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### Cover

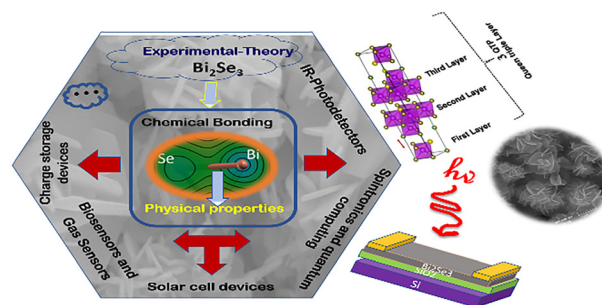
See Ashlee J. Howarth *et al.*, pp. 2621–2628.  
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## REVIEWS

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### Bismuth selenide topological insulator materials for green energy devices: prospects and applications

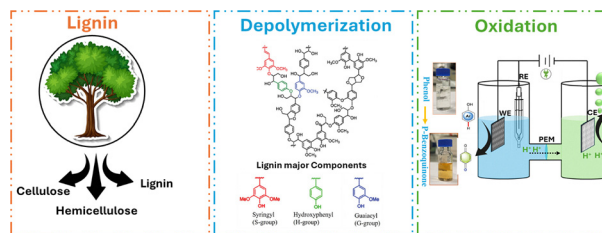
Razieh Khaki, Mahmood Moradi,\*  
Gholam Hossein Bordbar, Hana Kazemi,  
Saeid Davatolhagh and Meysam Pazoki\*



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### Electrochemical coupling of lignin-derived phenolic valorization and green hydrogen production: a minireview

Asad Ali,\* Leif J. Jönsson, Xiaoyan Ji,\* Lovisa Byström and Reverant Crispin\*



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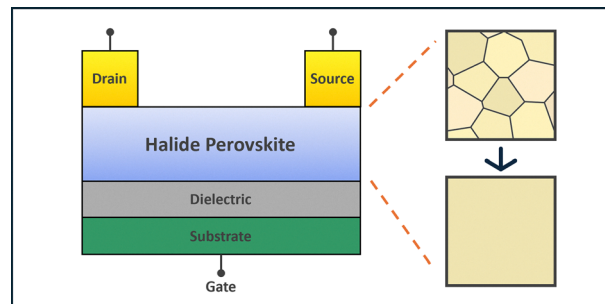


## REVIEWS

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## Toward AI-ready hardware: review of single-crystal halide perovskite FET fabrication and performance

Hyojung Kim

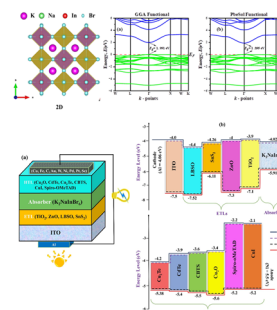


## COMMUNICATION

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An eco-friendly  $K_2NaInBr_6$  double halide perovskite as a next-generation absorber for perovskite solar cells: a DFT and SCAPS-1D study

Nazmul Shahadath, Ashraful Mujahid, Raihan Kabir, Md. Tarekuzzaman, Mohammad Yasin Hayat Khan, Md. Abu Bakkar Siddique, Sohail Ahmad, Md. Rasheduzzaman and Md. Zahid Hasan\*

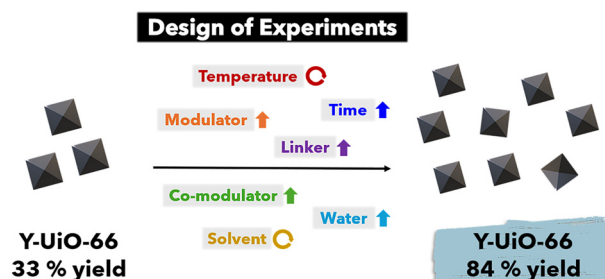


## PAPERS

2621

## Studying the significance of the parameters involved in the synthesis of Y-UiO-66 to improve product yield

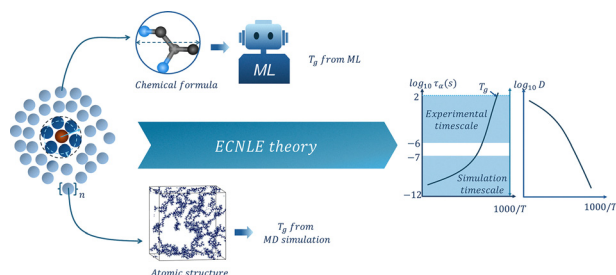
Micaela Richezzi, P. Rafael Donnarumma and Ashlee J. Howarth\*



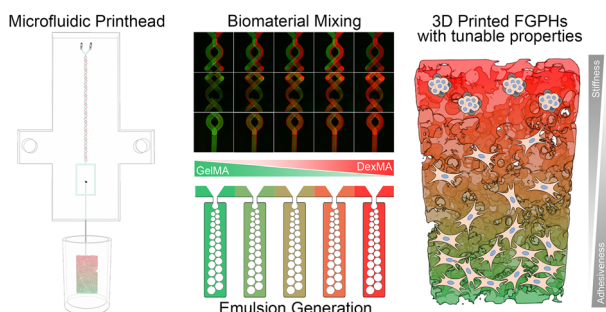
2629

## Multiscale prediction of polymer relaxation dynamics via computational and data-driven methods

Nguyen T. T. Duyen, Ngo T. Que and Anh D. Phan\*



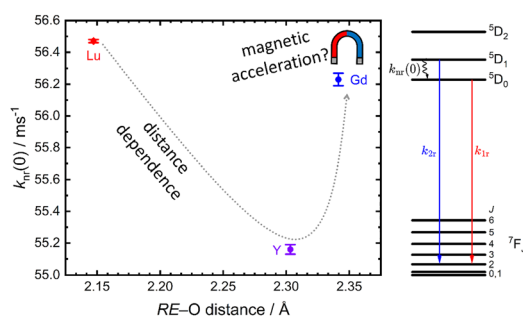
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### Microfluidic-mixer assisted 3D printing of functionally graded multimaterial hydrogels for engineering complex tissue interfaces

Maria Celeste Tirelli, Francesco Nalin, Nehar Celikkin, Żaneta Górecka, Pasquale Posabella, Wojciech Świążkowski and Marco Costantini\*

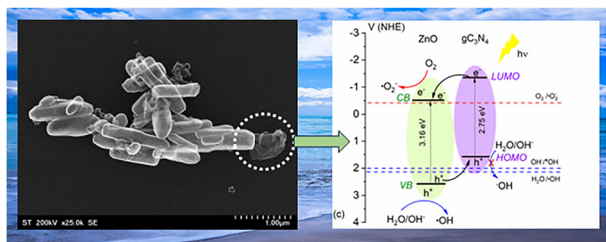
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### Analysis of the magnetic dipolar nonradiative decay of the ${}^5D_1$ level of $\text{Eu}^{3+}$ in single-crystalline huntite-type $\text{REAl}_3(\text{BO}_3)_4:\text{Eu}^{3+}$ (RE = Y, Gd, Lu)

Tom Förster, Leonardo Ceccon, Benedikt Bendel, Marco Bettinelli, Fabio Piccinelli\* and Markus Suta\*

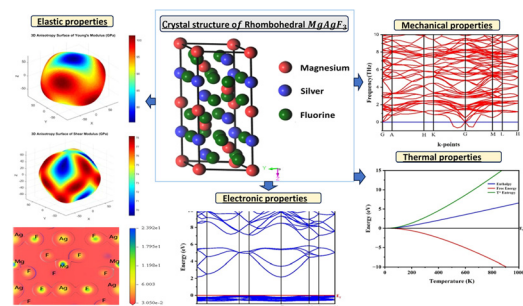
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### $\text{gC}_3\text{N}_4$ decorated with $\text{ZnO}:\text{Mn}$ rods for enhanced photocatalytic performance

Adriana Popa, Maria Stefan, Sergiu Macavei, Lucian Barbu-Tudoran, Ioana Perhaita, Maria Suciuc, Cristian Leostean and Dana Toloman\*

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### First-principles calculation of rhombohedral perovskite $\text{MgAgF}_3$ : a DFT study of optical, electronic, elastic, thermodynamic and mechanical properties

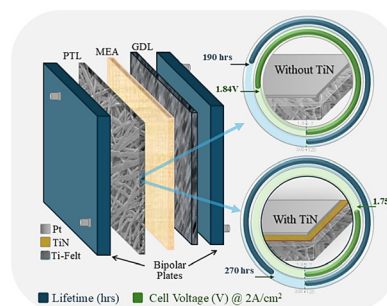
Aesha Siddiqua, Jannat Ara Jui, Shajib Ahmed, M. D. I. Bhuyan\* and Obaidullah



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## Enhancing durability of Pt-coated titanium porous transport layers for PEM water electrolysis using TiN interlayers

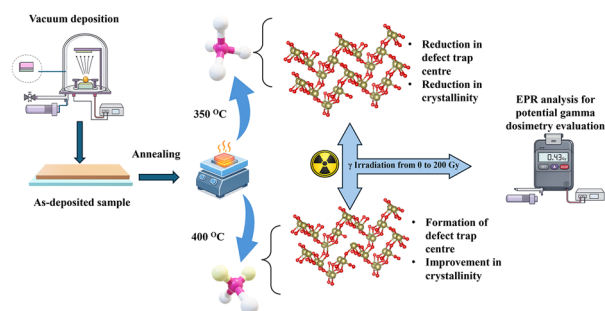
Muhammad Azhar Iqbal, Sukhvant Singh, Aditya Singh and Samaneh Shahgaldi\*



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## Gamma irradiation-induced structural and defect modulation in $\beta$ -TeO<sub>2</sub> thin films at different annealing temperatures

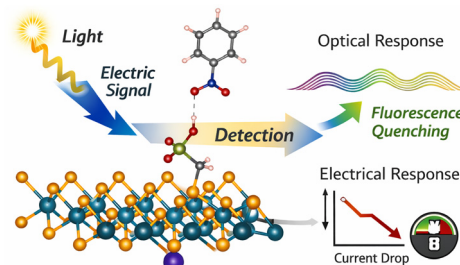
K. Chandra, M. G. Mahesha, N. Karunakara and Pramoda Kumara Shetty\*



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## Covalent functionalization of MoSe<sub>2</sub> nanosheets with hydrogen bond-donating functionalities for the sensing of nitroaromatics

Rabaa Hajlaoui, Sabrine Baachaoui, Sami Ben Aoun, Said Ridene\* and Nouredine Raouafi

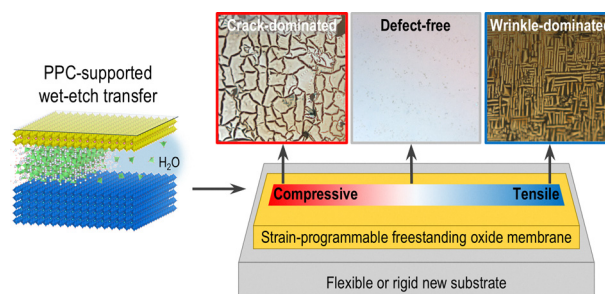


Dual Responsive Sensor for Nitroaromatics

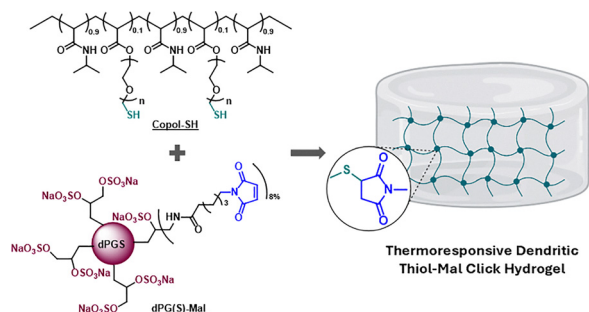
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## Scalable, epitaxy-preserving transfer of freestanding perovskite and layered oxide membranes with tunable strain

Habib Rostaghi Chalaki, Ebenezer Seesi, Avari Suber, Sang-Hoon Nam, Yo-Han Suh and Dongkyu Lee\*



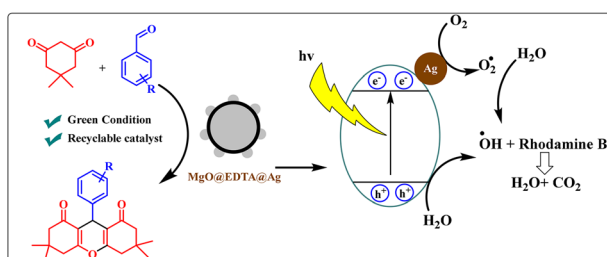
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### Sulfation of thiol–maleimide crosslinked hydrogels modulates material properties and cell biocompatibility

Lasse Riediger, Lei Wang, Peer Nölte, Cosmin Butnarusu, Peng Tang, Yannic Kerkhoff, Elisa Quaas, Justin Arenhoevel, Daniel Lauster, Yi-An Yang,\* Nan Ma\* and Rainer Haag

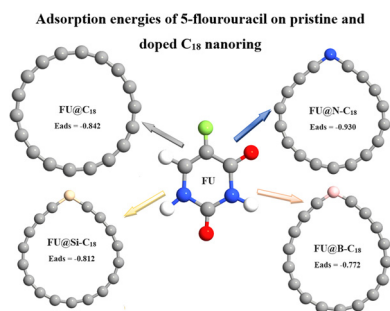
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### Design of a MgO@EDTA@Ag nanocatalyst for sustainable synthesis of xanthenes and rhodamine B degradation

Anamika Brahma, Ankita Borah, Masoume Malmir and Snigdha Singh\*

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### Tunable drug delivery via functionalized C<sub>18</sub> nanorings: a DFT-MD investigation of 5-fluorouracil adsorption and release

Alaa M. Khudhair and Ali Ben Ahmed\*

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a				b	
PEGDA700	PEGDA575	DEGDA	LCST (°C)		
50	50	/	80 ± 1.3		
25	75	/	65 ± 0.9		
100	/	/	60 ± 1.1		
/	75	25	48 ± 0.9		
/	50	50	34 ± 0.8		

### Thermo-responsive single-chain cyclized/knotted polymers for cell encapsulation

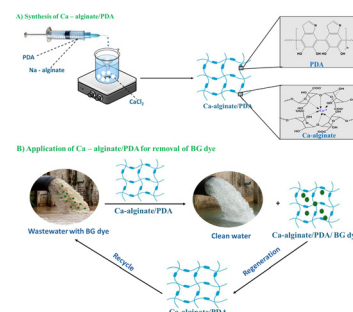
Zhi Dou,\* Liangliang He,\* Wenxing Zhao, Xiaoping Wang, Hongyan Wang, Jie Lu, Chao Wang and Liqiang Yang\*



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### Sustainable removal of brilliant green dye from aqueous media using a calcium alginate–polydopamine bio-composite: process optimization and adsorption mechanism

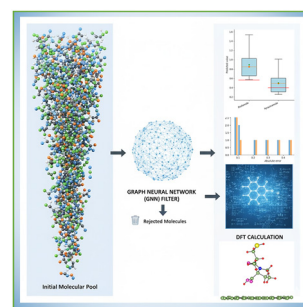
Marwa Magdy, Mohamed M. Aboelnga and Elsayed Elbayoumy\*



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### Unveiling the adsorption and electronic interactions of drugs on 2D graphsene: insights from DFT and machine learning approaches

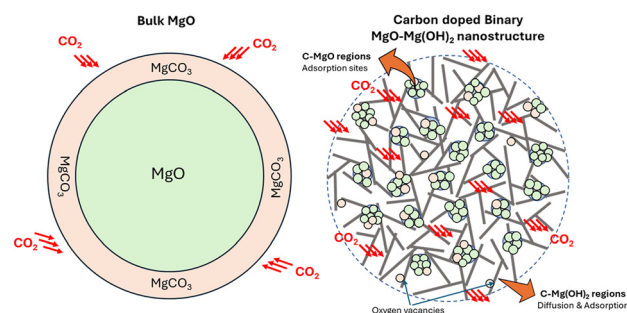
Chaithanya Purushottam Bhat, Pranav Suryawanshi, Aditya Guneja and Debashis Bandyopadhyay\*



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### Kinetic interface design in carbon-doped Mg(OH)<sub>2</sub> enables concurrent CO<sub>2</sub> blocking and capture

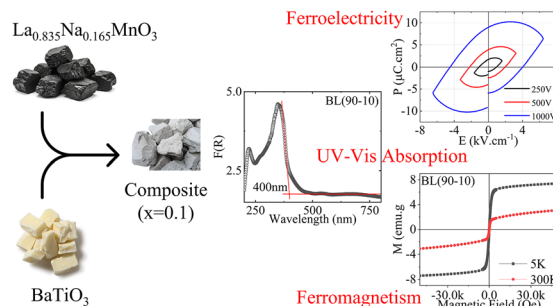
Hashan N. Thenuwara, W. P. Cathie Lee, Shunlian Wu, Sim Jia Yu, Siew Yee Wong, Xu Li\* and Ping Wu\*



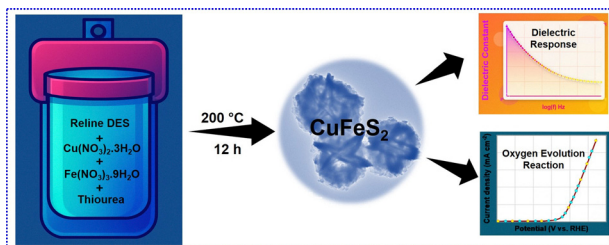
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### Tunable multifunctionality in BaTiO<sub>3</sub>–La<sub>0.835</sub>Na<sub>0.165</sub>MnO<sub>3</sub> composites: from UV-to-visible light absorption and nonmagnetism to room-temperature ferromagnetism

Lozil Denzil Mendonca, El Kebir Hlil and Mamatha D. Daivajna\*



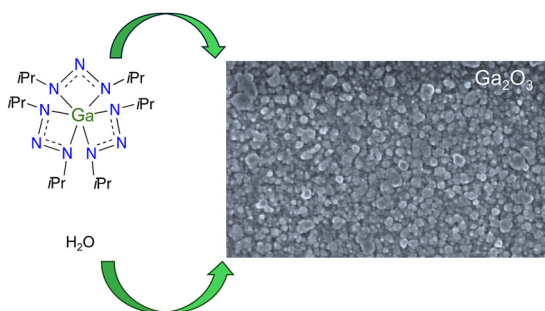
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### Unveiling a reline deep eutectic solvent (DES) for controlled synthesis of phase-pure $\text{CuFeS}_2$ towards dielectric and electrocatalytic applications

Bhagirath Mahto, Monika Gupta, Haider Ali and Sahid Hussain\*

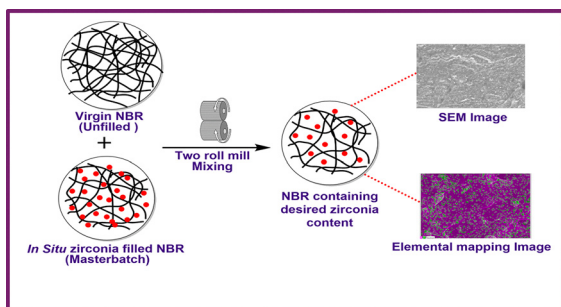
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### Atomic layer deposition of gallium oxide using gallium triazenide and water

Prosper Simbarashe Mushore, Pamburayi Mpofo, Kenichiro Mizohata, Kostas Sarakinos, Nathan J. O'Brien and Henrik Pedersen\*

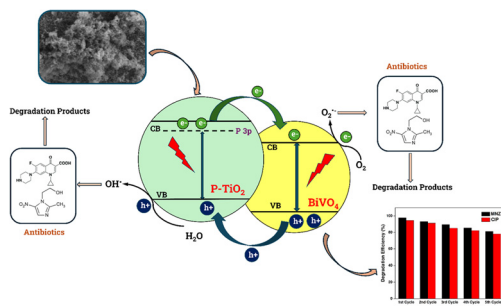
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### Masterbatch strategy for enhanced filler dispersion and reinforcement of zirconia-filled NBR composites

Shubham C. Ambilkar, Surabhi S. Raut, Bharat P. Kavgate and Chayan Das\*

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### Enhanced photodegradation of antibiotics using a novel $\text{BiVO}_4/\text{P-doped TiO}_2$ heterostructure: performance evaluation, property and kinetic modelling

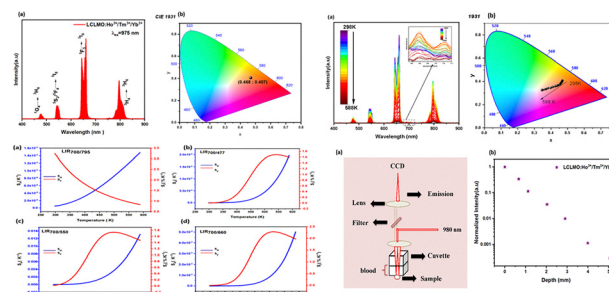
Tanzim Ur Rahman, Musfekur Rahman Dihan, Abdul Hai and Md. Shahinoor Islam\*



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## A robust, multifunctional optical sensing platform operating under practical conditions

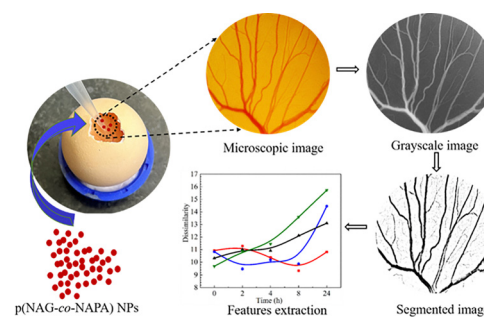
Ikhlas Kachou, Mouna Fhoula, Kamel Saidi, Christian Hernández-Álvarez, Mohamed Dammak\* and Inocencio R. Martín



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## Angiogenic properties of poly(NAG-co-NAPA) nanoparticles: assessment via gray-level co-occurrence matrix-based image processing

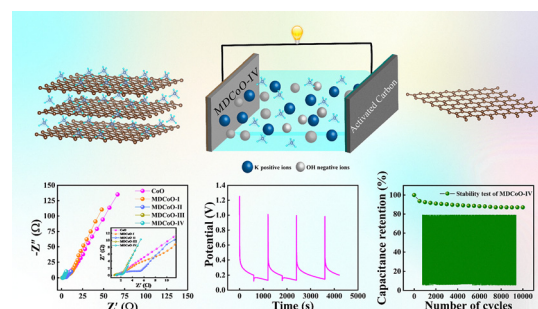
Sukanya Patra, Aniket Dayanand Lokhande, Gurmeet Singh, Divya Pareek, Saumya Jaiswal, Prem Shankar Gupta, Abhijit Majumder, Jac Fredo Agastinose Ronickom and Pradip Paik\*



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## Optimization of diffusion dynamics in Mn-doped Co<sub>3</sub>O<sub>4</sub>/rGO hybrid electrodes for efficient energy storage in asymmetric supercapacitors

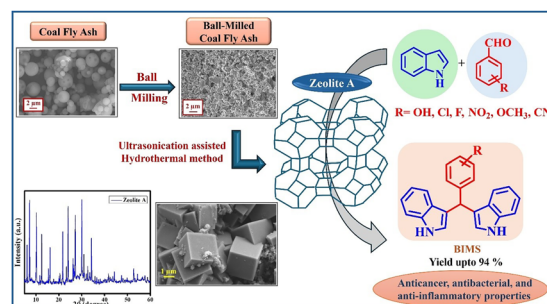
Farhan Ahmad, Abdul Shakoor, Ahsan Iqbal, Asif Mahmood, Waheed Al-Masry, Farooq Ahmad and Shahid Atiq\*



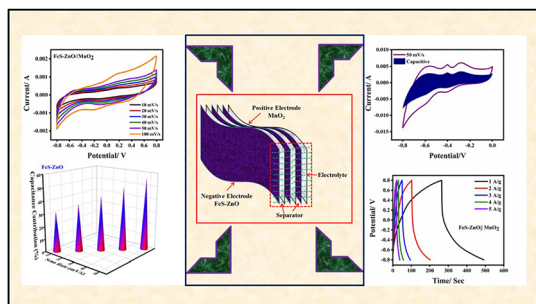
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## Zeolitization of fly ash for synthesis of pharmaceutically important bis(indolyl)methane derivatives

Aashima Mahajan, Loveleen K. Brar\* and Manmohan Chhibber\*



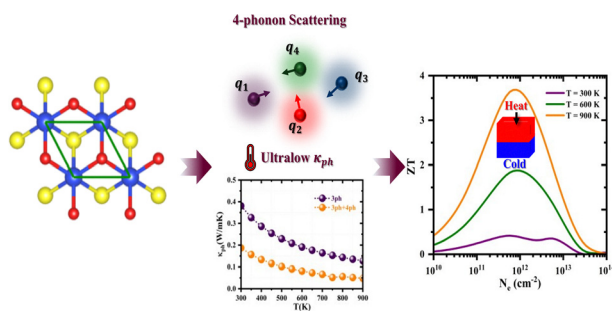
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### Exploring the storage applications of FeS–ZnO nanocomposite as a negative electrode for asymmetric supercapacitors

Junaid Riaz and Amina Bibi\*

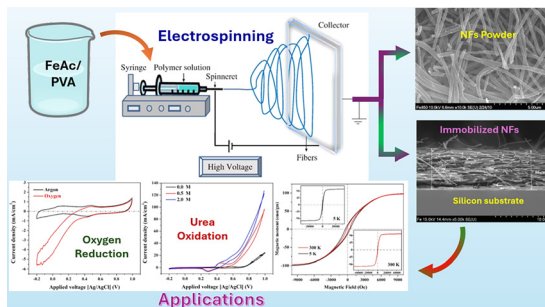
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### High thermoelectric power conversion efficiency of an earth-abundant Janus silicon oxy-sulfide monolayer: a first-principles study

Zakariae Darhi,\* Mounaim Bencheikh, Ravindra Pandey and Larbi El Farh

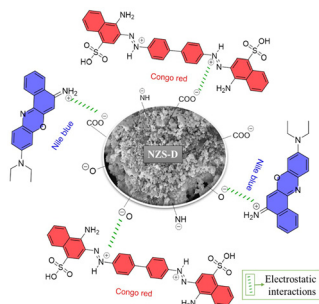
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### Fe-embedded graphitic carbon nanofibers for efficient urea electrooxidation and stable oxygen reduction reaction in acidic media

Nasser A. M. Barakat

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### Exploring sustainable water treatment: comprehensive analysis of an NZS-D nanocomposite for enhanced dye adsorption

Md. Sajid, Mohammed K. Al Mesfer, Mohd Danish, Atul Sharma and Saif Ali Chaudhry\*

