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ISSN 2633-5409 CODEN MAADC9 5(16) 6335-6674 (2024)



### Cover

See Ryota Teshima *et al.*, pp. 6368–6372.  
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## EDITORIAL

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### Introduction to Advanced materials for sensing and biomedical applications

Yogendra Kumar Mishra, Ajeet Kaushik and Avtar Singh

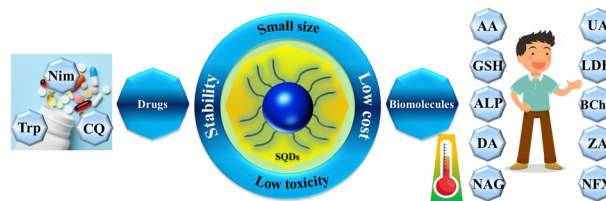


## REVIEW

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### Sulfur quantum dots for fluorescence sensing in biological and pharmaceutical samples: a review

Kawan F. Kayani,\* Sewara J. Mohammed, Nian N. Mohammad, Ahmed M. Abdullah, Diary I. Tofiq, Muhammad S. Mustafa, Dler M. S. Shwan and Shujahadeen B. Aziz



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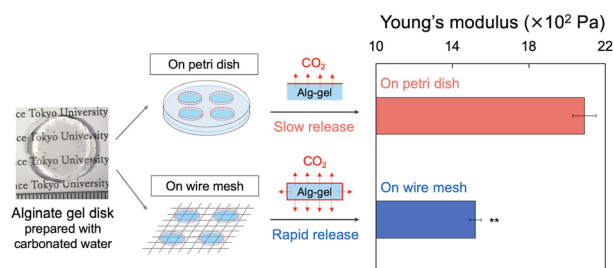
Fundamental questions  
Elemental answers



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### Effect of CO<sub>2</sub> release behavior on the crosslinking degree of alginate hydrogels prepared with CaCO<sub>3</sub> and carbonated water

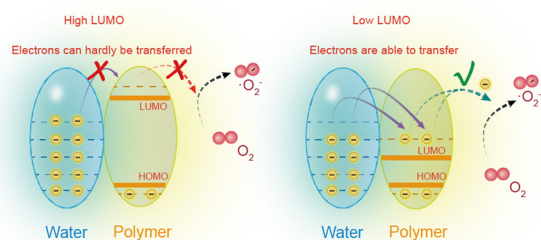
Ryota Teshima,\* Shigehito Osawa, Kaoru Hirose, Yayoi Kawano, Akihiko Kikuchi, Takehisa Hanawa and Hidenori Otsuka



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### A perspective on contact-electro-catalysis based on frontier molecular orbitals

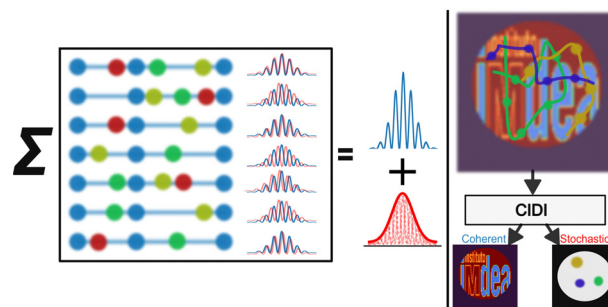
Ziming Wang, Xuanli Dong, Fu-Jie Lv and Wei Tang\*



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### Coherent X-ray imaging of stochastic dynamics

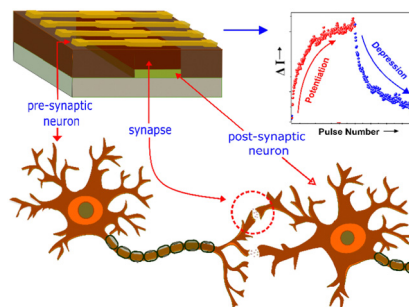
Arnab Sarkar and Allan S. Johnson\*



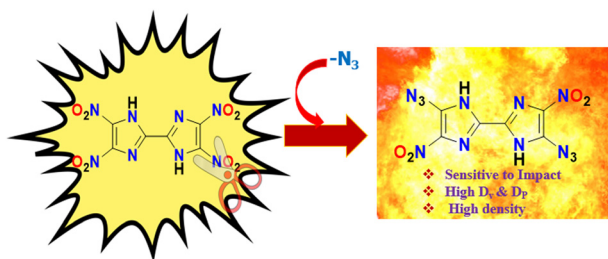
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### Emulating synaptic plasticity with a poly[N-(3-(9H-carbazol-9-yl)propyl)methacrylamide] memristor

Yadu Ram Panthi, Ambika Pandey, Adriana Šturcová, Drahomír Výprachtický, Stephen H. Foulger and Jiří Pflieger\*



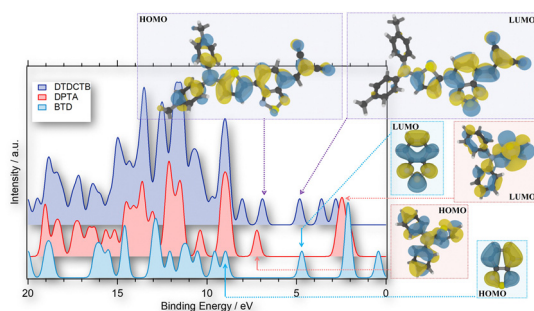
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### One step synthesis of nitrogen-rich green primary explosives from secondary explosives: synthesis, characterization, and performance study

Parasar Kumar, Vikas D. Ghule and Srinivas Dharavath\*

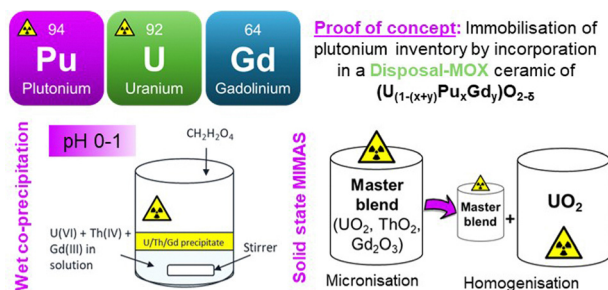
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### Gas phase electronic structure of the DTDCTB small-molecule donor for vacuum-processed organic photovoltaics compared to its constituent building blocks

Ambra Guarnaccio,\* Iulia Emilia Brumboiu,\* Cesare Grazioli, Teng Zhang, Fredrik O. L. Johansson, Marcello Coreno, Monica de Simone and Carla Puglia

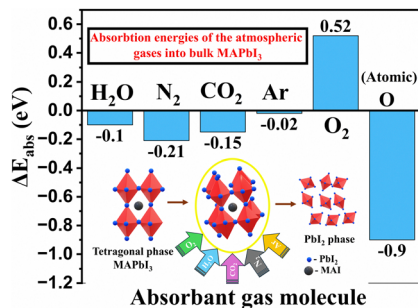
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### A disposal-MOX concept for plutonium disposition

Max R. Cole, Lewis R. Blackburn, Latham T. Haigh, Daniel J. Bailey, Luke T. Townsend, Kristina O. Kvashnina, Neil C. Hyatt and Claire L. Corkhill\*

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### Unravelling the environmental degradation mechanism of perovskite thin films

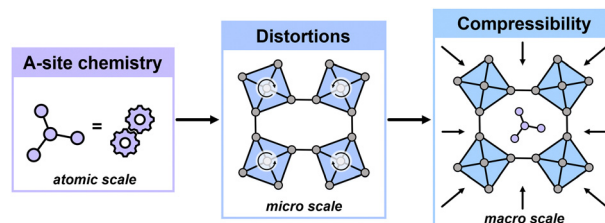
Nalini V, Gergely N. Nagy, Ariful Rahaman, Sreeram K. Kalpathy, Tiju Thomas, Sumangala T. P.\* and Mousumi Upadhyay Kahaly\*



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### Tuning the mechanical properties of molecular perovskites by controlling framework distortions via A-site substitution

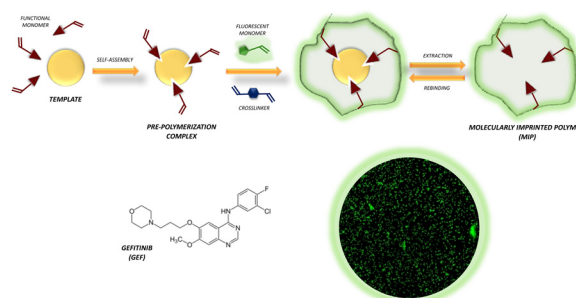
Silva M. Kronawitter, Shinjoo Park, Sebastian A. Hallweger, Emily Myatt, Jem Pitcairn, Matthew J. Cliffe, Dominik Daisenberger, Markus Drees and Gregor Kieslich\*



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### Exploring crosslinker effects on fluorescent molecularly imprinted polymers for improved gefitinib delivery in lung cancer theranostics

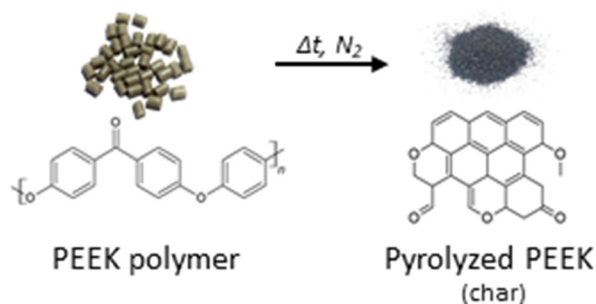
Marco Dattilo, Marisa Francesca Motta, Francesco Patitucci, Claudia Ferraro, Ortensia Ilaria Parisi\* and Francesco Puoci



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### Microporous carbonaceous adsorbent prepared from a pyrolyzed polymer

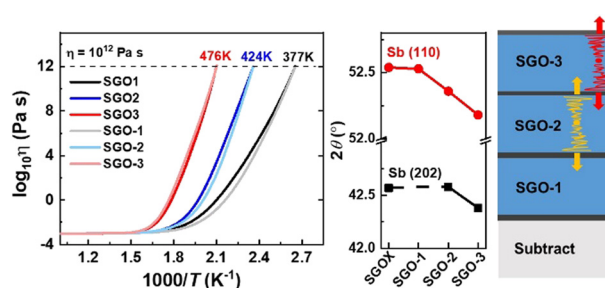
Jaroslav Lang,\* Jan Bednárek, Michal Ritz, Martin Kormunda, Tomáš Zelenka, Michal Vaštyl, Anna Gavlová, Zdeňka Kolská and Marta Férová



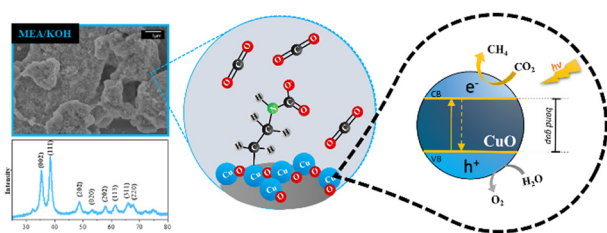
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### Crystallization kinetics of stacked phase-change films for multi-level storage

Yimin Chen,\* Ce Fan, Nan Han, Kexing Peng, Chenjie Gu, Zijun Liu, Guoxiang Wang, Tiefeng Xu, Junqiang Wang and Xiang Shen\*



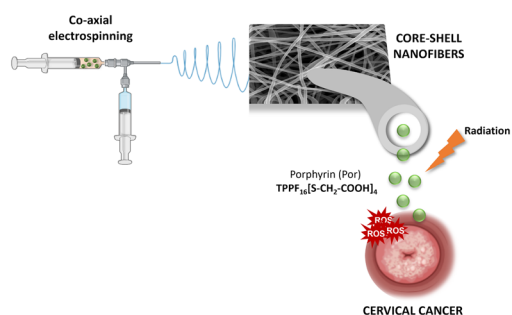
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### Unveiling the influence of alkaline modifiers in CuO synthesis on its photocatalytic activity for CO<sub>2</sub> reduction

Jéssica C. de Almeida, Thais Aparecida Rodrigues, Gelson T. S. T. da Silva, Caue Ribeiro\* and Vagner R. de Mendonça\*

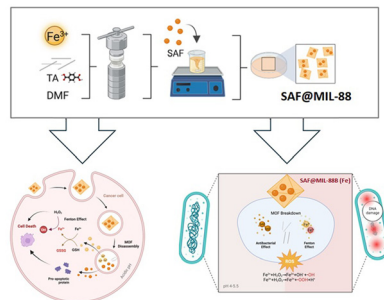
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### Localized cancer photodynamic therapy approach based on core-shell electrospun nanofibers

Sofia M. Costa,\* Leandro M. O. Lourenço, Ricardo C. Calhelha, Isabel Calejo, Cristina C. Barrias, Raul Figueiro and Diana P. Ferreira\*

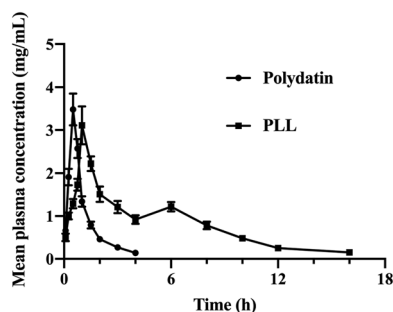
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### Synthesis and characterization of safranal@MIL-88B(Fe) nanostructures and their preliminary anticancer and antibacterial characteristics

Alia Alkaabi, Khansa Ahsan, Nayla Munawar, Abdelouahid Samadi, Hesham El-Maghraby, Amr Amin and Yaser Greish\*

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### Advancing diabetes treatment: novel formulation of polydatin long-circulating liposomes and their glucose-regulating impact on hyperlipidemia-induced type 2 diabetic mice

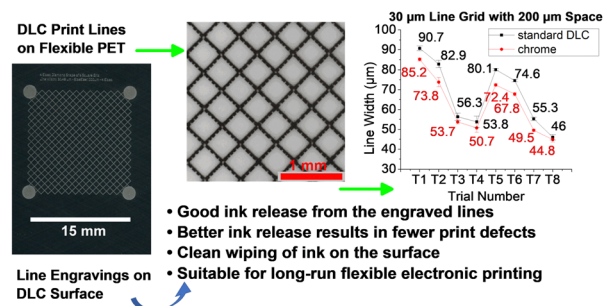
Kepei Zhang, Junlan Chen, Faisal Raza, Hajra Zafar, Ye Xu, Ran Li, Kamran Hidayat Ullah and Shigao Zhou\*



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### DLC-engineered flat gravure surface: enabling sustainable fabrication to replace chrome for printing conductive line electrodes in flexible electronics

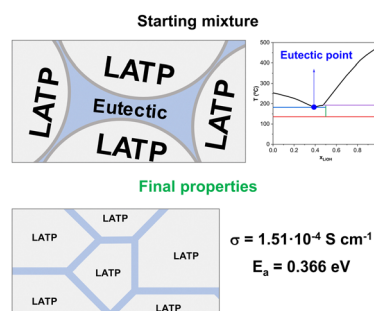
Chandramohan Seetharamiahsrinivasaraju,\* Ronit Shetty, Donald K. Cohen, Priyanka Sharma\* and James R. Springstead



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### Hydroflux-assisted cold sintering: eutectic mixtures for boosting ionic conductivity in LATP solid-state electrolytes

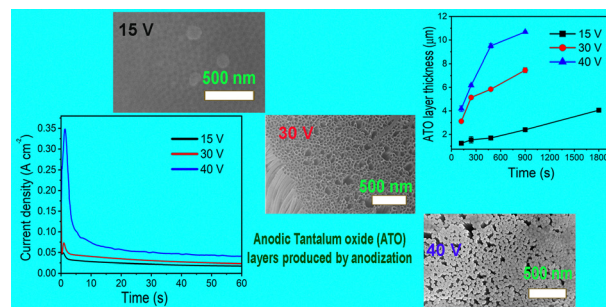
Andrés Mormeneo-Segarra, Sergio Ferrer-Nicomedes, Nuria Vicente-Agut\* and Antonio Barba-Juan



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### Understanding the morphological evolution of anodic tantalum oxide nanostructures in acidic medium

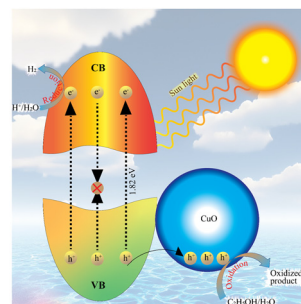
Biswaranjan D. Mohapatra,\* Kinga Pawlik, Izabela Darowska, Łukasz Gondek, Marcin Pisarek and Grzegorz D. Sulka\*



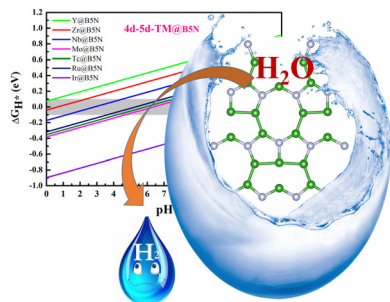
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### Insights into the development and performance of CuO/CuFe<sub>2</sub>S<sub>x</sub>O<sub>4-x</sub> catalysts: an effective approach for renewable hydrogen generation

Ejaz Hussain,\* Muhammad Jalil, Muhammad Zeeshan Abid, Javeria Mansab, Raed H. Althomali, Shuxin Wang, Abdul Rauf and Khezina Rafiq\*



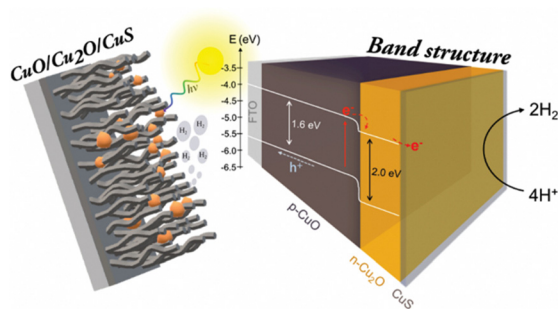
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### Single-atom transition metals doping two-dimensional $B_xN$ materials ( $X = 2, 3, 5$ ) with promising electrocatalytic activity for efficient hydrogen production in the entire pH range

Yuhua Wei, Feng Gao,\* Hong Liu, Wei Qi, Sichao Du, Hao Xie and Duo Xiao

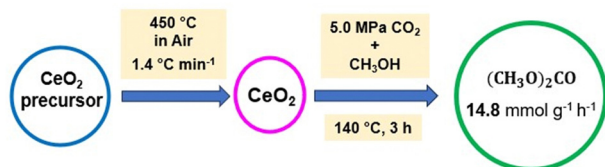
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### Enhanced photoelectrochemical water splitting using nanostructured films: p-CuO sensitized with polyhedral n-Cu<sub>2</sub>O particles and CuS as photocathode

Hugo Leandro Sousa Santos and Lucia Helena Mascaro\*

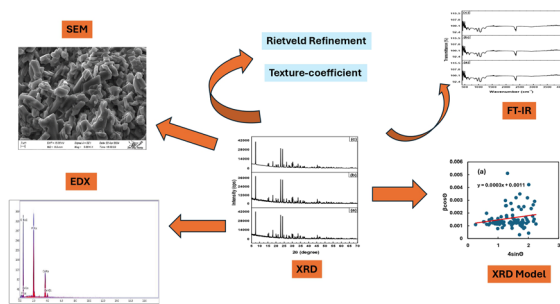
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### Porous ceria materials for efficient direct conversion of carbon dioxide and methanol to dimethyl carbonate

Zhuxian Yang, Justin Tay Zheng, Xinhuan Lu, Monica Mengdie Lin, Dongming Cai, Yankun Wang, Wen-Yueh Yu,\* Yanqiu Zhu and Yongde Xia\*

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### Sustainable synthesis and characterization of nano-triple superphosphate from solid marine wastes

Md. Kawcher Alam, Md. Sahadat Hossain, Mohammad Saimon Islam, Newaz Mohammed Bahadur and Samina Ahmed\*

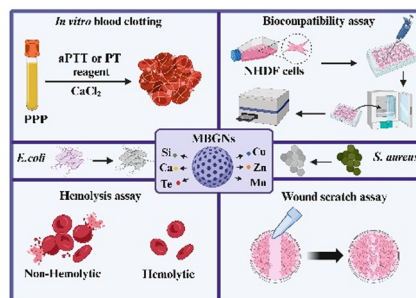




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## The effect of mesoporous bioactive glass nanoparticles incorporating various metallic ions (Cu, Zn, Mn, Te) on wound healing

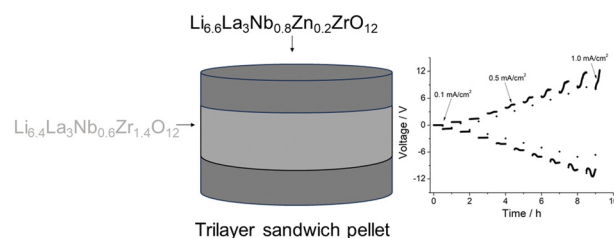
Sara Pourshahrestani,\* Ehsan Zeimaran, Christina Janko, Christoph Alexiou, Andrea Kerpes, Adrian Würz, Marcus Fischer, Hana Kaňková, Martin Hartmann and Aldo R. Boccaccini\*



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## Experimental and computational study of Zn doping in $\text{Li}_{5+x}\text{La}_3\text{Nb}_{2-x}\text{Zr}_x\text{O}_{12}$ garnet solid state electrolytes

Bo Dong,\* Bassey Oboho, Linhao Li, Xiao Tao, Pengcheng Zhu, Mark P. Stockham, Chuan Li, Roger Smith, Yongliang Li, Yulong Ding, Pooja Goddard\* and Peter R. Slater\*



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## Fabrication of composite scaffolds using hydroxyapatite, epoxy resin and silica for load-bearing applications

Md. Kawcher Alam, Md. Sahadat Hossain, Newaz Mohammed Bahadur and Samina Ahmed\*

