

# Materials Advances

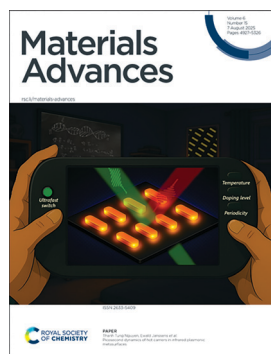
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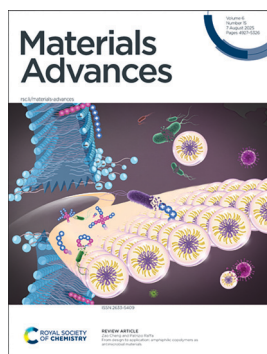
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### Cover

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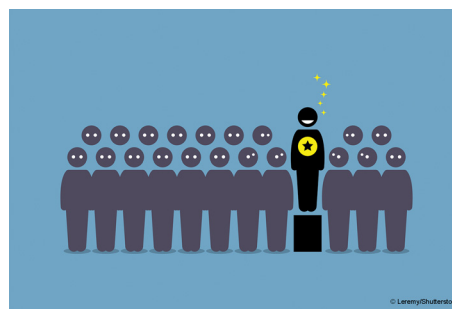
### Inside cover

See Zao Cheng and Patrizio Raffa, pp. 4939–4968. Image reproduced by permission of Zao Cheng and Patrizio Raffa from *Mater. Adv.*, 2025, 6, 4939.

## EDITORIAL

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### Outstanding Reviewers for *Materials Advances* in 2024

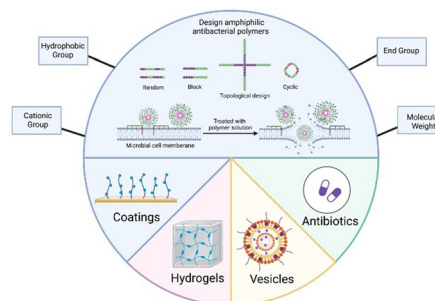


## REVIEWS

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### From design to application: amphiphilic copolymers as antimicrobial materials

Zao Cheng and Patrizio Raffa\*



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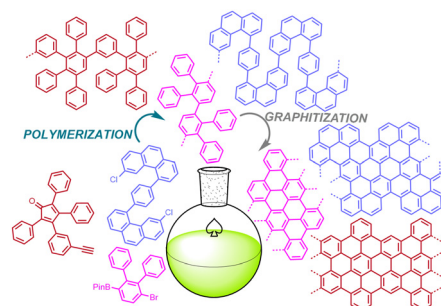


## REVIEWS

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**Solution-phase synthesis of graphene nanoribbons: a review on polymerization strategies**

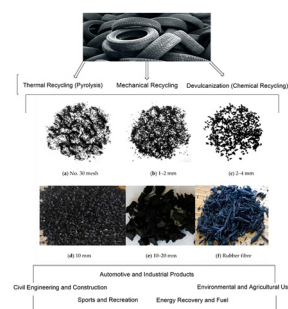
Kaysa Sekhavati, Vikas Sharma and Ashok Keerthi\*



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**A comprehensive review of tire recycling technologies and applications**

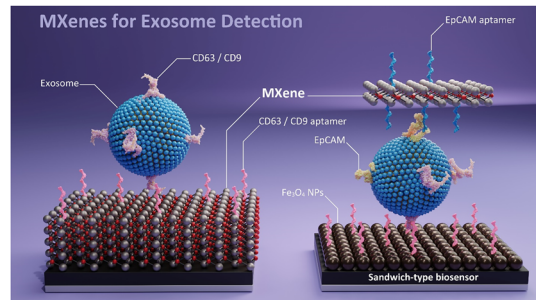
Waham Ashaier Laftah\* and Wan Aizan Wan Abdul Rahman



5011

**MXenes for exosome detection: a new frontier in biomolecular analysis**

Siavash Irvani,\* Atefeh Zarepour, Arezoo Khosravi, Ali Zarrabi,\* Ehsan Nazarzadeh Zare, Rajender S. Varma and Pooyan Makvandi\*

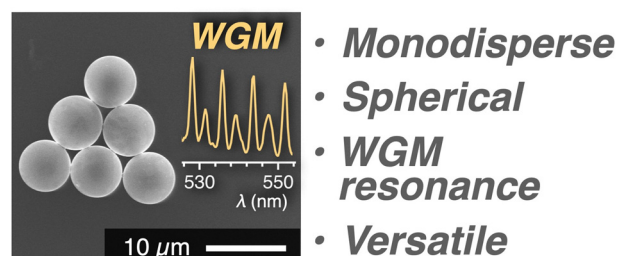


## COMMUNICATION

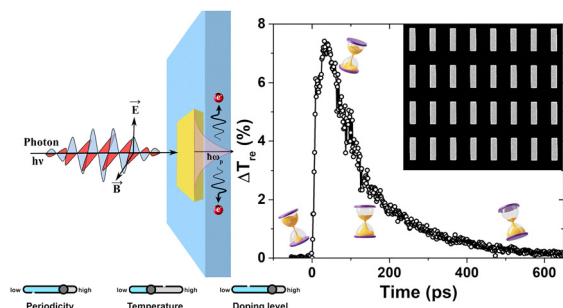
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**Monodisperse and size-modulable spherical optical resonators produced from synthetic polymers by inkjet printing toward applications under water**

Kariana Kusuma Dewi, Hiroshi Yamagishi,\* Wey Yih Heah, Sooyeon Kim, Asuma Kubono, Yuichi Taniguchi and Yohei Yamamoto\*



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### Picosecond dynamics of hot carriers in infrared plasmonic metasurfaces

Matias Bejide, The Linh Pham, Amirmostafa Amirjani, Guillaume Libeert, Nils Deßmann, Thanh Tung Nguyen\* and Ewald Janssens\*

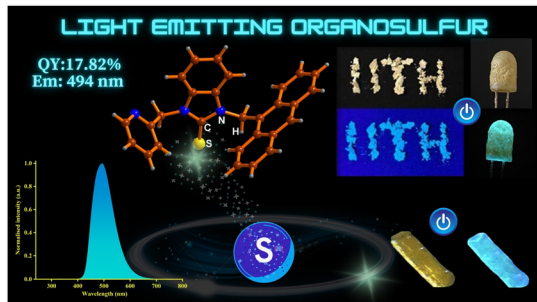
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### Development of a colorimetric sensor utilizing itaconic acid-mediated Griess reaction for sensitive detection of nitrite and nitrate in agricultural products

Anubhab Das, Sindhu I Sanakal, Gomathi Sivakumar, Anashwara Babu and Samarendra Maji\*

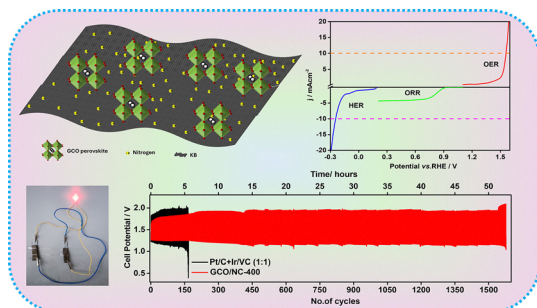
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### Near blue light emitting benzimidazol-2-thione

Bikash Lahkar, Gopendra Muduli, Suman Mandal, Arushi Rawat, Abhilash Sahu, Kohsuke Matsumoto, Osamu Tsutsumi and Ganesan Prabusankar\*

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### Trifunctional GdCoO<sub>3</sub> perovskite electrocatalysts for zinc-air battery and water electrolysis applications

Annet Anna Thomas, Anook Nazer Eledath, M. Junaid Bushiri and Azhagamuthu Muthukrishnan\*



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### Synthesis and characterization of lignin-modified geopolymer composites for aqueous phase sequestration of methyl orange dye in a fixed-bed column

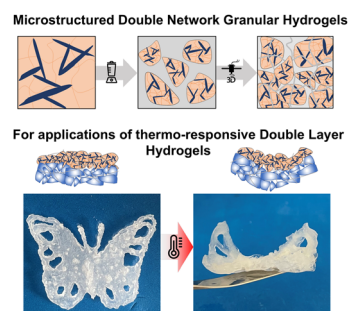
Idriss Kamdem Taquiete, Hermann Dzoujo Tamaguelon,\* Victor Shikuku, Sylvain Tome, Donald Kamdem Njouond, Manelle Fouetfack Dongmo, Hanibal Othman, Annette Vollrath, Abdulrahman Mohabbat, Christoph Janiak, Charles Banenzoué and David Joh Daniel Dina\*



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### Microstructured thermo-responsive double network granular hydrogels

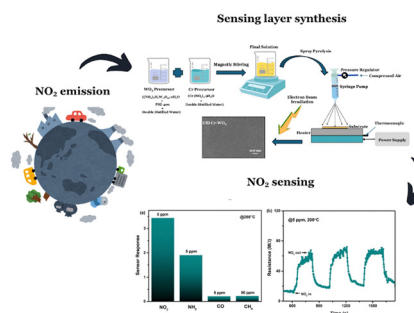
Alexandra Thoma, Reece Whatmore and Esther Amstad\*



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### Sensing of ultra-ppm level NO<sub>2</sub> gas via synergistic effects of Cr doping and e-beam irradiation in WO<sub>3</sub> nanostructures

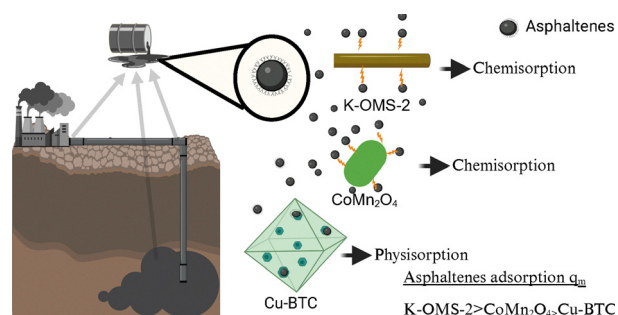
Anusha, P. Poornesh,\* Vikash Chandra Petwal, Vijay Pal Verma and Jishnu Dwivedi



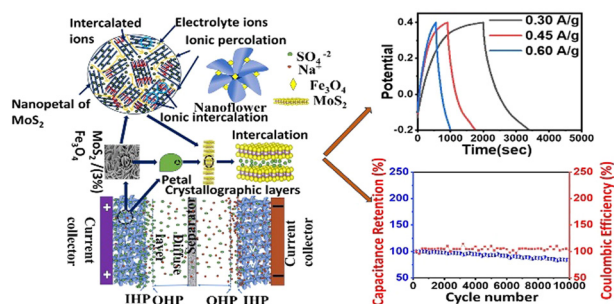
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### Exploring metal nanocomposites for asphaltene removal: the role of Cu-BTC, CoMn<sub>2</sub>O<sub>4</sub> and K-OMS-2 in the adsorption and oxidation of asphaltenes

Abhishek Nayak, Shanon Viegas, Nithya Rajagopal, Adrian Marcel Rodrigues, Harshini Dasari and Nethaji Sundarabal\*



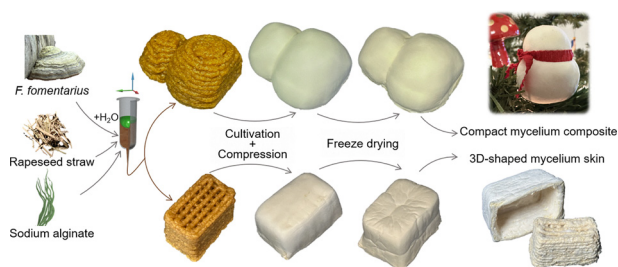
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**Defect mediated modulation of electrochemical efficacy and stability of Fe<sub>3</sub>O<sub>4</sub> nanodiamond incorporated MoS<sub>2</sub> based hierarchical 2D nanostructures for high performance supercapacitor electrodes**

Md. Raihan Siddiki, Shahid Abubakar Abtahee, Mehedi Hasan, Mizanur Rahaman, Muhammad Rakibul Islam and Md. Abdullah Zubair\*

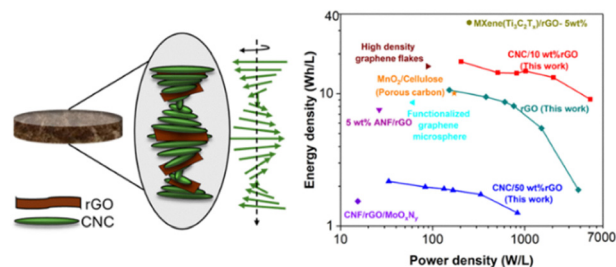
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**Extrusion-based additive manufacturing of complex three-dimensional ultra-lightweight materials using the basidiomycete *Fomes fomentarius***

Huaiyou Chen,\* Bertram Schmidt, Andrew Gennett, Paul H. Kamm, Aleksander Gurlo, Vera Meyer and Ulla Simon\*

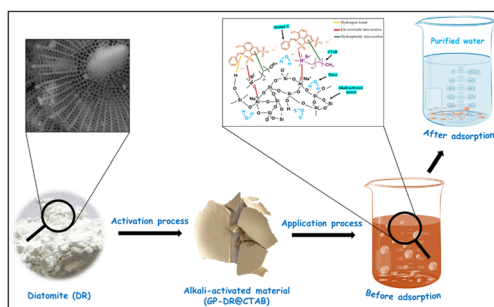
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**Chiral bioderived supercapacitor electrodes based on cellulose nanocrystals**

Sai Gowtham Allu, Mirina E. Enderlin and Paraskevi Fluda\*

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**Enhanced adsorption of Orange G dye using activated diatomite: a novel functionalization approach**

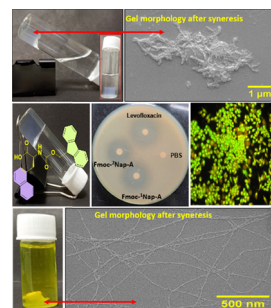
Youssef Ettahiri,\* Ayoub Aziz, Khadija Felaous, Abdessalam Bouddouch, Brahim Akhsassi, Lahcen Bouna, Abdeljalil Benlhachemi and Luis Pérez-Villarejo



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### External stimuli responsive syneresis of amino acid-based bioactive hydrogels: a sustainable platform for environmental remediation

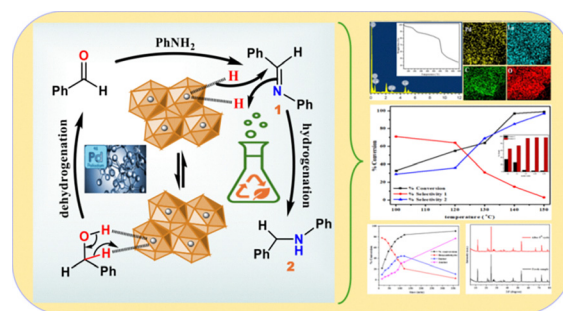
Abhinandan Bera, Ritu Raj Patel, S. Daisy Precilla, Meenakshi Singh, B. Agiesh Kumar, Sudipta Bhowmik, Mayank Varshney and Subhasish Roy\*



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### Efficient and selective *N*-benzylation of amines using Pd-doped La-BDC MOF

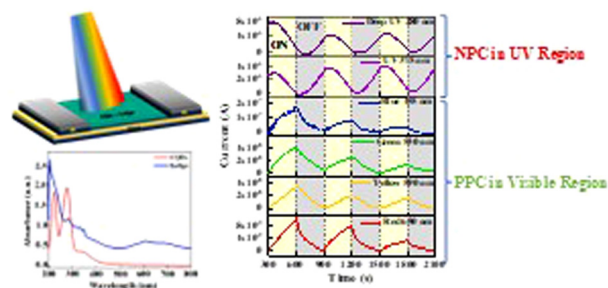
Amreet Kaur, Yadvinder Singh, Avtar Singh, Sandeep Kaushal\* and Rahul Badru\*



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### Wavelength dependent bidirectional photoconductivity in carbon quantum dot embedded in indigo molecular layer with enhanced detectivity

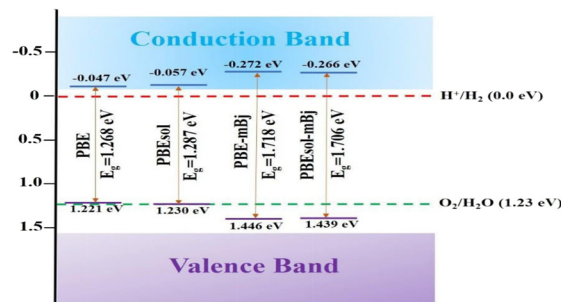
Amrita Bharati Mishra and R. Thamankar\*



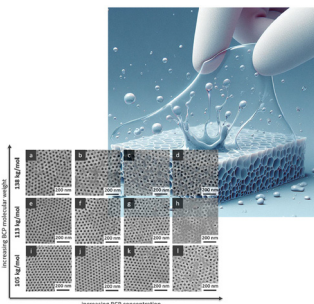
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### A DFT insight into lead free double halide perovskite Cs<sub>2</sub>Tel<sub>6</sub> for clean and renewable energy sources

Md. Sajib Hossian, Md. Majibul Haque Babu, Alamgir Kabir,\* Ahmed Azzouz Rached and Md. Ibrahim Kholil



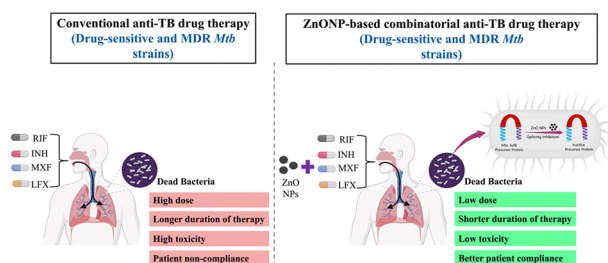
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### Tailoring poly(vinylbenzocyclobutene)-*b*-poly(4-vinylpyridine) isoporous block copolymer membranes: functionalization and performance optimization

Michael Appold, Sofia Rangou,\* Brigitte Lademann and Volkan Filiz\*

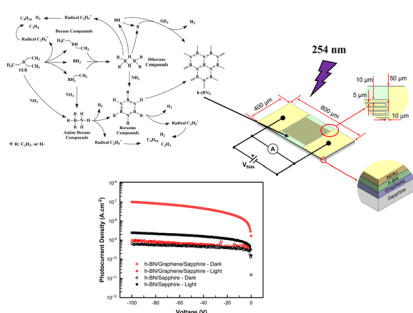
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### Bactericidal activity of ZnO nanoparticles–anti-TB drug combination towards the H37Rv strain and multidrug-resistant isolates of *Mycobacterium tuberculosis* via SufB splicing inhibition

Deepak Kumar Ojha, Ashwaria Mehra, Sunil Swick Rout, Sidhartha Giri and Sasmita Nayak\*

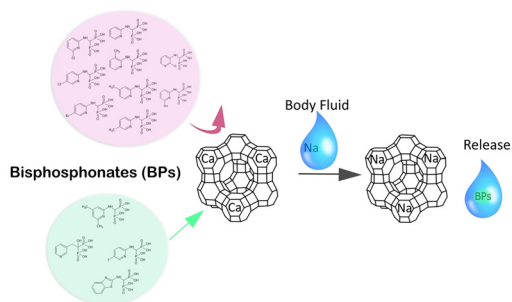
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### van der Waals epitaxial growth of hexagonal boron nitride on graphene for enhanced deep ultraviolet sensing performance

Hoang Hung Nguyen, Seongjun Kim, Tran Viet Cuong, Huynh Tran My Hoa, Anh Hao Huynh Vo, Thien Trang Nguyen, Kang Bok Ko and Young Jae Park\*

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### Controlled release of aminomethylenebisphosphonates from a calcium zeolite carrier: investigating the impact of compound structure on sorption and release profiles

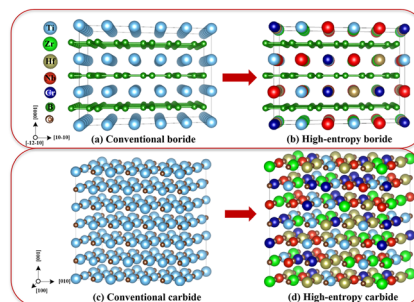
Monika Zielińska,\* Natalia Banaś, Rozalia Gatecka, Ewa Chmielewska, Maria Ratajczak, Michael Fischer, Paulina Lechwar, Katarzyna Gawet-Bęben, Adam Voelkel and Mariusz Sandomierski



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### Predictive screening of phase stability in high-entropy ceramics

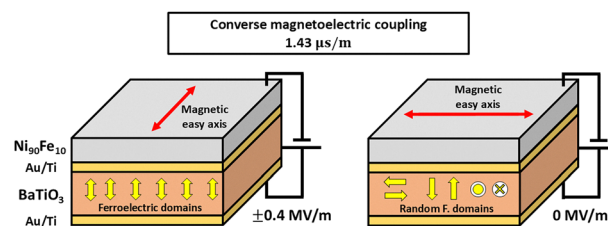
Muhammad Waqas Qureshi,\* Shuguang Wei, Longfei Liu, Sudipta Paul, Jun Young Kim, Chuan Zhang, Xudong Wang, John H. Perepezko, Dane Morgan and Izabela Szlufarska\*



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### Voltage-controlled rotation of magnetic anisotropy in the $\text{Ni}_{90}\text{Fe}_{10}/\text{BaTiO}_3(001)$ heterostructure

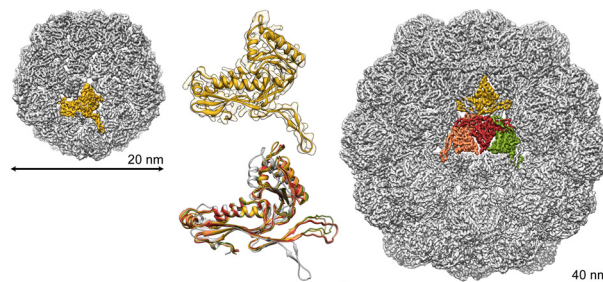
A. Begué, M. W. Khaliq, N. Cotón, I. Lorenzo-Feijoo, M. A. Niño, M. Foerster and R. Ranchal\*



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### Biocatalytic application and structural elucidation of robust bacterial protein nanocages

Ognjen Pećanac, Alexander Belyy,\* Caterina Martin, Rosalie Kleissen, Marco W. Fraaije\* and Nikola Lončar\*



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### Microwave-synthesized $\text{Bi}_2\text{MoO}_6$ nanoplates for high performance symmetric and asymmetric supercapattery devices

Anu, Pawanpreet Kour, Khadim Hussain, Prakash Chand, J. Nagendra Babu, C. S. Yadav, Joel Garcia,\* Surender Kumar Sharma\* and Kamlesh Yadav\*

