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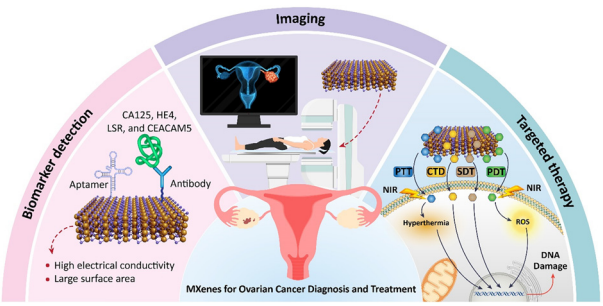
REVIEWS

5807

Advancing ovarian cancer care: recent innovations and challenges in the use of MXenes and their composites for diagnostic and therapeutic applications

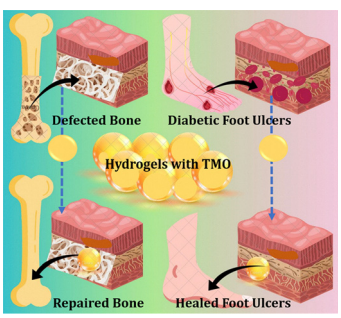
Neda Farzizadeh, Atefeh Zarepour, Arezoo Khosravi, Siavash Iravani* and Ali Zarrabi*



5831

Unveiling the development principles and mechanistic understanding of controlled drug delivery strategies for chronic bone defects and diabetic wound management

Shikha Awasthi



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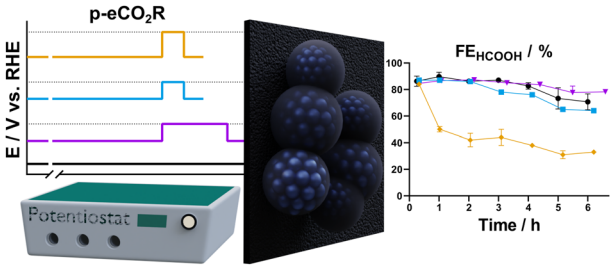
COMMUNICATION

5857

Countering *in situ* reduction of SnO_2 during electrochemical CO_2 conversion *via* oxidative pulsing

Sven Arnouts, Kevin Van Daele, Nick Daems, Mathias van der Veer, Sara Bals and Tom Breugelmans*



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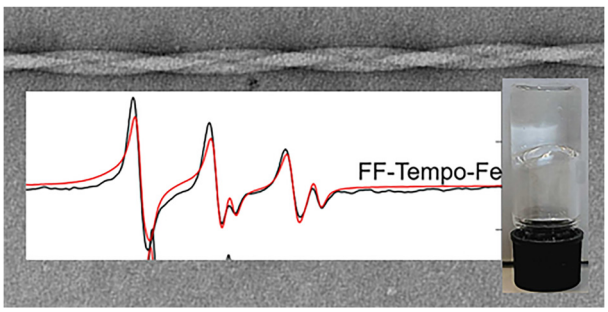
Composite hydrogels of phenylalanine dipeptides with trivalent metal cations

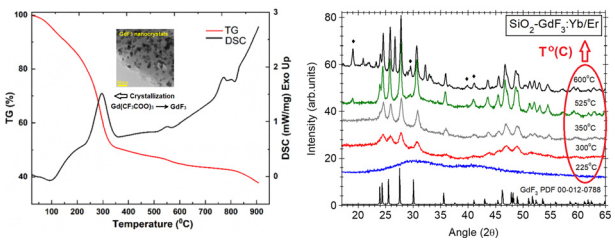
Melissa Kemesies, Vanessa Jerschabek, Chife Ekene Fidelis, Jonas Volmer, Anna Franziska Roth, Christian Schwieger, Annette Meister, Haleh Hashemi Haeri and Dariush Hinderberger*



5877

Unravelling the crystallization mechanism and structural evolution of Yb/Er-doped SiO_2-GdF_3 nano-glass ceramics

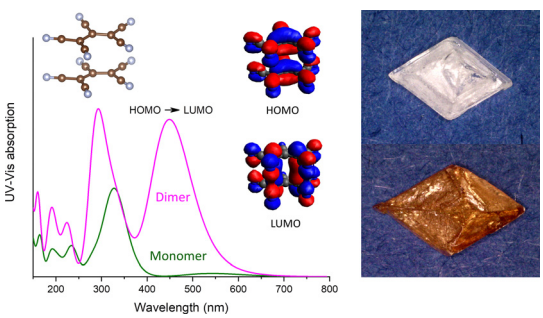
C. E. Secu, C. Bartha and M. Secu*



5884

Fluorescence from pentacyanopropenide in melamine

Hanen Mechi, Arthur Mantel, Vipin Mishra, Yuto Urano, Ryo Kitaura and Hidetsugu Shiozawa*



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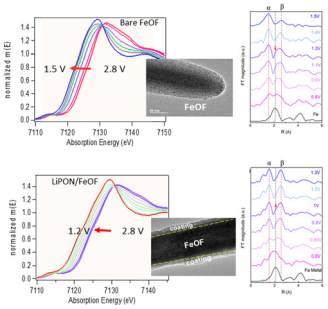


Oversaturated Li-FeOF solid solutions developed using LiPON interfacial coating

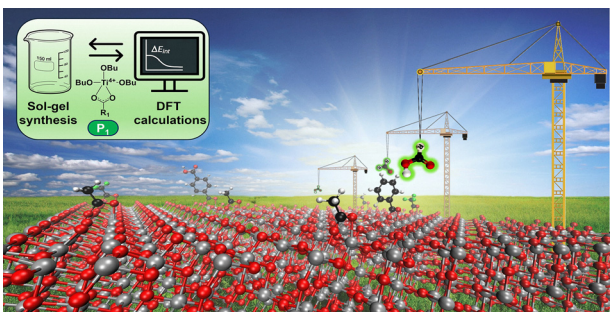
Haotian Wang, Binh Hoang, Feng Wang, Sz-Chian Liou, Chunsheng Wang, Gary Rubloff and Chuan-Fu Lin*

5901

Hollow porous molecularly imprinted polymer for xylose detection in sugarcane bagasse by dispersive solid-phase extraction

Diogo Hideki Moriya, Cláudio Fernando de Souza Teles, Paula Mantovani dos Santos, Ademar Wong and Maria D. P. T. Sotomayor*

5914



Prediction of photocatalytic performance of TiO_2 hybrid catalysts based on the nature of the ligand: a simple theoretical model as a guide for advanced materials

Giuseppe Santoriello, Claudio Imparato,* Ida Ritacco, Aurelio Bifulco, Paola Amato, Gerardino D'Errico, Antonio Aronne, Matteo Farnesi Camellone, Fabia Grisi and Lucia Caporaso*

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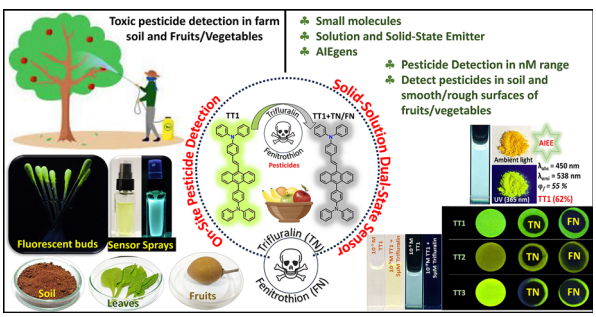

Efficient dual-phase visual detection of pesticides in real samples with electron-rich emitters carrying multiple twists

Shivani Tripathi and Manab Chakravarty*

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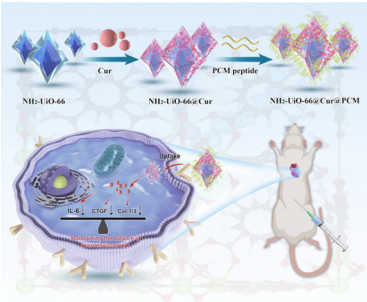
Biomineralized metal–organic frameworks targeting collagen for suppression of myocardial fibrosis and enhancement of cardiac function

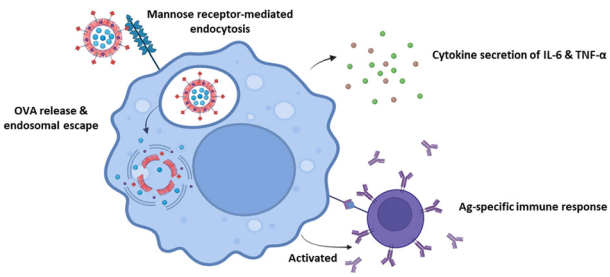
Jiao Liu, Xueli Zhao, Bo Wang, Ruoxuan Li, Yuze Qin, Yue Wang, Jia Zhao, Lanlan Zhang, Liang Yu* and Liwen Liu*



5948

Mannose-decorated polymersomes loaded with antigens and TLR7/8 agonists targeting antigen-presenting cells for enhancing vaccine efficacy

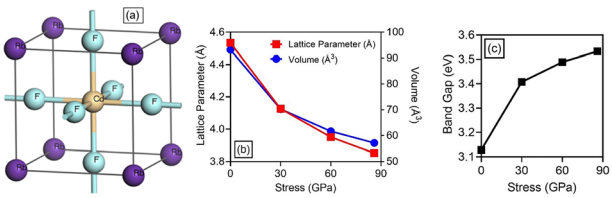
Jong-Woo Lim, So-Eun Lee, Hongjun Park, Sojeong Lee, Minjoo Yeom, Seungjoo Haam* and Daesub Song*



5959

A DFT study to evaluate the modulation in the band gap, elastic, and optical performances of $RbCdF_3$ under the influence of stress

M. Sana Ullah Sahar, S. M. Junaid Zaidi, Hammad Khalid and M. Ijaz Khan*



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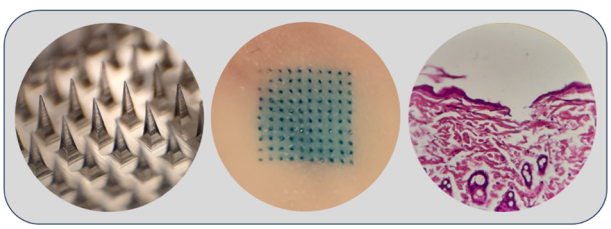
Localized photothermal–chemotherapy synergy *via* Bi_2S_3 and sorafenib co-loaded dissolvable microneedles: a non-invasive precision delivery approach for melanoma suppression

Mahsa Akbari, Maryam Toolabi, Atefeh Malek-Khatabi, Mohammad Reza Eskandari, Bo Zhi Chen, Xin Dong Guo and Mohammad-Ali Shahbazi*



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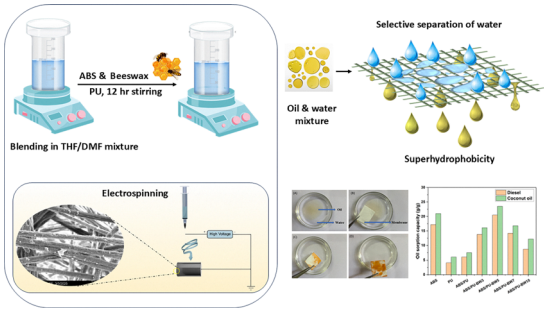

Beeswax-modified super hydrophobic acrylonitrile butadiene styrene/polyurethane electrospun membrane for effective oil–water separation

Muhammed Shabeer, Maria Mathew, Manaf Olongal and Sujith Athiyanathil*

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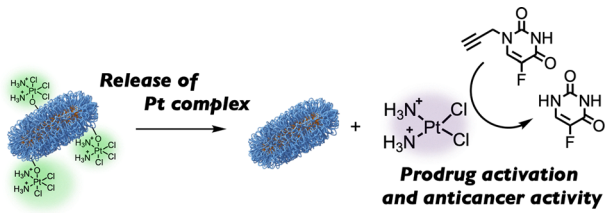
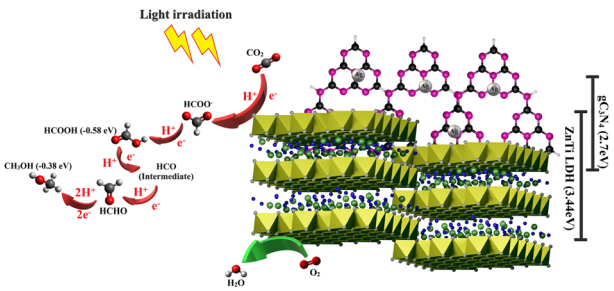


Platinum catalyst-functionalized cylindrical graft copolymer micelles for dual catalytic and cytotoxic activity

Kyosuke Seryu, Chieri Inada and Tomoki Nishimura*

6008



Synergistic effects of Ag/g-C_3N_4-incorporated bi-metallic ZnTi-LDH in CO_2 photoreduction to hydrocarbons

Jijoe Samuel Prabagar, C. Ashajyothi, Arpan Kumar Tripathi, Peter R. Makgwane, Akhtar Rasool, Mohammed H Alqarni, Ahmed I. Foudah, Dong-Kwon Lim and Harikaranahalli Puttaiah Shivaraju*

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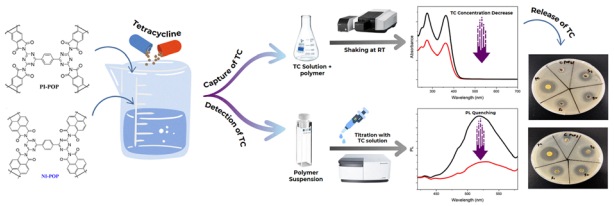

A 3-in-1 multifunctional porous organic polyimide: detection, capture and controlled release of antibacterial drugs

Rasha Diab, Fatima Mahroos, Sreeshna Ravindran, Oussama M. El-Kadri* and Mohammad H. Al-Sayah*

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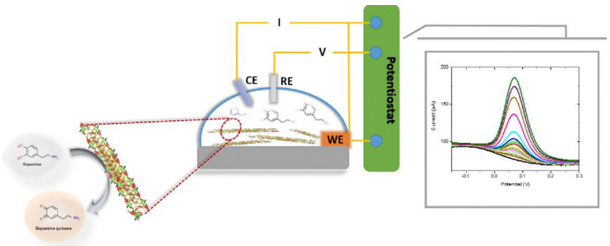
Advanced 2D MoS_2–chitosan nanocomposites for ultra-sensitive and selective dopamine detection

Ratiba Wali, Rayhane Zribi,* Viviana Bressi, Ramzi Maalej, Antonino Foti, Pietro Giuseppe Gucciardi, Wissem Cheikhrouhou-Koubaa and Giovanni Neri



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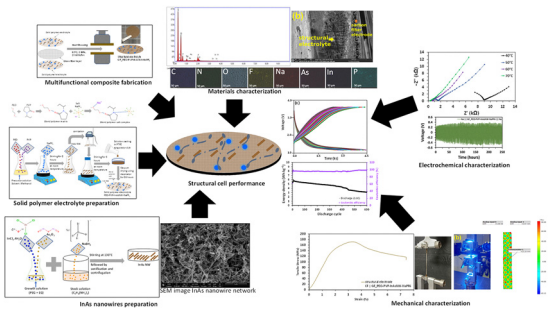
Fabrication and characterization of high-tensile-strength PEO–PVP blend-based multifunctional composites for sodium-ion structural batteries

Vasan Iyer,* Sandeep Kumar, Håkan Pettersson, Jan Petersen, Sebastian Geier and Peter Wierach



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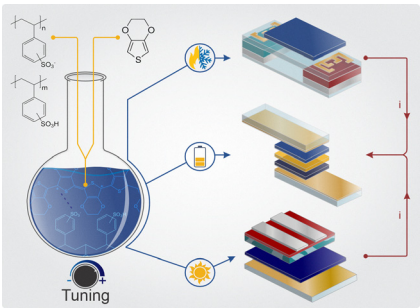
Synthesis engineering and development of emergent conducting pi-conjugated materials: applications in energy harvesting and storage devices

Germán D. Gómez Higuita,* João H. C. Bocchi, Yosthyn M. Ariza Florez, Gustavo G. Dalkiranis, Bianca de Andrade Feitosa, Diego Sousa, Sara Luiza Gusso, Marcos Luginieski, João Vitor de Lima, Rafael F. Santiago de Souza and Gregório Couto Faria*



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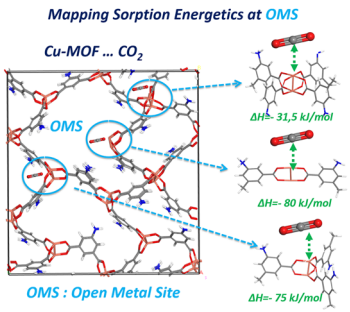
Synthesis optimization, adsorption properties and spectroscopic investigation of an NH_2-tagged Cu-based MOF with open metal sites

Lotfi Boudjema, Anil Kumar Dahiya, Ivan da Silva, Diego Gianolio, Izuchika Nduka, Manfred Erwin Schuster, Gea Theodora van de Kerkhof, Paulina Kalinowska, Emilio Borrego-Marin, Jorge A. R. Navarro, Valentina Colombo, June McCorquodale, David C. Grinter, Pilar Ferrer, Georg Held, C. Richard A. Catlow and Rosa Arrigo*



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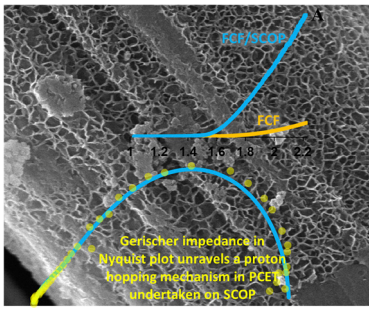

3D honeycomb porous sulfonated covalent organic polymer (PCOP) synthesized on carbon fabric at refrigerated temperature: supercapacitor and metal-free proton relay for water oxidation in alkaline and neutral media

Roghayeh Azizi, Mojtaba Shamsipur,* Avat (Arman) Taherpour, Maryam Miri and Afshin Pashabadi*

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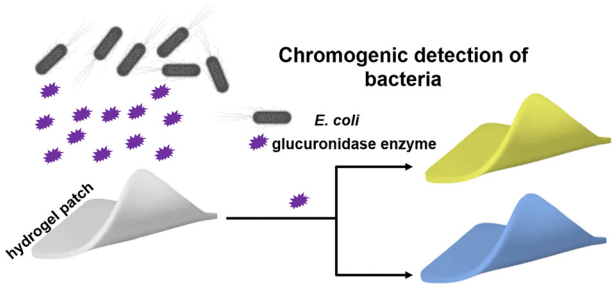

Dye-integrated photocrosslinkable polymers and networks for the visual chromogenic detection of a bacterial enzyme

Muhammad Atif, Gizem Babuççu, Martijn Riool, Sebastian A. J. Zaat and Ulrich Jonas*

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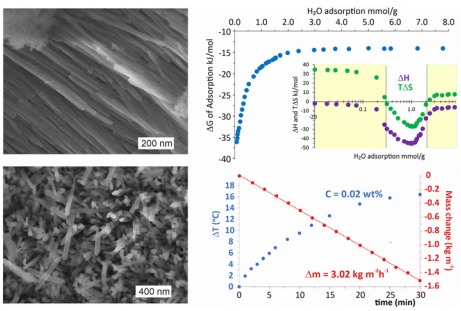

Deciphering the mechanism of water interaction with nanostructural copper oxide: going beyond superwetting

Julia Moszczyńska, Xinying Liu, Yali Yao and Marek Wiśniewski*

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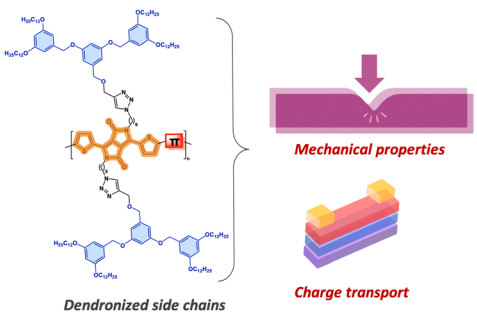

Side-chain engineering of semiconducting polymers with poly(benzyl ether) dendrons: impact on electronic and mechanical properties

Gage T. Mason, Chloé Lisowski, Piumi Kulatunga, Tiago C. Gomes, Angela Awada, Yu-Xin Hsu, Yu-Cheng Chiu and Simon Rondeau-Gagné*

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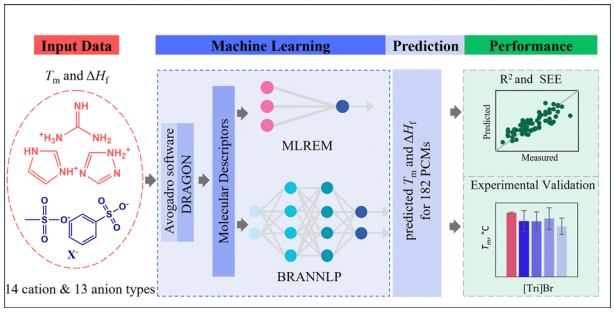
Machine learning-based predictions of melting temperature and enthalpy of fusion for protic organic salt phase change materials

Saliha Saher, Tu C. Le,* Tamar L. Greaves, Jennifer M. Pringle, Douglas R. MacFarlane and Karolina Matuszek*



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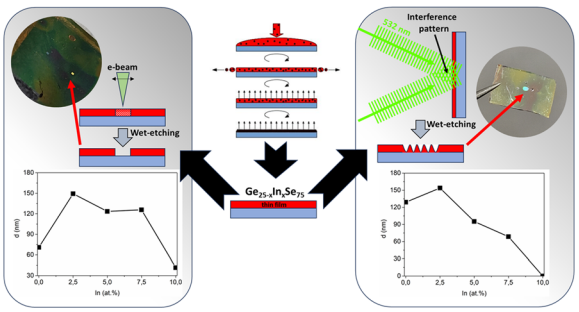
Spin-coated Ge–In–Se thin films: characterization and changes induced by visible and electron radiation in relation to indium content

Jiri Jancalek, Aidan Milam, Stanislav Slang,* Michal Kurka, Roman Svoboda, Jiri Jemelka, Miroslav Vlcek and Karel Palka



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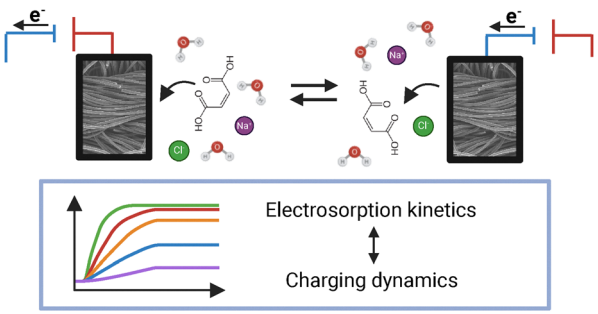
Activated carbon cloth as efficient microporous electrode for maleic acid recovery through electrical potential

Dennis Röcker, Fabian Biebl, Lisa Meier, Sebastian Patrick Schwaminger, Paula Fraga-García* and Sonja Berensmeier*



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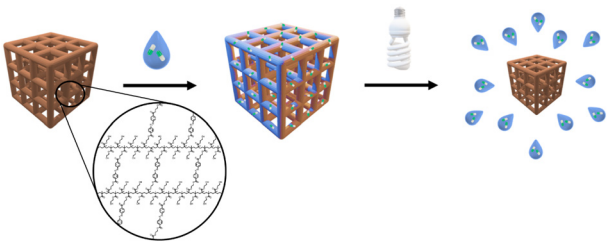
4D printed polymethacrylate lattices capable of dimensional switching and payload release *via* photoresponsive actuation of azobenzene units

James MacKay, Lewis R. Hart, Alarqam Z. Tareq, Simeng Wang, Valeria Gonzalez Abrego, Ian Maskery, Derek Irvine, Ricky D. Wildman and Wayne Hayes*



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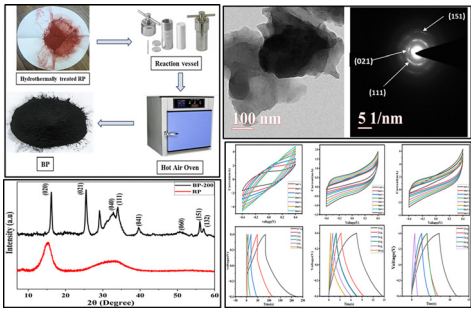

Enhanced energy storage properties of red phosphorus/black phosphorus hybrid nanostructures

Shahbaz Ahmad and Mohd Zubair Ansari*

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