

# Materials Advances

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## IN THIS ISSUE

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### Cover

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### Inside cover

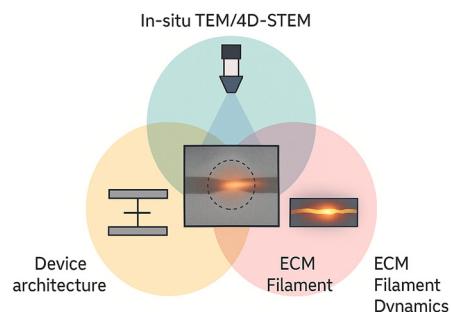
See Koon-Yang Lee et al.,  
pp. 4202–4210.  
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## REVIEWS

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### Advances in resistive switching memory: comprehensive insights into ECM mechanisms through TEM observations and analysis

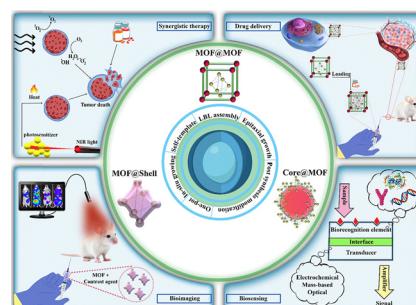
Woonbae Sohn, Hyerim Kim, Jung Hun Lee,  
Young-Seok Shim, Cheon Woo Moon\* and  
Hyojung Kim\*



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### A review of core–shell metal–organic frameworks: preparation and biomedical applications

Simindokht Zarei-Shokat, Sheyda Abedi-Banaei,  
Amir Kashtiaray, Zahra Yazdi, Haniyehalsadat Amirkhosseini  
and Ali Maleki\*



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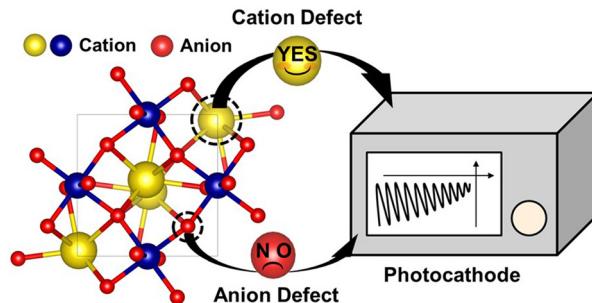


## COMMUNICATION

4197

**Utilization of neural network potential for determining perovskite-type metal oxide photocathodes capable of producing hydrogen**

Shuya Masuda, Yosuke Harashima, Tomoaki Takayama,\* Shogo Takasuka and Mikiya Fujii\*

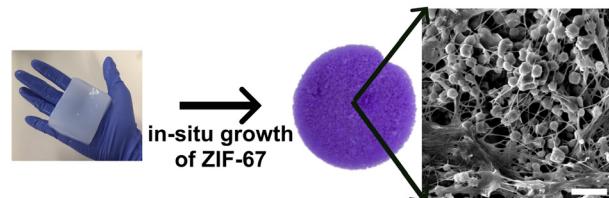


## PAPERS

4202

**Zeolithic imidazolate framework decorated bacterial cellulose coating for enhancing particulate filtration and adsorption from liquid and vapour phases of woven fabric**

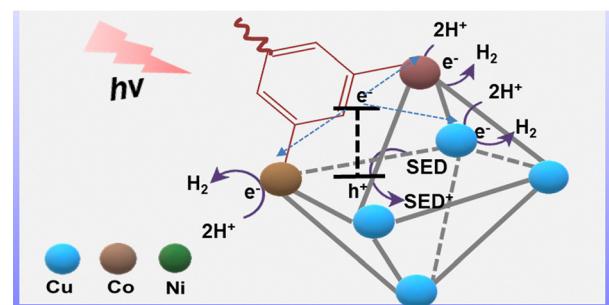
Joanne Li, Armando Garcia, Anett Kondor, Corinne Stone, Martin Smith, Mike Dennis and Koon-Yang Lee\*



4211

***In situ* decorated Ni and Co in a CubTC MOF for synergistic photocatalytic hydrogen generation**

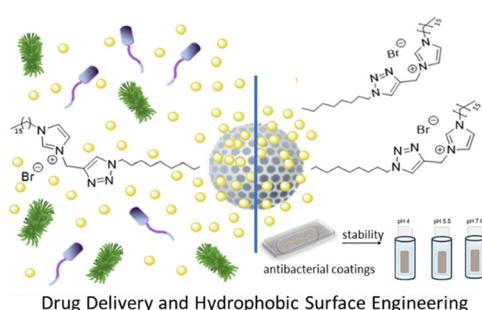
Bhavya Jaksani, Janardhan Abburi, Hafijul Islam, Spandana Gonuguntla, Tinku Baidya and Ujjwal Pal\*



4220

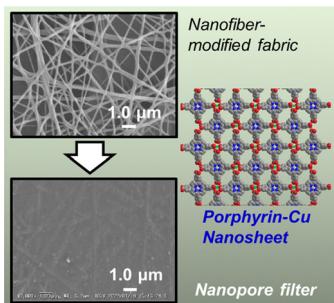
**Ionic liquid modified mesoporous silica nanocarriers for efficient drug delivery and hydrophobic surface engineering**

Annika Szymura, Shaista Ilyas,\* Florian Grohmann and Sanjay Mathur



## PAPERS

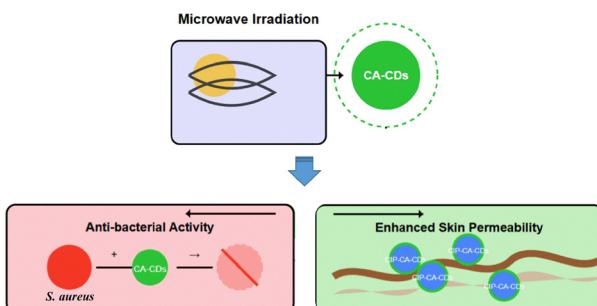
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### Hybridization of nanofiber-modified fabrics with porphyrin-based nanosheets for nanoparticle capture

Yusuke Kuramochi, Yuna Aoki, Kyoko Enomoto, Seiji Nakamura, Hideyuki Tanaka, Keiichiro Ozawa, Miki Hasegawa, Osamu Ohsawa, Kei Watanabe\* and Kazuyuki Ishii\*

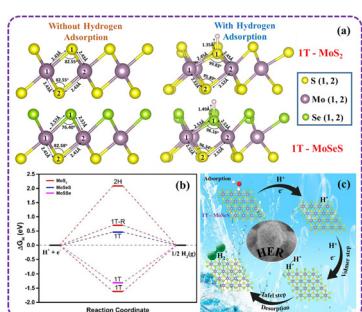
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### Cinnamic acid-derived carbon dots by microwave irradiation synergise the ciprofloxacin effect against *Staphylococcus aureus* and promote its skin permeability

Tompe Krishna Vitthal, Varaprasad Rao Regu, Bhabani Shankar Das, Ashirbad Sarangi, Mahendra Gaur, Amrita Ray, Arun Kumar Pradhan, Soma Chattopadhyay and Bharat Bhushan Subudhi\*

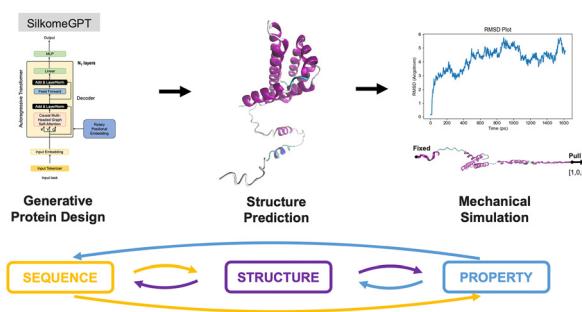
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### Phase selective hydrothermal synthesis of 1T MoS<sub>2</sub> and Janus 1T MoSSe for the hydrogen evolution reaction

Kushal Mazumder, Chob Singh, N. J. Hemavathi, Suman Kalyan Sahoo, Arvind H. Jadhav and Pramoda K. Nayak\*

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### Generative design and molecular mechanics characterization of silk proteins based on unfolding behavior

Wei Lu and Markus J. Buehler\*

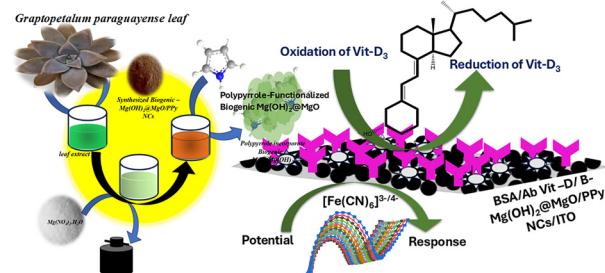


## PAPERS

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**Fabrication of a polypyrrole-functionalized biogenic  $Mg(OH)_2@MgO$  immunosensor, synthesized using *Graptotetalum paraguayense* leaf extract, for selective and efficient impedimetric detection of cholecalciferol (Vit-D<sub>3</sub>)**

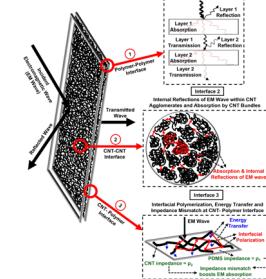
Sarita Shaktawat, Surendra K. Yadav and Jay Singh\*



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**Tailoring electromagnetic interference shielding properties in sandwich architectures made with low-concentration multi-walled CNT-reinforced PDMS**

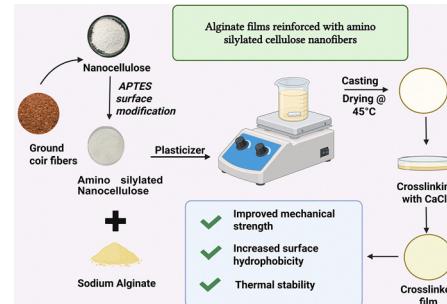
Pavithra Ananthasubramanian, Pritom J. Bora, Chandana Gadadasu, Praveen C. Ramamurthy and Nagarajan Raghavan\*



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**Influence of amino silane-modified nanocellulose on the physico-chemical and mechanical properties of alginate films**

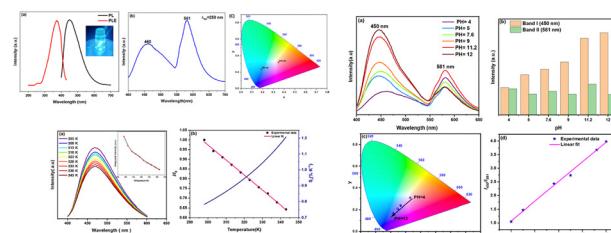
Shenbagaraman Akshaya and A. Joseph Nathanael\*



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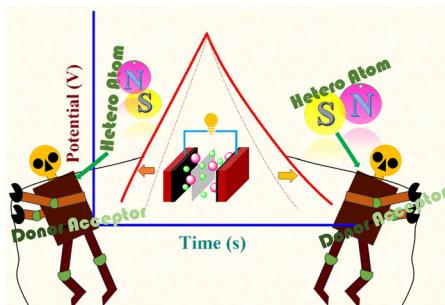
**Highly photoluminescent carbon dots: a multifunctional platform for pH sensing, nano thermometry, and mercury(II) detection**

Mouna Fhouda, Ikhlas Kchaou, Christian Hernández-Álvarez, Mohamed Dammak,\* Sami Boufi and Inocencio R. Martín



## PAPERS

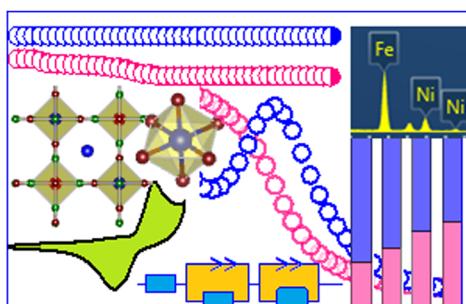
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**Enhanced electrochemical performance of S,N-containing carbon materials derived from covalent triazine-based frameworks with a tetrathiafulvalene core**

Arijit Maity, Anupam Jana, Sandeep Kumar Dey, Christoph Janiak\* and Asamanjoy Bhunia\*

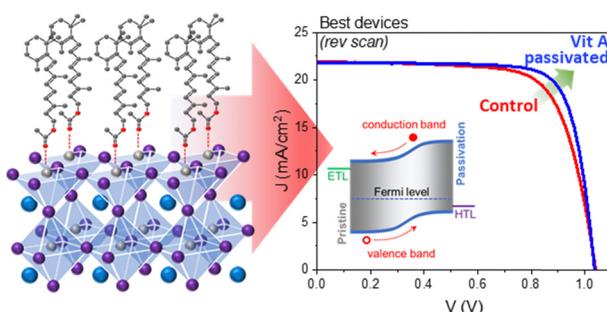
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**Investigation of energy storage performance in organic molecule-stabilized nickel ferrocyanide nanoparticles for supercapacitor applications**

Pooja Kumari, Lungelo Lekokotla, Chandan Saha, Sarit K Ghosh, Harishchandra Singh and Kaushik Mallick\*

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**Vitamin A as a simple, dual-role agent for the band bending-induced passivation of perovskite solar cells**

James C. Solano, Itaru Raifuku,\* Hidenori Kawanishi and Yukiharu Uraoka

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**Chitosan–acrylic acid biomaterial with an antimicrobial nature supports biomineralization and is suitable for bone tissue regeneration**

Sweta Agarwal, Abhishek Singh, Satish Kumar, Tejas Pravin Rokade, Chandan Goswami and Luna Goswami\*

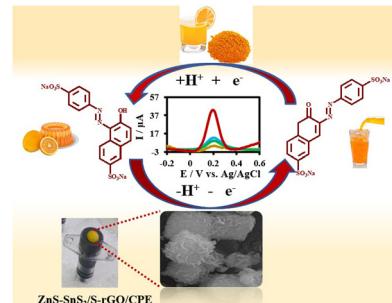


## PAPERS

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**A ZnS–SnS<sub>2</sub>/S–rGO ternary heterostructure for electrochemical detection of azo toxic dye sunset yellow in food samples**

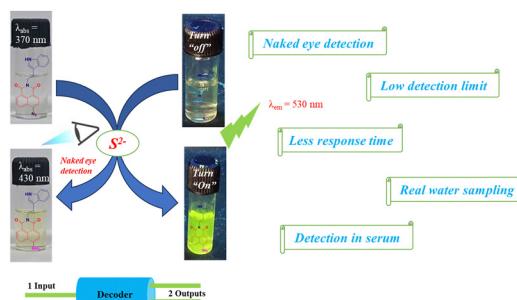
Hanieh Ghaedi, Khadijeh Ghanbari\* and Sepideh Bonyadi



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**A naphthalimide-derived chemosensor for ratiometric detection of sulphide ions: insights into the S<sup>2-</sup>-driven reduction cascade, real-time applications and live cell imaging of bacterial cells**

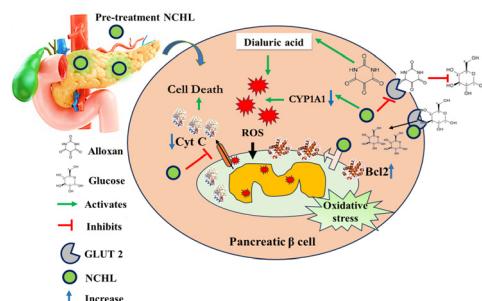
Saurabh Gupta, Gulshan Kumar, Vijay Luxami and Kamaldeep Paul\*



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**Unveiling the nano-particle enabled synergistic mitigation of the Bcl2/Cyt c/CYP1A1 signaling axis as a protective therapeutic route in mitochondrial dysfunction associated diabetes**

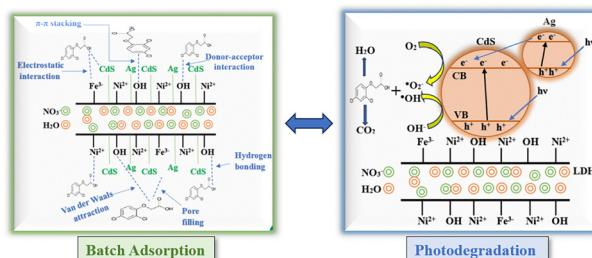
Sudatta Dey, Rishita Dey, Priyanka Sow, Banani Bhattacharjee, Arnob Chakraborty, Sujan Sk, Manindranath Bera, Sisir Nandi, Pradeepa Guptaroy and Asmita Samadder\*



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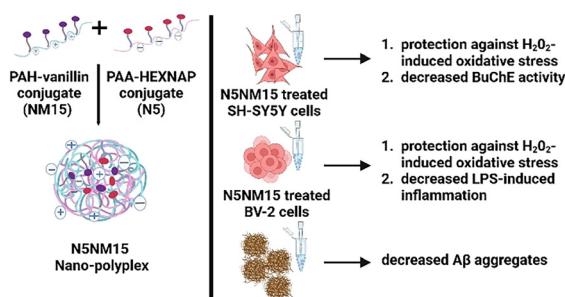
**Utilization of a cadmium sulfide/nickel–ferric layered double hydroxide nanocomposite decorated with silver nanoparticles for efficient adsorption and photocatalytic degradation of 2,4-dichlorophenoxyacetic acid**

Walaa A. Shaltout,\* Asaad F. Hassan, Maha S. Elsayed and H. Hafez



## PAPERS

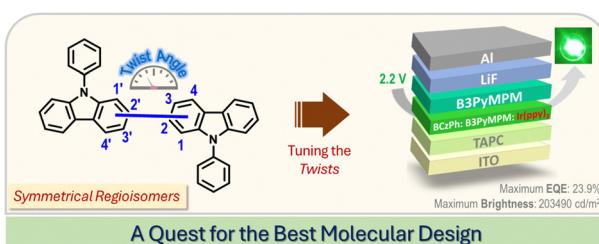
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**Development, characterisation and neuroprotective effects of polymer–drug conjugate nano-polyplex: working towards a multi-target treatment for neurodegenerative diseases**

Nuruddin Mahadik, Gemma A. Barron, Paul Kong Thoo Lin and Colin J. Thompson\*

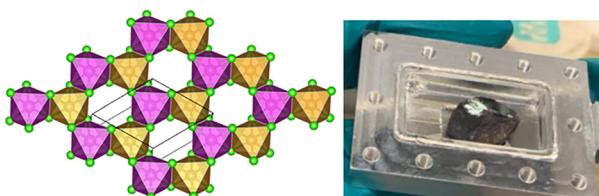
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**Connectivity and twist: engineering high-performance green phosphorescent OLEDs using unipolar symmetric bicarbazole regioisomers**

Kalidass Kollimalaian, Jia-Fan Wu, Yu Hsuan Lin, Ya-Hsin Cheng, Premkumar Gnanasekaran, Sudhakar Maddala, Mandy M. Lee, Shih-Sheng Sun, Chih-Hao Chang,\* Yuan Jay Chang\* and Venkatakrishnan Parthasarathy\*

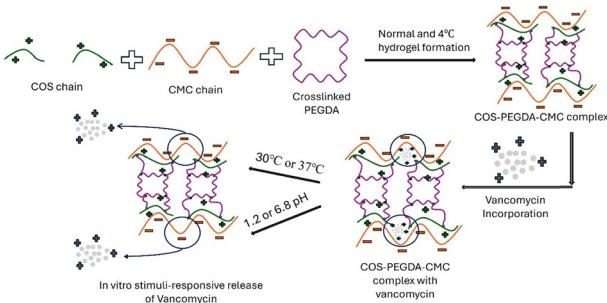
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**Magnetic properties of a non-centrosymmetric polymorph of  $\text{FeCl}_3$**

Joshua J. B. Levinsky, Ankit Labh, Vladimir Pomjakushin, Uwe Keiderling, Alexander C. Komarek, Li Zhao, Jacob Baas, Catherine Pappas and Graeme R. Blake\*

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**Effect of the temperature of biomixing on the pH/temperature sensitive controlled drug release of a chitooligosaccharide-based hydrogel**

Mohammad Muhtasim Ittisaf, Md. Rakid-Ul-Haque, Nishat Tabassum, Mehedi Hasan Pritom, Md. Shad Hossain Tanvir, M. Azam Ali and Shoeb Ahmed\*

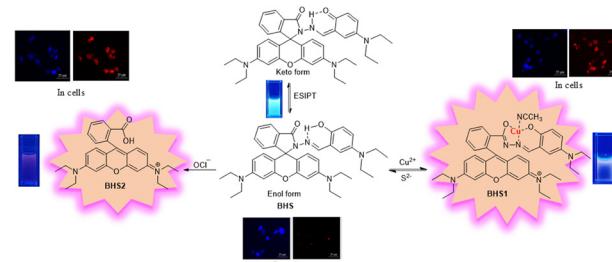


## PAPERS

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**Fluorescence switching via competitive ESIPT and spirolactam ring opening in a multifunctional rhodamine B probe for selective detection of  $\text{Cu}^{2+}$  and  $\text{OCl}^-$ : theoretical insights with anticancer and biosensor activity**

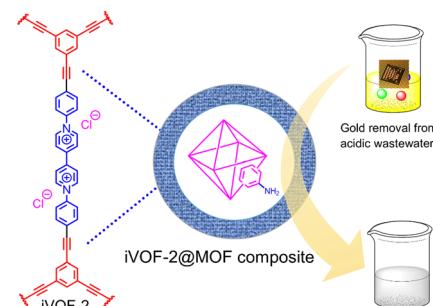
Vishnu S, Avijit Kumar Das,\* Gouri Karan and Sujata Maiti Choudhury



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**Gold recovery from acidic wastewater using ionic viologen organic and metal–organic framework composites**

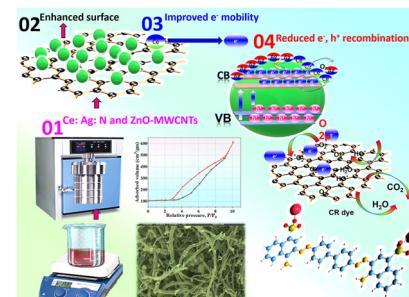
Sk Abdul Wahed, Atikur Hassan\* and Neeladri Das\*



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**Synergistic Ce/Ag/N-doped ZnO–MWCNT nanocomposites for efficient photocatalytic wastewater remediation with visible light**

Manisha Dagar, Suresh Kumar, Amit Jain,\* Anil Vohra, Manohar Singh, Jasvir Dalal,\* Sanjeev Kumar and Sandeep Kaushal



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**Ni–NiCr nanoparticles incorporated carbon nanofibers as robust electrocatalysts for efficient glycerol oxidation**

Nasser A. M. Barakat,\* Shimaa Hamada, Ibrahim Mustafa and Hesham Alhumade

