

# Materials Advances

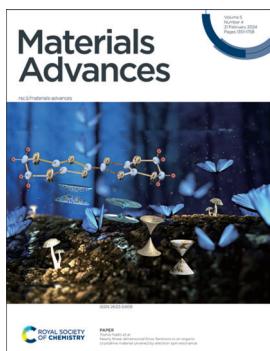
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### Cover

See Toshio Naito *et al.*, pp. 1492–1501.  
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### Inside cover

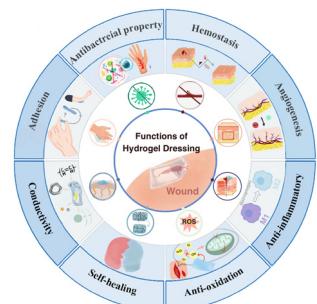
See Michael Josse, Mathieu Marchivie *et al.*, pp. 1502–1512.  
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Wei Zhang, Lulu Liu, Hui Cheng, Jing Zhu, Xinyi Li, Sheng Ye\* and Xiaojing Li\*

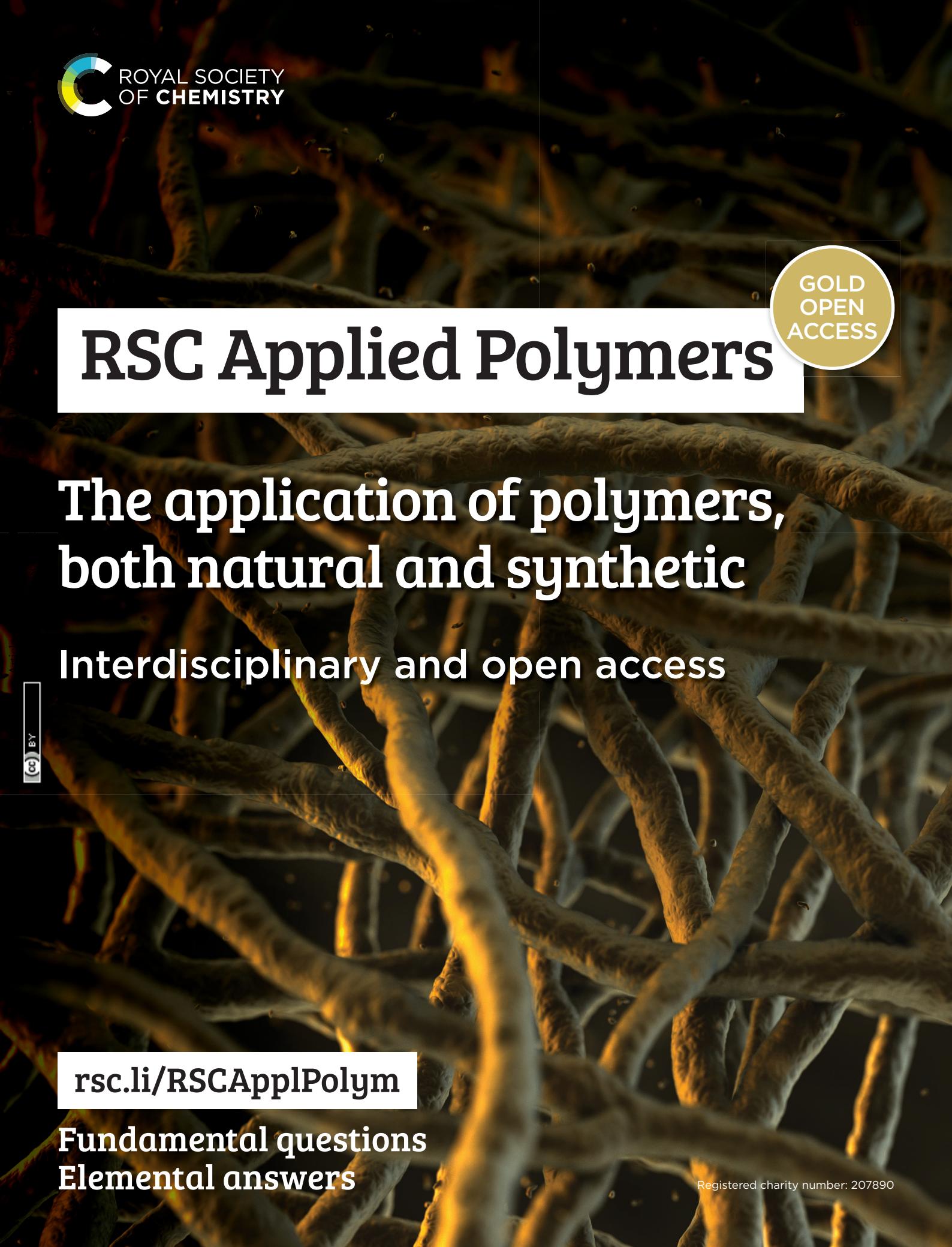


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### Decoding eumelanin's spin label signature: a comprehensive EPR analysis

João V. Paulin,\* Carlos F. O. Graeff\* and A. Bernardus Mostert\*





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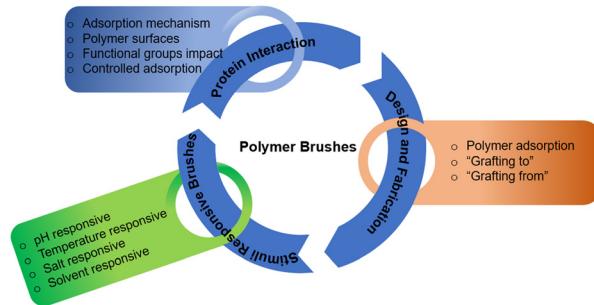
Fundamental questions  
Elemental answers

## REVIEWS

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**Mixed polymer brushes for controlled protein adsorption: state of the art and future prospective**

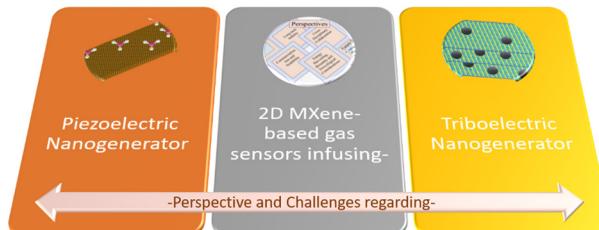
Muhammad Atif\* and Ali Balasini



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**Perspectives of 2D MXene-based materials for self-powered smart gas sensors**

Sayali Atkare, Chandra Sekhar Rout\* and Shweta Jagtap\*

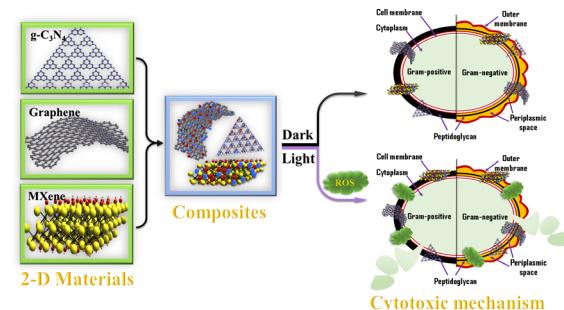


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**Carbon-based two-dimensional (2D) materials: a next generation biocidal agent**

Neetu Talreja,\* Divya Chuhuan and Mohammad Ashfaq\*

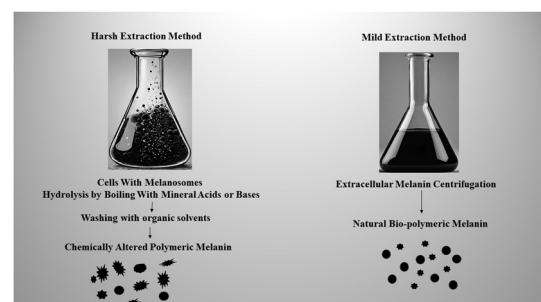


## COMMUNICATIONS

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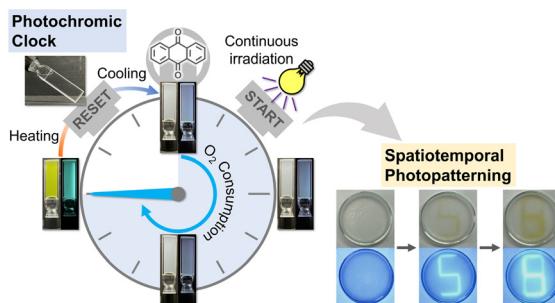
**One-pot synthesis of black biopolymeric eumelanin pigment by indigenous salt-tolerant *Pseudomonas stutzeri* SGM-1**

Swapnil G. Mahajan,\* Vinod S. Nandre, Kisan M. Kodam and Mohan V. Kulkarni



## COMMUNICATIONS

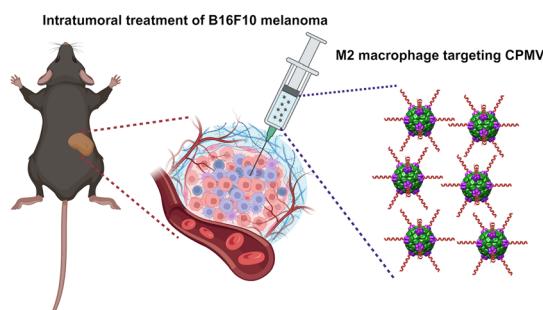
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**Photochromic clock reaction of anthraquinone in supramolecular gel and its application to spatiotemporal patterning**

Sota Fujisaki, Yuki Nagai,\* Yoshinori Okayasu and Yoichi Kobayashi\*

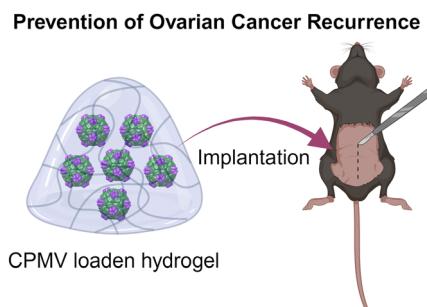
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**Melanoma immunotherapy enabled by M2 macrophage targeted immunomodulatory cowpea mosaic virus**

Zhongchao Zhao, Young Hun Chung and Nicole F. Steinmetz\*

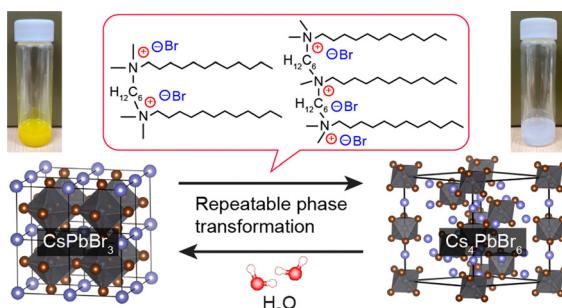
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**3D bioprinting cowpea mosaic virus as an immunotherapy depot for ovarian cancer prevention in a preclinical mouse model**

Zhongchao Zhao, Yi Xiang, Edward C. Koellhoffer, Sourabh Shukla, Steven Fiering, Shaochen Chen\* and Nicole F. Steinmetz\*

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**Phase transformation between  $\text{CsPbBr}_3$  and  $\text{Cs}_4\text{PbBr}_6$  nanocrystals by a cationic oligomeric ligand and water, and their water resistance**

Norio Saito,\* Akihiro Urayama, Takahiro Takei and Nobuhiro Kumada

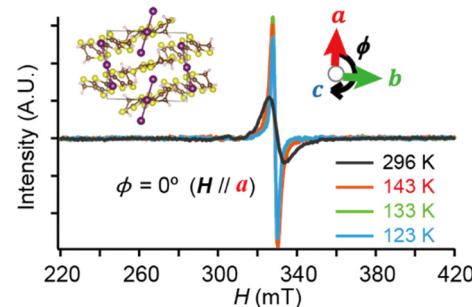


## PAPERS

1492

## Nearly three-dimensional Dirac fermions in an organic crystalline material unveiled by electron spin resonance

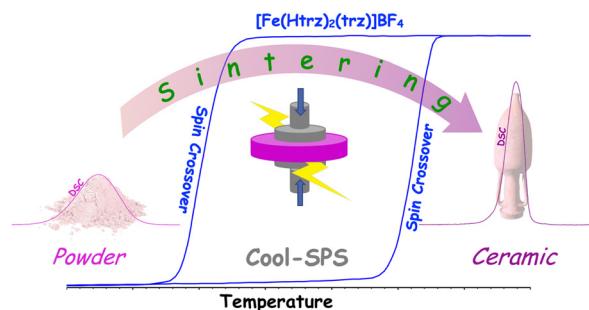
Ryuhei Oka, Keishi Ohara, Naoya Tajima, Toshihiro Shimada and Toshio Naito\*



1502

## Spin crossover molecular ceramics by Cool-SPS: consequences on switching features beyond microstructural effects

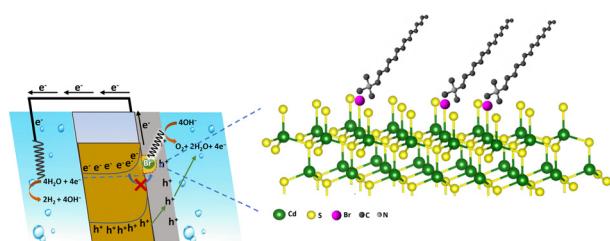
Liza El-Khoury, Nathalie Daro, Guillaume Chastanet, Patrick Rosa, Dominique Denux, Laetitia Etienne, Vincent Mazel, Michael Josse\* and Mathieu Marchivie\*



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## Profound influence of surface trap states on the utilization of charge carriers in CdS photoanodes

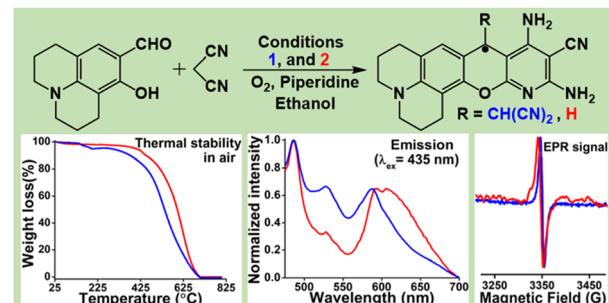
Elif Öykü Alagöz, Hadi Jahangiri and Sarp Kaya\*



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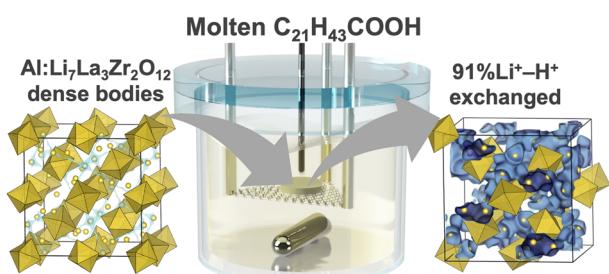
## One pot oxygen mediated syntheses of stable radicals

Mohit Kulshrestha, C. N. Ramachandran,\* Rajesh G. Gonnade\* and Kalyan K. Sadhu\*



## PAPERS

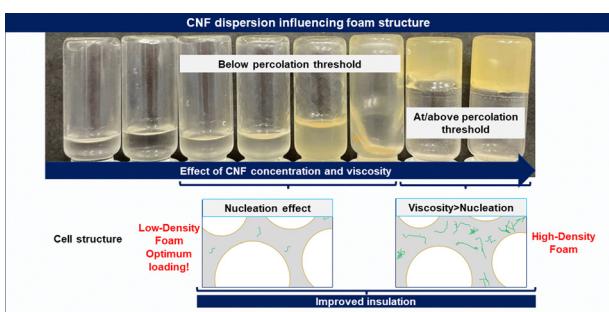
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**Proton conductivity of Li<sup>+</sup>-H<sup>+</sup> exchanged Li<sub>7</sub>La<sub>3</sub>Zr<sub>2</sub>O<sub>12</sub> dense membranes prepared by molten long-chain saturated fatty acids**

Akihiro Ishii,\* Daisuke Kume, Shoki Nakayasu, Itaru Oikawa, Hiroshi Matsumoto, Hisashi Kato and Hitoshi Takamura

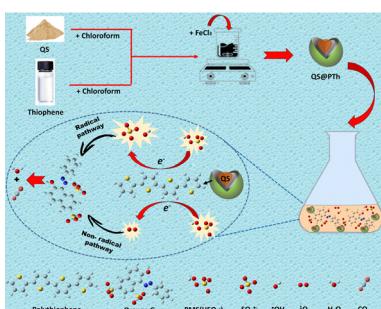
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**Dispersion engineering of cellulose nanofibres in polyols: for controlled microstructure of high-performance polyurethane foam**

Hima Haridevan, David A. C. Evans, Darren J. Martin and Pratheeep K. Annamalai\*

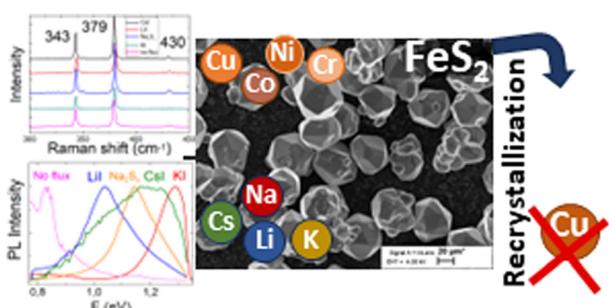
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**Efficient degradation of orange G dye using the quartz-sand@polythiophene composite for peroxyomonosulfate activation: a sustainable approach for advanced oxidation processes**

Asma Amjlef,\* Abdellah Ait El Fakir, Salaheddine Farsad, Aboubakr Ben Hamou, Ayoub Chaoui, Saïd Et-Taleb\* and Noureddine El Alem

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**Characterization of FeS<sub>2</sub> pyrite microcrystals synthesized in different flux media**

Katriin Kristmann,\* Taavi Raadik, Mare Altosaar, Mati Danilson, Jüri Krustok, Peeter Paaver and Yuryi Butenko

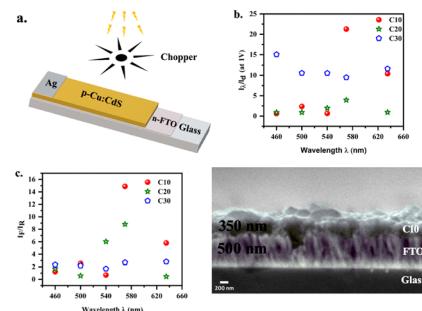


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**Fast response and multi-color photodetection in p-type Cu:CdS thin films**

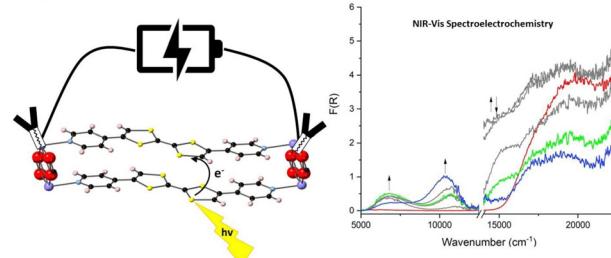
Ganesha Krishna V. S., Pawan Kumar, Gowrish Rao K. and Mahesha M. G.\*



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**The spatial dependence of intervalence charge transfer in an electroactive metal-organic framework**

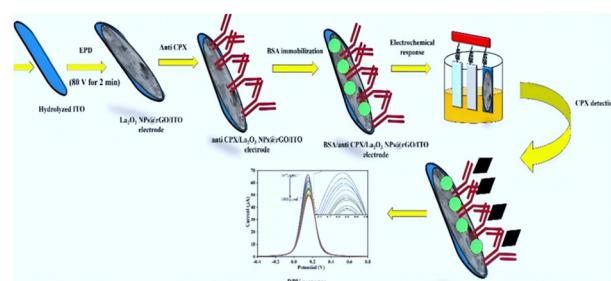
Eleanor R. Kearns, Bun Chan, Hunter J. Windsor, William Lewis and Deanna M. D'Alessandro\*



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**An electrochemical immunosensor based on a nanostructured lanthanum oxide-substituted reduced graphene oxide interface for ultralow ciprofloxacin detection in milk samples**

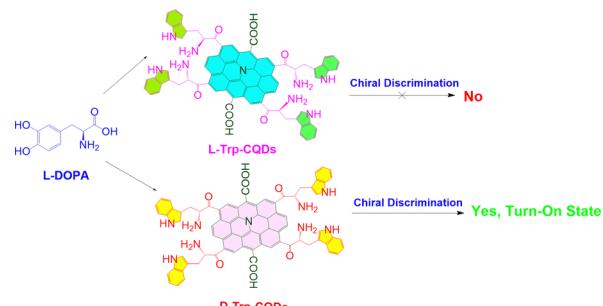
Navneet Chaudhary, Amit K. Yadav, Damini Verma, Jai Gopal Sharma and Pratima R. Solanki\*



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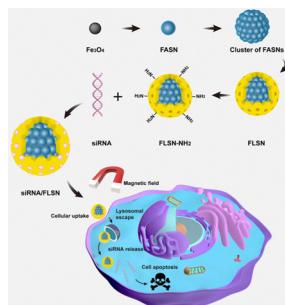
**Chiral discrimination of L-DOPA via L/D-tryptophan decorated carbon quantum dots**

Aram Rezaei,\* Mohammed Ahmed Hamad, Hadi Adibi, Huajun Zheng and Khdir Hamza Qadir



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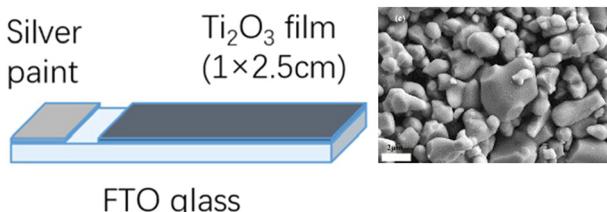
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**Development of magnetic nanoparticles with double silica shells of different porosities for efficient siRNA delivery to breast cancer cells**

Qing Bao, Xiangyu Liu, Yan Li, Tao Yang, Hui Yue, Mingying Yang\* and Chuanbin Mao\*

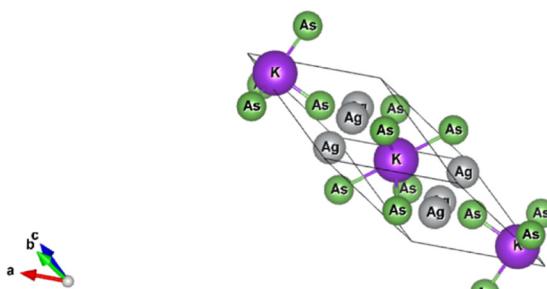
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**Ti<sub>2</sub>O<sub>3</sub> film electrode for water treatment via electrochemical chlorine evolution**

Yishu Zhang, Caroline Kirk\* and Neil Robertson\*

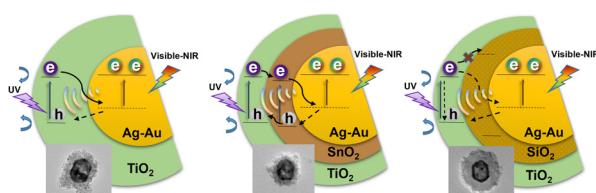
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**New findings on a Zintl phased K<sub>3</sub>Ag<sub>3</sub>As<sub>2</sub> ternary semiconductor compound for photovoltaic applications by first-principles methods**

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**TiO<sub>2</sub> core–shell and core-dual-shell nanoparticles with tunable heterojunctions and visible to near-infrared extinctions**

Riddhiman Medhi, Sarawut Plengjaroensirichai, Nhat Ngo, Maria D. Marquez, Pannaree Srinoi, Hung-Vu Tran, Allan J. Jacobson, Tai-Chou Lee and T. Randall Lee\*

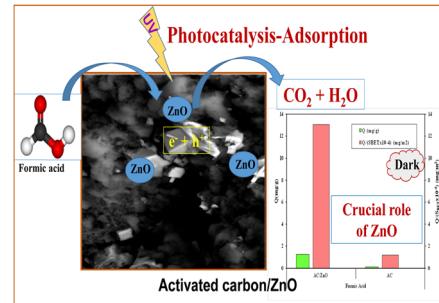


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**Synergy between activated carbon and ZnO: a powerful combination for selective adsorption and photocatalytic degradation**

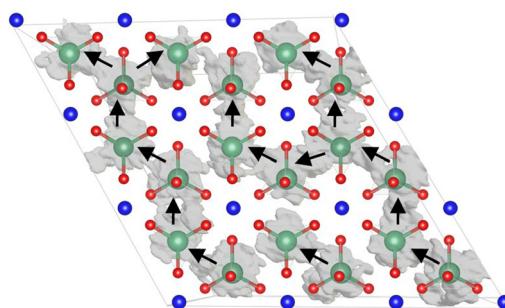
Wided Salah, Wahid Djeridi, Ammar Houas and Leila Elsellami\*



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**Oxide ion dynamics in hexagonal perovskite mixed conductor  $\text{Ba}_7\text{Nb}_4\text{MoO}_{20}$ : a comprehensive *ab initio* molecular dynamics study**

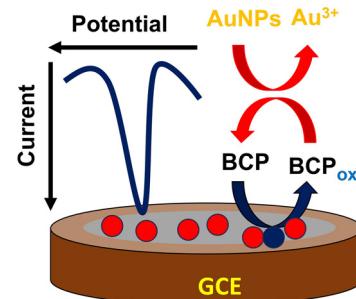
Bettina Schwaighofer, Markus Appel, Miguel Angel Gonzalez\* and Ivana Radosavljevic Evans\*



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**Red gum-capped gold nanoparticles for electrochemical sensing of bromocresol purple in water**

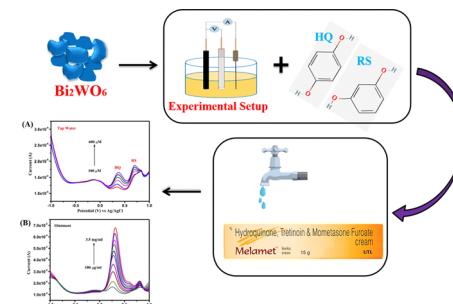
Moustafa Zahran,\* Magdi Abdel Azzem and Mona El-Attar



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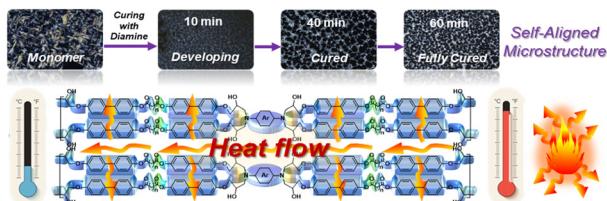
**Bismuth tungstate nanocomposites for simultaneous detection of hydroquinone and resorcinol**

Thatchanamoorthy Thenrajan, Madasamy Madhu malar, Sangeetha Kumaravel, Rajendran Rajaram, Subrata Kundu\* and Jeyaraj Wilson\*



## PAPERS

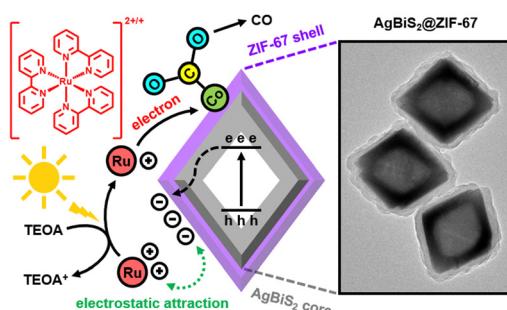
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## Enhancement of thermal conducting properties in epoxy thermoset systems using an aligned liquid-crystalline mesophase

Thi En Trinh and Hyeonuk Yeo\*

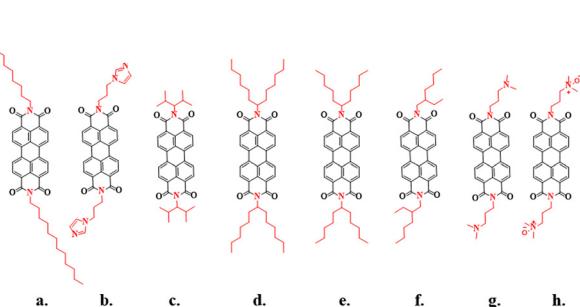
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## Enhanced light driven $\text{CO}_2$ conversion based on silver bismuth sulfide hollow octahedrons coated with amorphous metal–organic frameworks

Meng-De Dai, Qian Zhang, Hao Dong and Ya-Wen Zhang\*

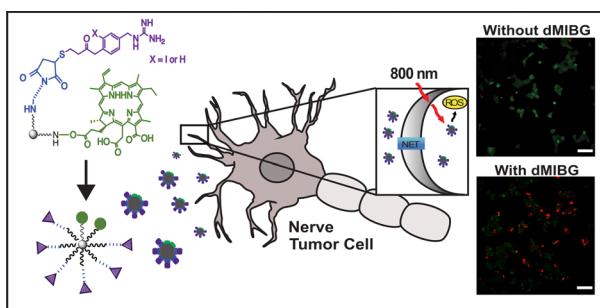
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## Synthesis and characterization of O-PDI for futuristic optoelectronic and rectifier applications

Akash and J. P. Tiwari\*

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## Efficient and highly biocompatible 8-arm PEG-Chlorin e6 nanosystems for 2-photon photodynamic therapy of adrenergic disorders

Natalie S. Potter, Zhen Wang, Evan C. Bornowski, Scott D. Swanson, John P. Wolfe, Alan McLean\* and Raoul Kopelman



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**Hole doping at Sn sublattice of the buckled honeycomb SnX (X = S and Se) monolayer: an efficient functionalization approach**

D. M. Hoat\* and J. Guerrero-Sanchez

