

# Materials Advances

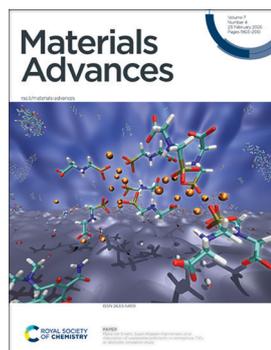
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## IN THIS ISSUE

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### Cover

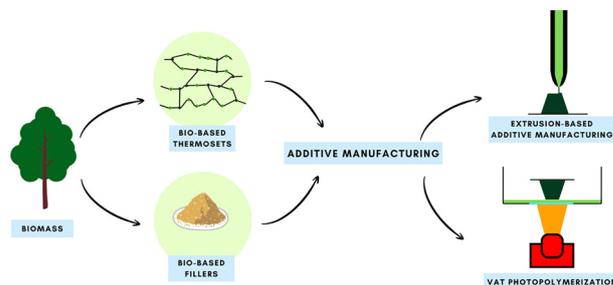
See Maria von Einem, Susan Köppen-Hannemann *et al.*, pp. 2017–2038. Image reproduced by permission of Maria von Einem and Susan Köppen-Hannemann from *Mater. Adv.*, 2026, 7, 2017.

## REVIEWS

1918

### The role of bio-based constituents in additive manufacturing with thermosetting polymers and vitrimers: a review

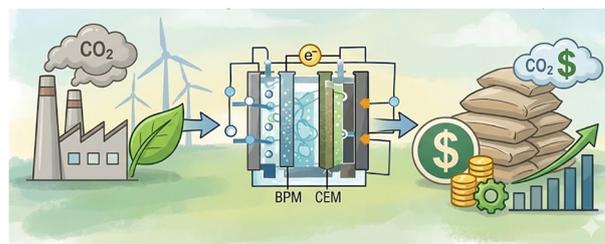
Elliott Bonnet Martin, Aurore Denneulin, Michael Lecourt, Mark Irle and Davide Beneventi



1936

### Electrochemical cement synthesis: a materials-centered framework for reactor design, manufacturing, and techno-economic feasibility

Abdallah M. Abdeldaiem and Nageh K. Allam\*



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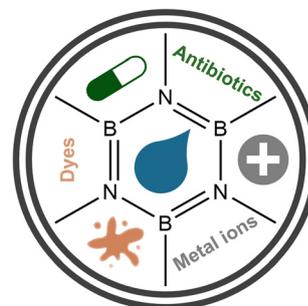
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## REVIEWS

1963

## Is porous boron nitride suited for water treatment? – a critical perspective on the materials water stability

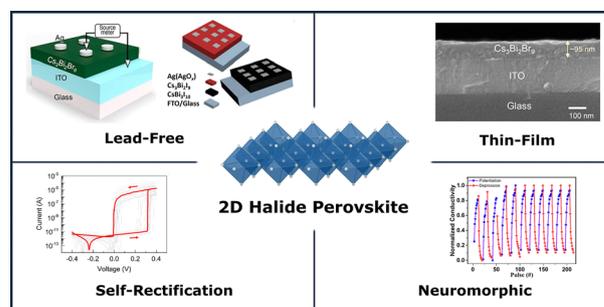
Tim Jähnichen



1986

## Two-dimensional halide perovskite memristors for resistive switching memory systems

Hyojung Kim

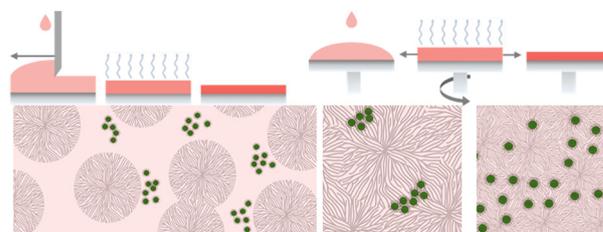


## COMMUNICATIONS

2003

## Influence of film formation kinetics on the dispersion of colloidal quantum dots in organic small molecule matrices

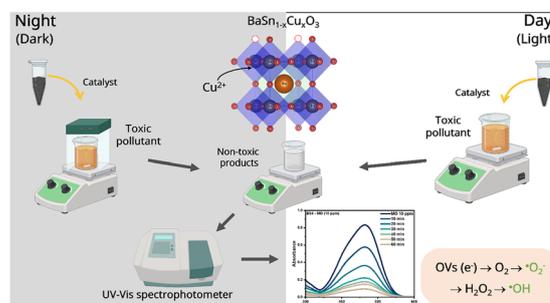
Rachel C. Kilbride, Michael P. Weir, James Xiao, Simon A. Dowland, Jurjen F. Winkel, John E. Anthony, Akshay Rao, Richard A. L. Jones, Anthony J. Ryan and Daniel T. W. Toolan\*



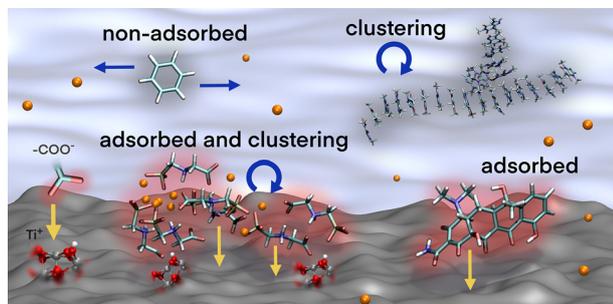
2012

## A 24/7 perovskite catalyst through oxygen vacancy engineering for the rapid catalytic degradation of azo dyes under dark and ambient light conditions

Suruthi Rajendran, Dhakshnamoorthi Harikaran and Vijayaraghavan R\*



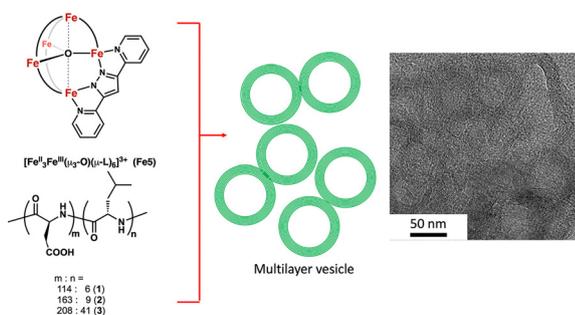
2017



### Adsorption of wastewater pollutants on amorphous TiO<sub>2</sub>: an atomistic simulation study

Maria von Einem, Filippo Balzaretti, Manuela Romero, Wilke Dononelli, Lucio Colombi Ciacchi, Giancarlo Franzese and Susan Köppen-Hannemann\*

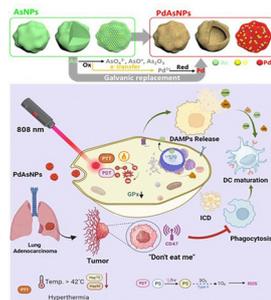
2039



### Supramolecular hybrid of Fe pentanuclear complex/diblock copolypeptide amphiphiles with pH-responsive nano/microstructures in water

Keita Kuroiwa,\* Touka Tada, Miki Ichise and Shigeyuki Masaoka

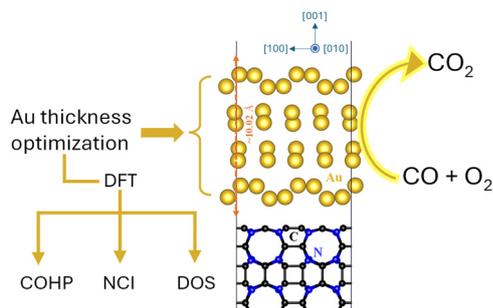
2047



### Revisiting bimodal cancer phototherapy with immunogenicity via galvanically-driven hollow Pd–As nanoshells

Sun Woo Kim, Manorma Negi, Youbin Heo, Apurva Jaiswal, Eun Ha Choi, Neha Kaushik,\* Hongje Jang\* and Nagendra Kumar Kaushik\*

2059



### DFT insights into nano-Au/carbon nitride: potent CO oxidation facilitated by weak metal–support interaction

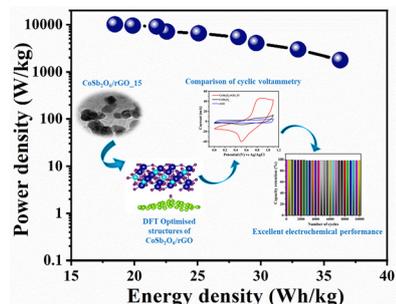
Milad Behroozi, Esmail Doustkhah\* and M. Hussein N. Assadi\*



2068

### Large improvement in the charge storage performance of a $\text{CoSb}_2\text{O}_6$ -reduced graphene oxide (rGO) composite – probing the role of rGO through experiments and theoretical analyses

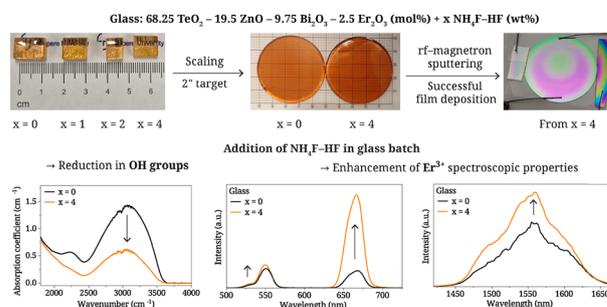
Parul, Surjit Sahoo, M. Amrutha, Satyajit Ratha, Brahmananda Chakraborty\* and Saroj Kumar Nayak\*



2086

### Fluoride-assisted hydroxyl reduction in $\text{Er}^{3+}$ -doped tellurite glass and amorphous thin films for enhanced optical and spectroscopic performances

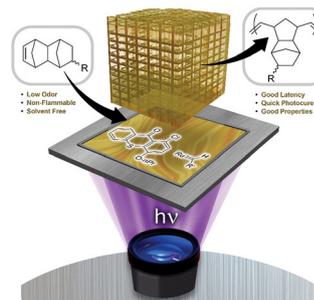
Pradeep Ramanan,\* Florent Starecki, Jan Gutwirth, Virginie Nazabal, Matthieu Roussey, Petr Némec\* and Laetitia Petit



2097

### Properties of cyclic olefin-based photo-ROMP resins suitable for DLP 3D printing applications

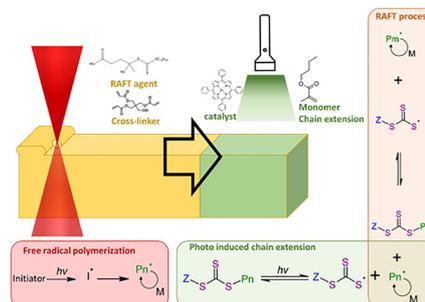
Oleksandr Burtovyy, Kyle Cushman, Gerhard A. Meyer, Linda Zhang, Leah Langsdorf, Alex Niemiec, Dan Gastaldo, Doug Skilskyj, Krzysztof Skowerski and Larry F. Rhodes\*



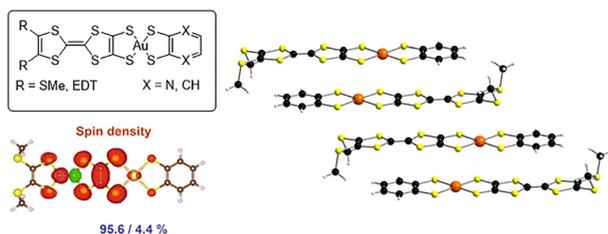
2103

### Exploration of post-print modification of 3D photo-printed materials for microfabrication by means of RAFT polymerization

Frank Marco den Hoed, Tjon F. Chen, Virgilio Mattoli, Luca Ceseracciu and Patrizio Raffa\*



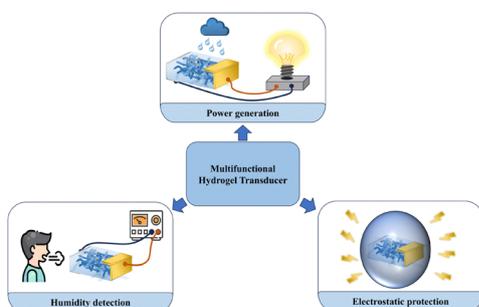
2115



### Localization effects in mixed-ligand gold bis(dithiolene) complexes as single-component conductors

Haia Kharraz, Pere Alemany, Eric Canadell,\*  
Antoine Vacher, Thierry Roisnel, Hengbo Cui,  
Kee Hoon Kim, Marc Fourmigué\* and Dominique Lorcy\*

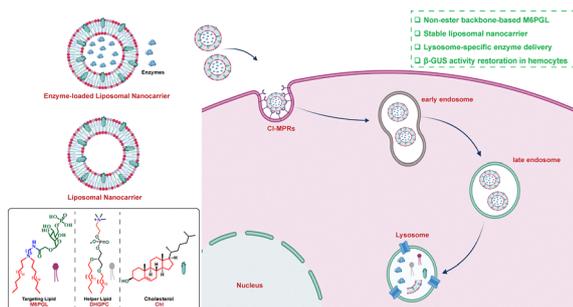
2128



### A hydrogel transducer for wearable devices: energy supply, electrostatic protection, and circuit modeling

Yue Shi, Zheming Zhang, Zekun Zhou,\* Yao Yao and  
Jingjie Huang

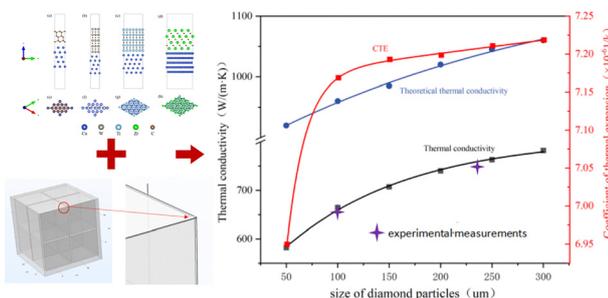
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### Mannose-6-phosphate functionalized liposomal nanocarrier for lysosome-specific delivery of $\beta$ -glucuronidase in a *Drosophila* model of MPS VII

Abinash Padhy, Apurba Das, Keya Mondal,  
Basudeb Mondal, Rupak Datta\* and Sayam Sen Gupta\*

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### A study on interfacial structure design and thermal conductivity optimization of diamond/copper composites

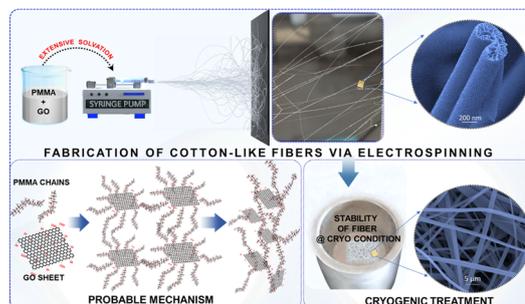
Dandan Li, Jian Wang, Yunzhen Jiang, Zhanghui Liu,  
Guojie Huang,\* Jinsong Feng, Bo Peng, Bing Wang and  
Ruzhi Wang\*



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### Mechanistic insights into graphene oxide-enhanced single electrospun PMMA fibres achieved via surface interface engineering

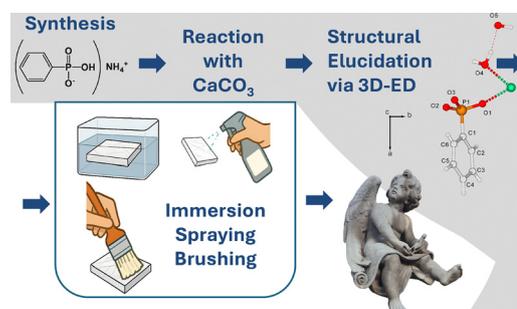
Anushree S. Bhat, Jonaid Ahmad Malik, Madhusudhana M. Devadiga, Irfan Ayoub, Ganesh Chandra Nayak, Nannan Wang, Javed N. Agrewala\* and Santosh K. Tiwari\*



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### Protecting white Carrara marble with organophosphorus salts: a case study of ammonium hydrogen phenylphosphonate

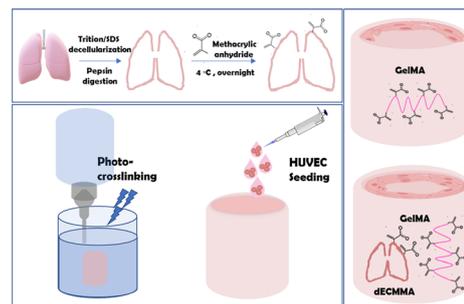
Simone Murgia, M. Carla Aragoni, Gianfranco Carcangiu, Simon J. Coles, Stefano Columbu, Guido Ennas, Vito Lippolis, Paola Meloni,\* Antonia Navarro Ezquerra, James B. Orton, Anna Pintus, Enrico Podda, Daniel N. Rainer, Domingo Gimeno Torrente\* and Massimiliano Arca\*



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### Methacrylated pulmonary dECM-enriched GelMA bioinks promote endothelialization and angiogenesis in 3D printed tubular constructs

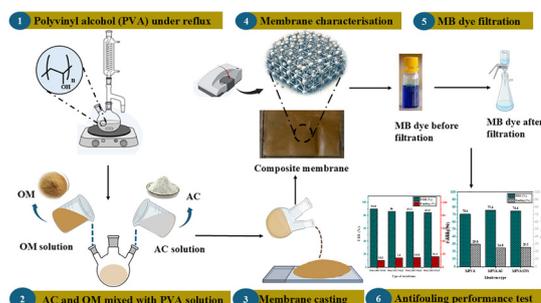
Nehar Celikkin,\* Maria Celeste Tirelli, Fabio Maiullari, Carolina Gutiérrez Cisneros, Vineeta Kaushik, Marina Volpi, Andreas Aerts, Ronny Mohren, Michiel Vandenbosch, Ruth Cardinaels, Arn Mignon and Marco Costantini



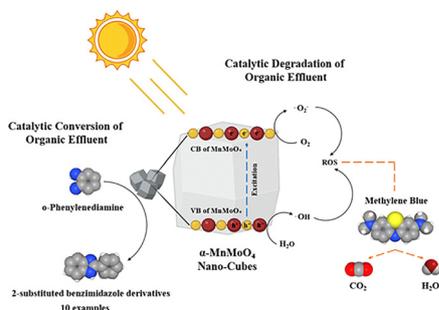
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### Activated clay/*Opuntia microdasys* incorporated polyvinyl alcohol membranes for fouling mitigation in wastewater filtration

Elikplim Nyabi, Andrews Ayim Oduro, Roland Tsoeke Agbetsi, Gideon Addai, Sampson Kofi Kyei, Francis Opoku, Ray Bright Voegborlo and Eric Selorm Agorku\*



2225



### Nature-inspired $\alpha$ -MnMoO<sub>4</sub> nanocubes from *Arachis hypogaea* for next-generation wastewater treatment and organic pollutant catalysis

Aakash Venkatesan, Aatika Nizam,\* Jeevitha Kallesh, Sumanth Hegde, Sampath Chinnam, R. Harini and Nagaraju Ganganagappa\*

2241

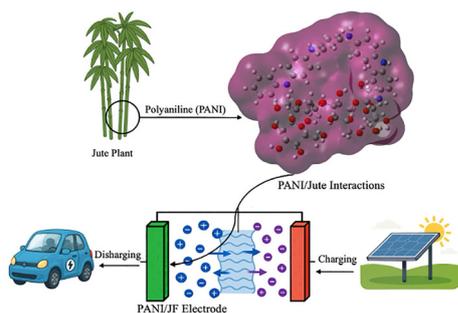
Using Sulfuric Acid–Phosphoric Acid Leaching to Remove Aluminum and Cathode Material Metal Residues from Spent Graphite



### Using sulfuric acid–phosphoric acid leaching to remove aluminum and cathode material metal residues from spent graphite

Venla Rantala, Toni Kauppinen, Tao Hu, Ali Huerta Flores, Anne Heponiemi, Ulla Lassi and Sari Tuomikoski\*

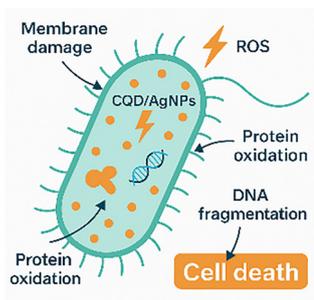
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### Polyaniline-functionalized jute fiber as a sustainable electrode for high-performance supercapacitors

Md. Sanwar Hossain, Md Humayun Kabir,\* Md Yeasin Pabel and Sabina Yasmin\*

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### Green synthesis of a CQD/AGNPs composite from guava leaf and its potent antimicrobial activity against multidrug-resistant ESKAPEE pathogens

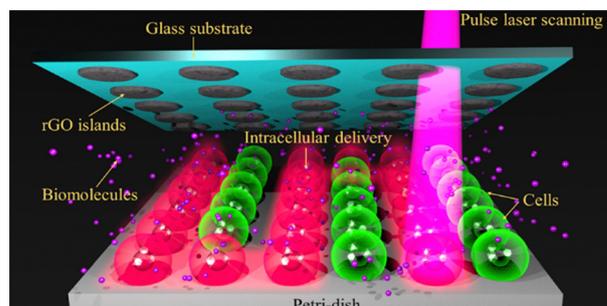
Hoang Thi Thu,\* Le Tuan Anh, Dang Thien Huong and Duong Ngoc Huyen



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### Immobilized, micro-patterned graphene nanoflake devices for high-throughput, uniform intracellular biomolecular delivery

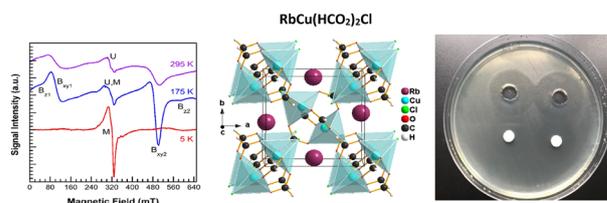
Donia Dominic, Rajdeep Ojha, Moeto Nagai, Srabani Kar and Tuhin Subhra Santra\*



2300

### A novel copper formate-based framework $\text{RbCu}(\text{HCO}_2)_2\text{Cl}$ : synthesis, crystal structure, thermal, vibrational and magnetic properties and antibacterial activity

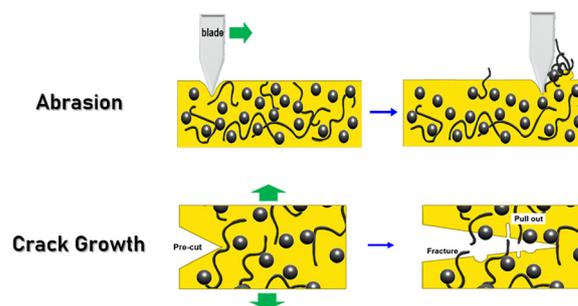
Asmae Ben Abdelhadi, Safaa Hidaoui, Rachid Ouarsal, Morgane Poupon, Michal Dusek, María de los Llanos Palop Herreros, Marco Antonio López de la Torre, Luis Lezama, Brahim El Bali, Mohammed Lachkar\* and Abderrazzak Douhal\*



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### The influence of carbon nanotubes on the abrasion and crack growth behaviors of styrene–butadiene rubber compounds

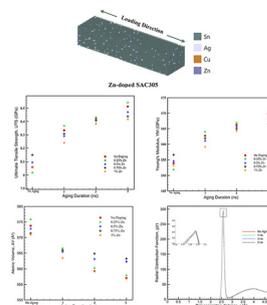
Gi-Bbeum Lee, Eun Jung Han, Dawon Kang, Preeyanuch Junkong and Changwoon Nah\*



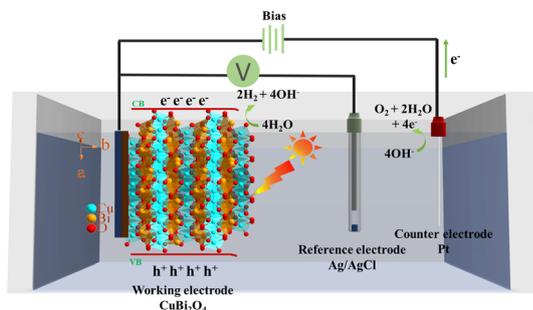
2322

### Analysis of mechanical properties in lead-free solders subjected to flash aging

Md Nurul Islam, Ruman Ahmed Shijan, Mohammad Motalab\* and Md. Rafat Al Razy Rafi



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### Enhancing the uniformity of $\text{CuBi}_2\text{O}_4$ thin films for photoelectrochemical (PEC) water splitting through a urea-modified ethylene glycol electrolyte

Xiuru Yang, Mansour Alhabradi, Anurag Roy, Manal Alruwaili, David Benson, Hong Chang, Xiaohong Li, Asif Ali Tahir\* and Yanqiu Zhu\*

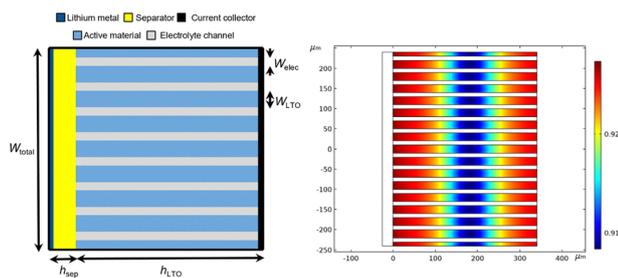
2349



### Eco-friendly cyanation strategies of aryl halides using recyclable nickel nanocatalysts with promising antibacterial and antioxidant activities

Asit Kumar Das,\* Md Sattar Ali, Arindam Misra, Md Sultan Saikh, Subhendu Dhibar, Sumit Kumar Panja, Aniruddha Das, Gourav Ghatak, Lokesh Kumar Rathore, Ashok Bera, Sanjay Bhar and Smritikana Biswas\*

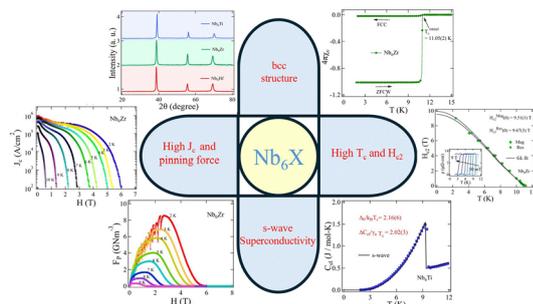
2362



### Numerical modeling of electrochemical transport and discharge mechanisms in hierarchically porous lithium-ion electrodes

Debanjan Sarker, Rajendra K. Bordia and Ulf D. Schiller\*

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### High critical temperature and field superconductivity in $\text{Nb}_{0.85}\text{X}_{0.15}$ , ( $\text{X} = \text{Ti}, \text{Zr}, \text{Hf}$ ) alloys: promising candidates for superconducting devices

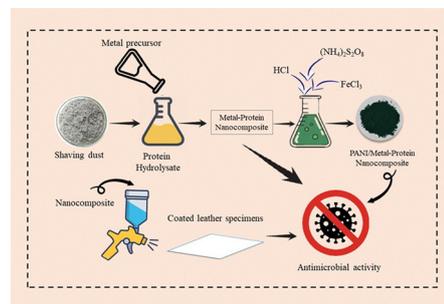
Roshan Kumar Kushwaha, Sonika Jangid, Priya Mishra, Suhani Sharma and Ravi Prakash Singh\*



2390

### Bio-based antimicrobial nanocomposites derived from tannery waste for functional leather coating: circular valorization of chrome shaving dust

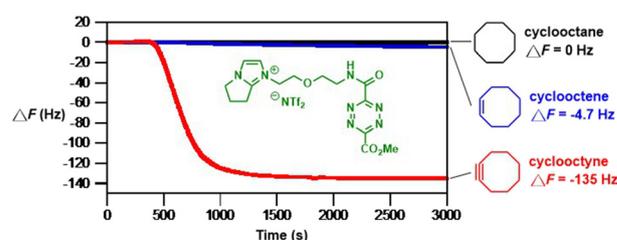
Sharmin Akter Liza, Md. Abdulla-Al-Mamun,\*  
Md. Nazmul Islam, Md. Rezaul Karim Rana and  
Md. Shariful Islam



2410

### Click-enabled tetrazine ionic liquid as an advanced material for chemo-selective gas detection via inverse electron-demand Diels–Alder reaction

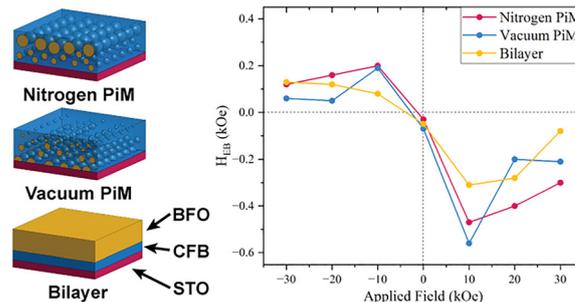
Chien-Yuan Chen, Yu-Hsin Chung, Yu-Qian Qiu,  
Wen-Chun Su, Wen-Ting Hsiao and Yen-Ho Chu\*



2416

### Tailored magnetic properties in CoFeB–BiFeO<sub>3</sub> nanocomposite thin films

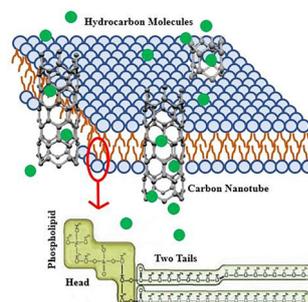
Lizabeth Quigley, Nirali A. Bhatt, Katrina Evancho,  
Jianan Shen, Juanjuan Lu, Claire A. Mihalko,  
James P. Barnard, Max Chhabra, Ping Lu, Raktim Sarma,  
Aleem Siddiqui and Haiyan Wang\*



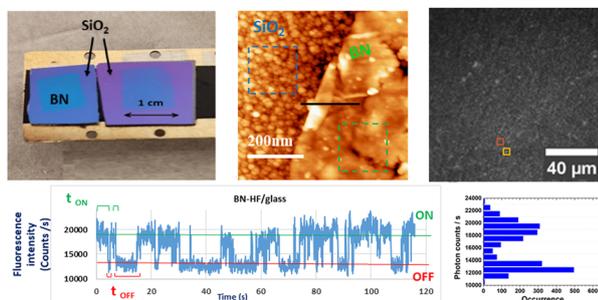
2426

### Application of carboxylated carbon nanotubes as artificial channels to facilitate *n*-decane transport through bacterial cell membranes

Sara Yazdani,\* Davoud Biria\* and Gholamreza Pazuki



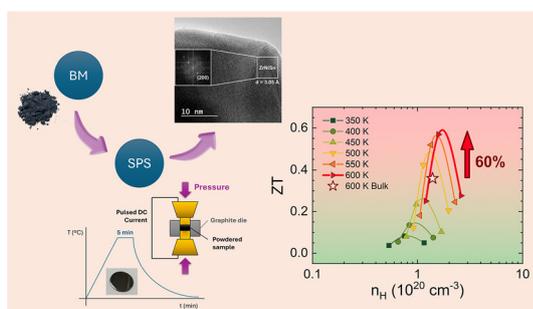
2441



### Effect of ammonia borane thermal decomposition under different Ar fluxes on large-area boron nitride films for quantum photonic applications

Elmahdi Amar, Tiago Queirós, Nicoleta Nicoara, Siva S. Nemala, Diego A. Garzón, James C. Peters, Jana B. Nieder, Pedro Alpuim, Carlos J. Tavares and Sascha Sadewasser\*

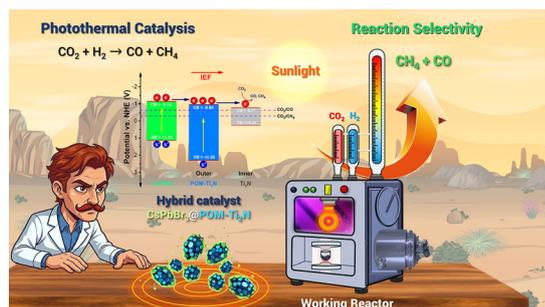
2454



### Synergistic effects of Sb doping and nanostructuring on spark plasma-sintered ZrNiSn thermoelectrics

José Luis Garrido-Álvarez, Javier López-García, Oscar Juan Dura, Matthias Schrade, Anthoula Poulia, Carlos F. Gutiérrez-González, Marta Suárez, Jesús Ángel Blanco, João Elias Rodrigues, Alaa Adawy, Victor Vega, Ole Martin Løvvik, Anette Eleonora Gunnæs and Cristina Echevarria-Bonet\*

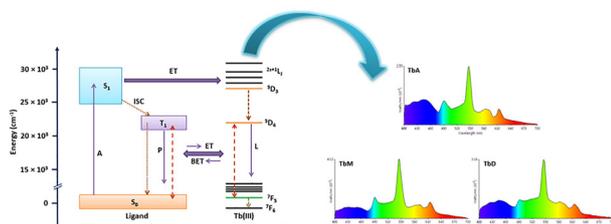
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### CsPbBr<sub>3</sub> nanocrystals supported on a partially oxidized Ti<sub>2</sub>N MXene for photothermal CO<sub>2</sub> conversion

Kevin Mego, Emanuela Accardo, Pedro Ruiz-Campos, Herme G. Baldovi\* and Pedro Atienzar\*

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### UV-induced near-white visible emission in dinuclear Tb(III) complexes: a photophysical, theoretical and computational study on fluxidentate ligand bridging and coordination geometry

Vandana Aggarwal, Devender Singh,\* Vandna Nishal, Anuj Dalal, Sumit Kumar, Rajender Singh Malik, Parvin Kumar, Jayant Sindhu and Varun Kumar



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## Mitochondria targeted small molecule-mediated chemo-photodynamic therapy induces apoptosis in cancer cells

Tripti Mishra, Phanindra Kumar, Sanyam, Asima Sahu, Anirban Mondal and Sudipta Basu\*

