams, L. M. Grover and W. M. Palin*

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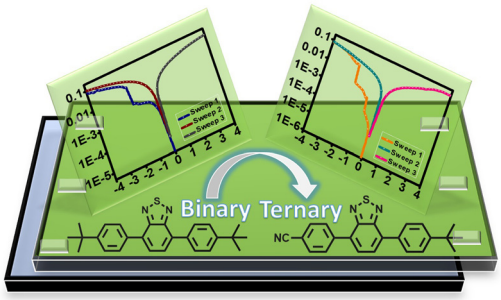
Switching from binary to ternary WORM memory behavior of benzothiadiazole-based D–A system

Paliyottil Kesavan Bhagyanath, Varghese Maria Angela, Hait Asit, Predhanekar M. Imran, Nattamai S. P. Bhuvanesh and Samuthira Nagarajan*



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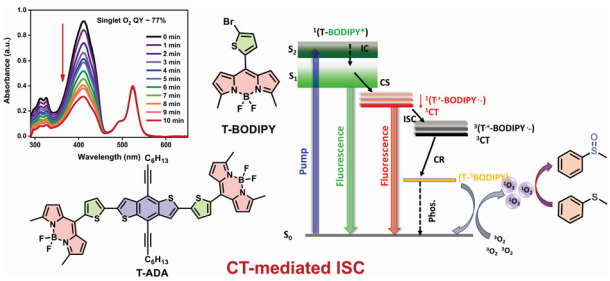
BODIPY-based regioisomers and a donor–acceptor rotor as organic photosensitizers for maximizing singlet oxygen quantum yields and for the photooxidation of thioanisole

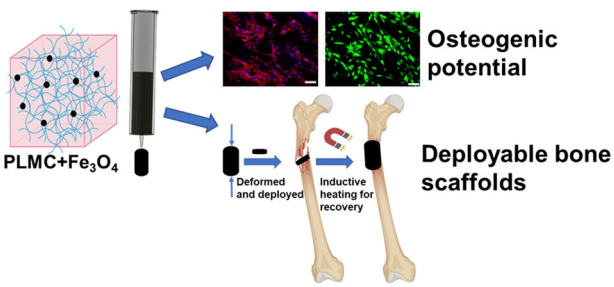
Sushil Sharma, Sakshi Chawla, Vidushi Gupta, Arijit K. De* and Sanchita Sengupta*



3345

4D printed biocompatible magnetic nanocomposites toward deployable constructs

Saswat Choudhury, Akshat Joshi, Debayan Dasgupta, Ambarish Ghosh, Sonal Asthana and Kaushik Chatterjee*



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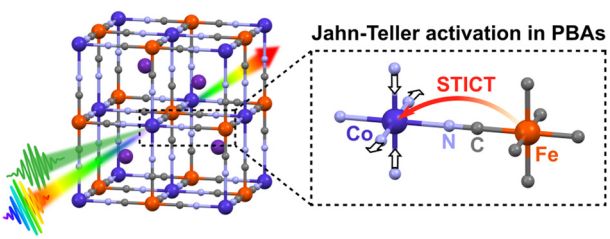
Detection of a Jahn–Teller mode as an ultrafast fingerprint of spin-transition-induced charge transfer in CoFe Prussian Blue Analogue

Marius Hervé,* Bogdan Marekha, Sandra Mazerat, Talal Mallah, Marco Cammarata, Samir F. Matar, Stefan Haacke, Jérémie Léonard and Eric Collet*



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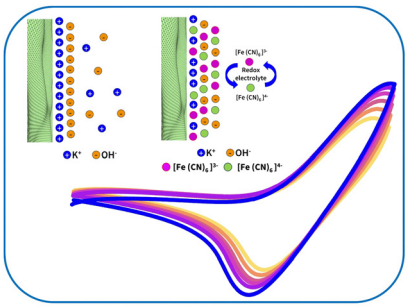
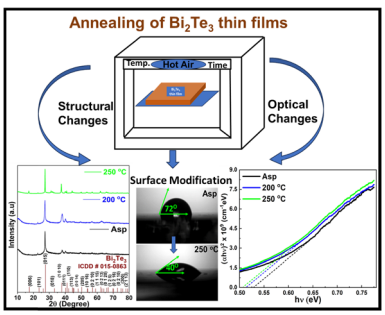


Augmenting the performance of thermally deoxygenated graphite oxide supercapacitor electrodes using 6 M KOH electrolyte with $K_3Fe(CN)_6$ redox additive

Arsha M S and Biju V*

3379



Temperature dependent Raman and photoresponse studies of Bi_2Te_3 thin films annealed at different temperatures for improved optoelectronic performance

S. Das, S. Senapati, D. Alagarasan and R. Naik*

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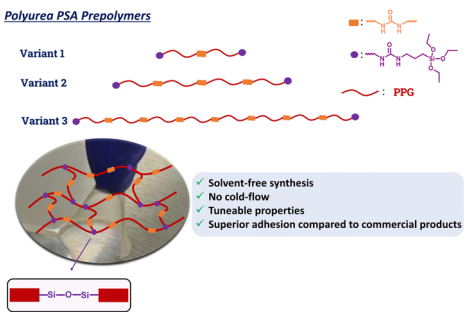

Moisture-cured solvent free silylated poly(ether-urea) pressure-sensitive adhesives (PSAs) for use as skin adhesives for application in transdermal drug delivery (TDD)

Spyridon Efstathiou, Gabit Nurumbetov, Andrew Ross, Yongguang Li and David M. Haddleton*

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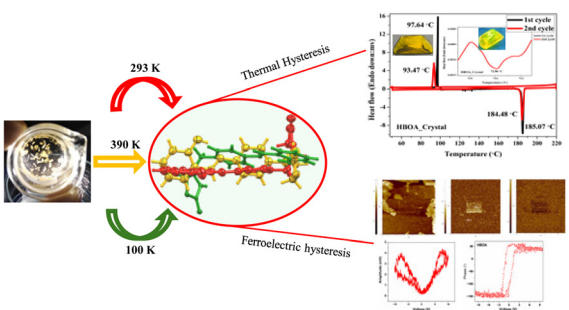

Designing multifunctional organic thermochromic ferroelectric materials: remarkable melt-cool large thermal hysteresis of reversible single crystal to single crystal transformation

Rekha Kumari, Arnab De, Aninda Jiban Bhattacharyya and T. N. Guru Row*

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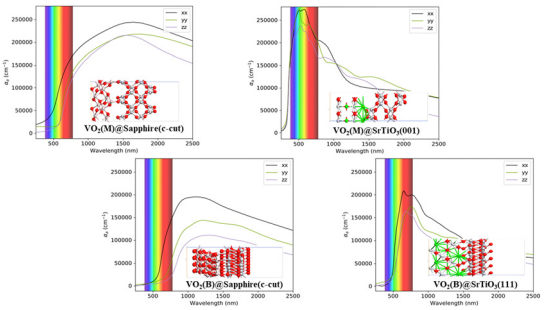
Insights into the interfaces of VO_2(M) and VO_2(B) polymorphs with different substrates

Elaheh Mohebbi, Eleonora Pavoni, Luca Pierantoni, Pierluigi Stipa, Emiliano Laudadio* and Davide Mencarelli



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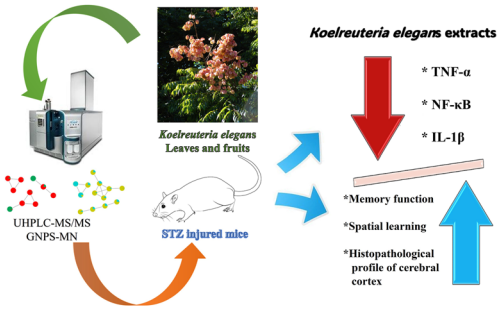
Unveiling the functional components and anti-Alzheimer's activity of *Koelreuteria elegans* (Seem.) A.C. Sm. using UHPLC-MS/MS and molecular networking

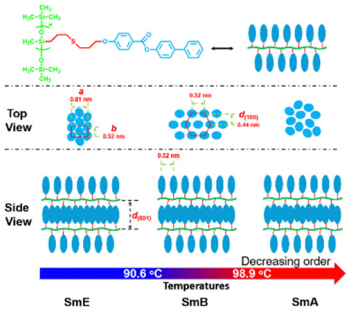
Mohamed S. Demerdash, Reem T. Attia, Moshera M. El-Sherei, Wafaa M. Aziz, Sherif Ashraf Fahmy* and Marwa Y. Issa*



3450

Finely tuning the self-assembled architectures of liquid crystal polymers by molecular engineering: phase transitions derived from terminal group variations

Wenhuan Yao,* Yanxia Wang, Lansheng Liu, Anzhi Ma, Jie Zhao, Zhengrui Ma, Lanying Zhang* and Ruochen Lan*



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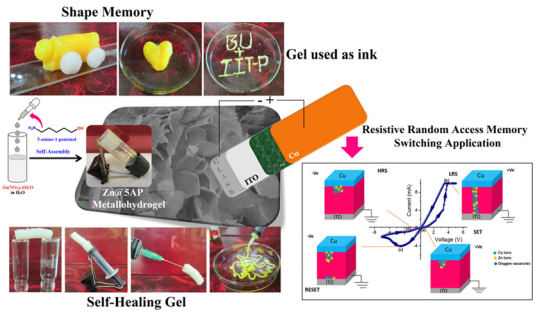
A Zn(II)-metal ion directed self-healing wide bandgap semiconducting supramolecular metallohydrogel: effective non-volatile memory design for in-memory computing

Arpita Roy, Subhendu Dhibar,* Kripasindhu Karmakar, Sangita Some, Sk Abdul Hafiz, Subham Bhattacharjee, Bidyut Saha* and Soumya Jyoti Ray*



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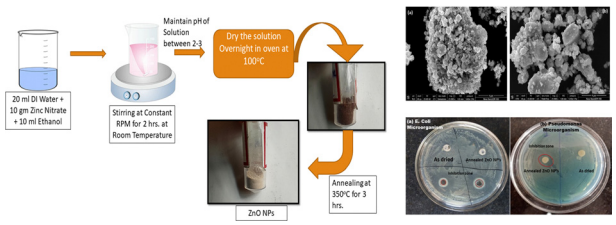

Photoluminescence and antibacterial performance of sol–gel synthesized ZnO nanoparticles

Mahendra Singh Rathore,* Harshita Verma, Sonal B. Akhani, Jaivik Pathak, Unnati Joshi, Anand Joshi, Chander Prakash,* Kirtanjot Kaur and Ankit Oza

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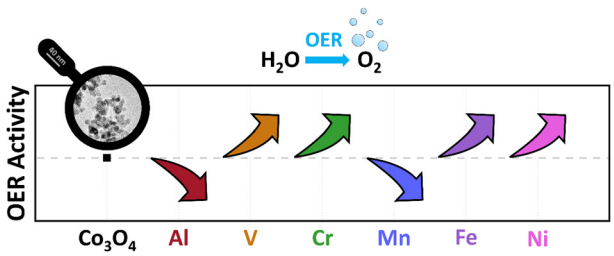
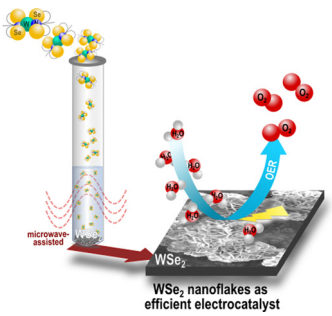


Versatile synthesis of sub-10 nm sized metal-doped $M_xCo_{3-x}O_4$ nanoparticles and their electrocatalytic OER activity

Carsten Placke-Yan, Georg Bendt, Soma Salamon, Joachim Landers, Heiko Wende, Ulrich Hagemann and Stephan Schulz*

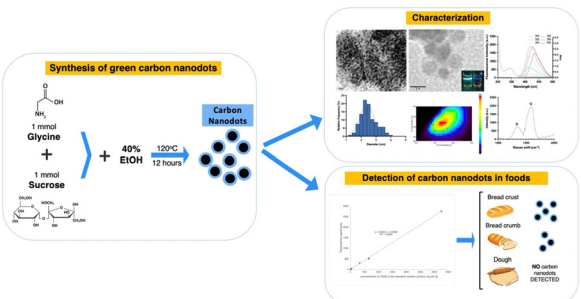
3490



Single-crystalline WSe_2 nanoflakes as efficient electrocatalysts

Veronika Brune, Fabian Hartl, Thomas Fischer, Ziyaad Aytuna, David Patrun, David Hillebrand and Sanjay Mathur*

3499



Optimization of extraction conditions to synthesize green carbon nanodots using the Maillard reaction

Duyen H.H. Nguyen,* Arjun Muthu, Hassan El-Ramady, Lajos Daróczi, Lajos Nagy, Sándor Kéki, Áron Béni, Istvan Csarnovics and József Prokisch

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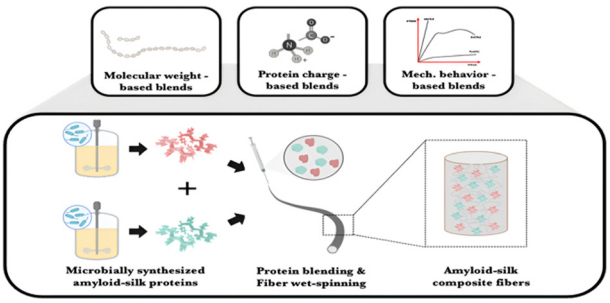
PAPERS

3506

Blending recombinant amyloid silk proteins generates composite fibers with tunable mechanical properties

Shri Venkatesh Subramani, Jingyao Li, Kok Zhi Lee, Natalie Fisher and Fuzhong Zhang*



CORRECTIONS

3517

Correction: Carbon-based two-dimensional (2D) materials: a next generation biocidal agent

Neetu Talreja,* Divya Chauhan and Mohammad Ashfaq*

3518

Correction: Chiral amplification induced by self-assembly of different aggregation states in liquid crystal block copolymer films with chiral response

Jianan Yuan, Xuemin Lu,* Xiaojie He, Feng Zheng and Qinghua Lu*