

Materials Advances

An open access journal publishing across the breadth of materials science

rsc.li/materials-advances

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

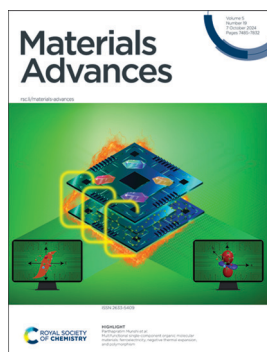
IN THIS ISSUE

ISSN 2633-5409 CODEN MAADC9 5(19) 7485-7832 (2024)



Cover

See Senentxu Lanceros-Méndez, Frank N. Crespilho *et al.*, pp. 7534–7547. Image reproduced by permission of Frank Nelson Crespilho and Thiago Bertaglia from *Mater. Adv.*, 2024, 5, 7534. Image generated by Bria AI.



Inside cover

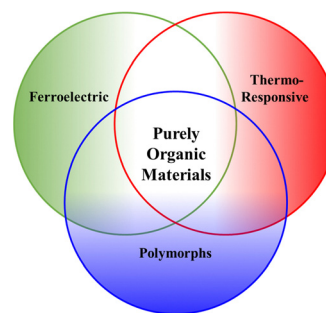
See Parthapratim Munshi *et al.*, pp. 7495–7515. Image reproduced by permission of Parthapratim Munshi from *Mater. Adv.*, 2024, 5, 7495.

HIGHLIGHT

7495

Multifunctional single-component organic molecular materials: ferroelectricity, negative thermal expansion, and polymorphism

Sanjay Dutta, Lalita Negi and Parthapratim Munshi*

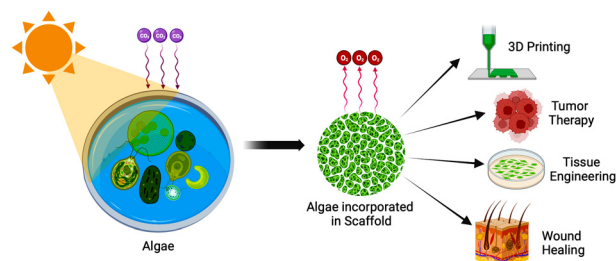


PERSPECTIVE

7516

Roadmap of algal autotrophic tissue engineering in the avenue of regenerative wound therapy

Nikhita Pandian, Radhika Chaurasia, Satyaki Chatterjee, Bhaskar Biswas, Prabir Patra, Archana Tiwari* and Monalisa Mukherjee*



RSC Advances

At the heart of open access for
the global chemistry community

Editor-in-chief

Russell J Cox

Leibniz Universität Hannover, Germany

We stand for:



Breadth We publish work in all areas of chemistry and reach a global readership



Affordability Low APCs, discounts and waivers make publishing open access achievable and sustainable



Quality Research to advance the chemical sciences undergoes rigorous peer review for a trusted, society-run journal



Community Led by active researchers, we publish quality work from scientists at every career stage, and all countries

Submit your work now

rsc.li/rsc-advances

@RSC_Adv



REVIEWS

7534

Eco-friendly, sustainable, and safe energy storage: a nature-inspired materials paradigm shift

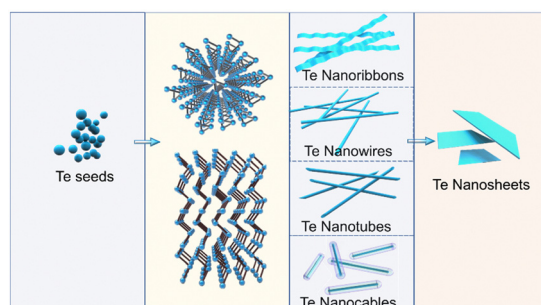
Thiago Bertaglia, Carlos M. Costa, Senentxu Lanceros-Méndez* and Frank N. Crespilho*



7548

Morphology-controlled synthesis, growth mechanism, and applications of tellurium nanostructures

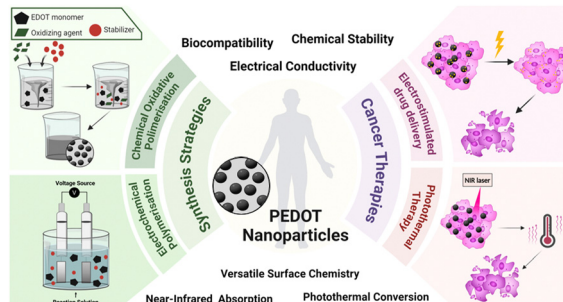
Jinshu Li, Qingshan Yang, Dawei He, Yongsheng Wang, Euyheon Hwang and Yajie Yang*



7561

Synthesis strategies and cancer therapy applications of PEDOT nanoparticles

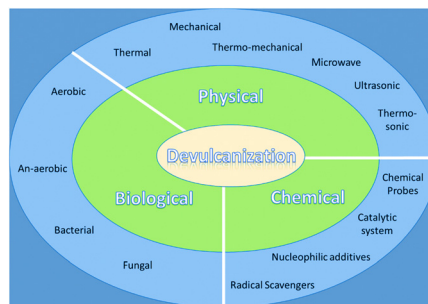
Diogo Dias, Leonor Resina, Frederico Castelo Ferreira, Paola Sanjuan-Alberte* and Teresa Esteves*



7584

Advances in recycling of waste vulcanized rubber products via different sustainable approaches

Amit Kumar, Ritesh J. Dhanorkar, Subhra Mohanty and Virendra Kumar Gupta*



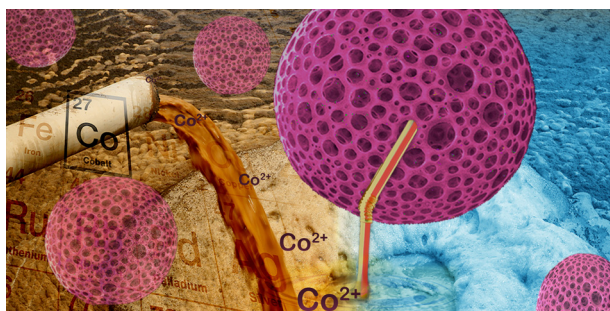
COMMUNICATIONS

7601

Scaling up, low cost, and energy efficient solid adsorbents for CO₂ capture**Porous carbon pellets for physical adsorption of CO₂: size and shape effect**

Baljeet Singh,* Marianna Kemell and Timo Repo*

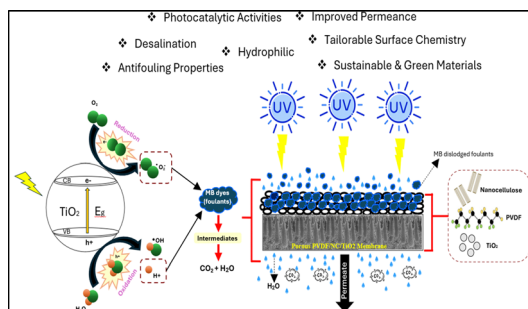
7609

**EDTA-functionalized hierarchical porous microspheres for effective cobalt ion recovery from water**

Mao-Hsuan Peng and Chia-Chen Li*

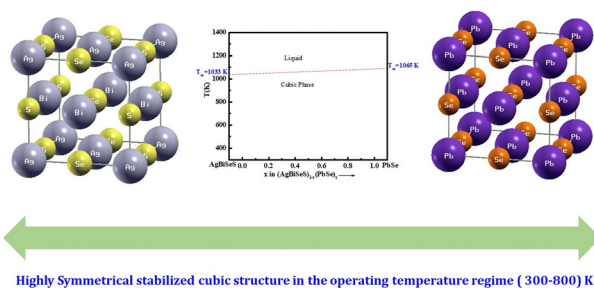
PAPERS

7617

**A TiO₂ grafted bamboo derivative nanocellulose polyvinylidene fluoride (PVDF) nanocomposite membrane for wastewater treatment by a photocatalytic process**

Md Rezaur Rahman,* Anthonette James, Khairul Anwar Mohamed Said, Murtala Namakka, Mayeen Uddin Khandaker, Woo Haw Jiunn, Jehan Y. Al-Humaidi, Raed H. Althomali and Mohammed Muzibur Rahman

7637



Highly Symmetrical stabilized cubic structure in the operating temperature regime (300-800) K

Entropy engineering in I–V–VI₂ family: a paradigm to bestow enhanced average ZT in the entire operating temperature regime

Ranita Basu,* U. Sandhya Shenoy, Ankita Pathak, Shweta Singh, P. Jha, D. Krishna Bhat, Hirakendu Basu and Ajay Singh

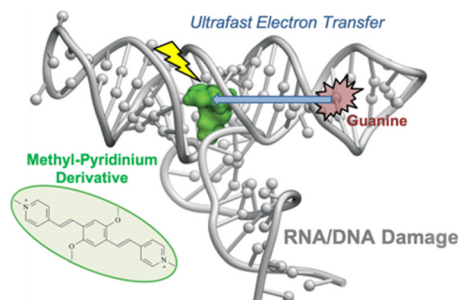


PAPERS

7650

Direct observation of guanine photo-oxidation from new potential anticancer drugs *via* ultrafast electron transfer

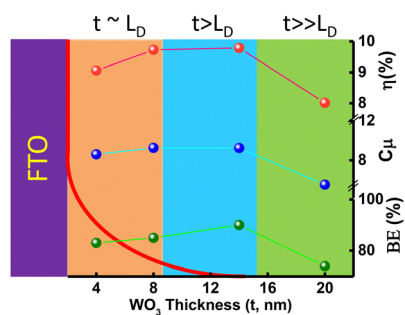
Alessio Cesaretti, Giulia Pantella, Gianmarco Reali, Giuseppe Consiglio, Cosimo G. Fortuna, Fausto Elisei, Anna Spalletti and Benedetta Carlotti*



7659

Enhanced efficiency of dye-sensitized solar cells *via* controlled thickness of the WO₃ Langmuir–Blodgett blocking layer in the Debye length regime

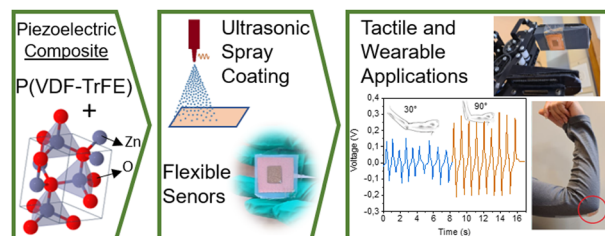
Neeraj Kumar, Sipra Choudhury, Aman Mahajan and Vibha Saxena*



7671

Toward high quality tactile sensors using ZnO/P(VDF-TrFE) flexible piezoelectric composite films

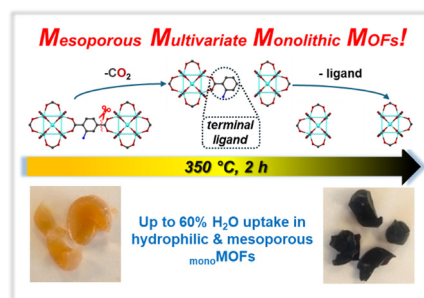
Sepide Taleb,* Wiebren M. van Lingen and Mónica Acuautila



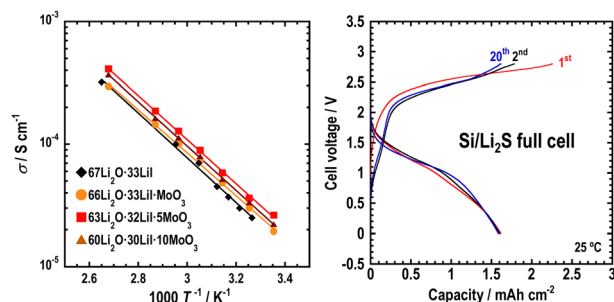
7679

Water sorption studies with mesoporous multivariate monoliths based on UiO-66

Linia Gedi Marazani, Victoria Gascon-Perez, Ayush Pathak, Michele Tricarico, Jin-Chong Tan, Michael J. Zaworotko, Andrew E. H. Wheatley, Banothile C. E. Makhubela and Gift Mehlana*



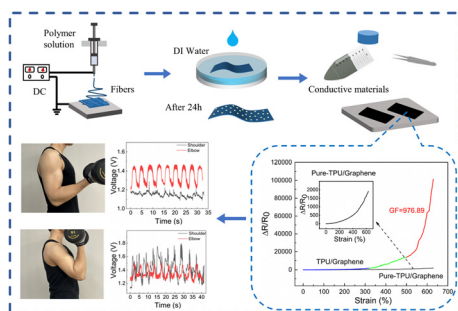
7690



Amorphous $\text{Li}_2\text{O-LiI-MoO}_3$ solid electrolytes: mechanochemical synthesis and application to all-solid-state batteries

Yushi Fujita, Tomoya Otono, Taichi Asakura, Jiong Ding, Hirofumi Tsukasaki, Shigeo Mori, Kota Motohashi, Atsushi Sakuda* and Akitoshi Hayashi

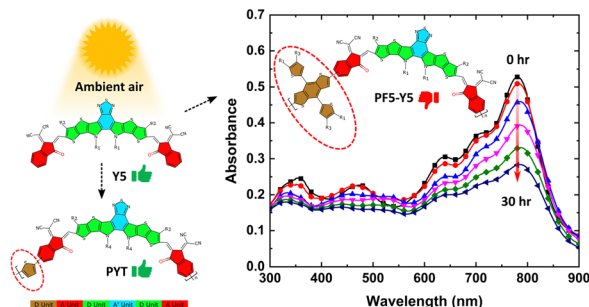
7700



Highly tensile and sensitive strain sensors with micro-nano topology optimization

Weixia Lan, Qiqi Ding, Tao Zhou, Zilong Guo, Wenbin Sun, Zhenghui Wu,* Yingjie Liao,* Bin Wei and Yuanyuan Liu*

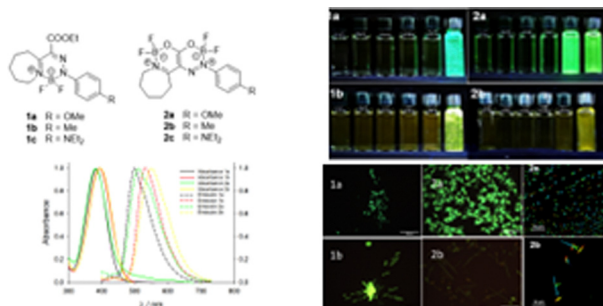
7708



Effect of molecular structure on the photochemical stability of acceptor and donor polymers used in organic solar cells

Suraj Prasad, Zewdneh Genene, Cleber F. N. Marchiori, Shivam Singh, Leif K. E. Ericsson, Ergang Wang, C. Moyses Araujo and Ellen Moons*

7721



Solid-state and aggregation-induced emission of novel bicyclic and tricyclic difluoroboron heterocycles

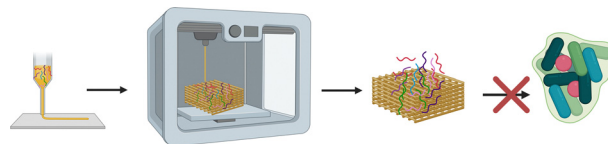
Martina Žabenská, Chiara Capolungo, Chiara Mariani, Damiano Genovese, Tomáš Mikysek, Jiří Váňa, Aleš Růžička, František Josefík, Markéta Svobodová* and Petr Šimůnek*



7729

3D printable gelatin/nisin biomaterial inks for antimicrobial tissue engineering applications

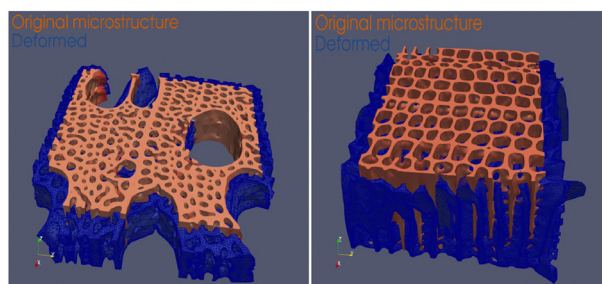
Mateo Dallos Ortega, Jenny Aveyard, Alexander Ciupa, Robert J. Poole, David Whettnall, Julia G. Behnsen and Raechelle A. D'Sa*



7747

Developing the orthotropic linear-elastic model for wood applications using the FE method

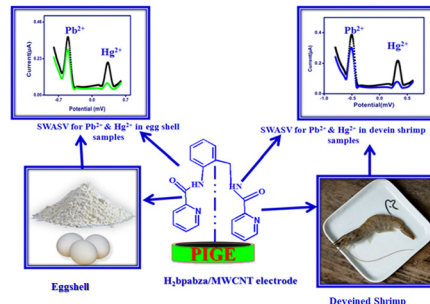
Tarik Chakkour* and Patrick Perré



7766

Stripping analysis of Pb^{2+} and Hg^{2+} in deveined shrimp and eggshells using a $\text{H}_2\text{bpabza}/\text{MWCNT}$ -modified graphite electrode

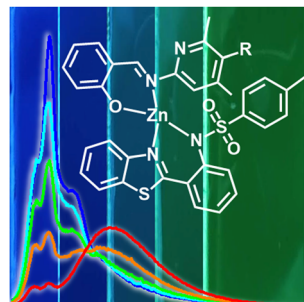
Kumar Sangeetha Selvan,* Jayagopi Gayathri* and Sivakumar Sivalingham



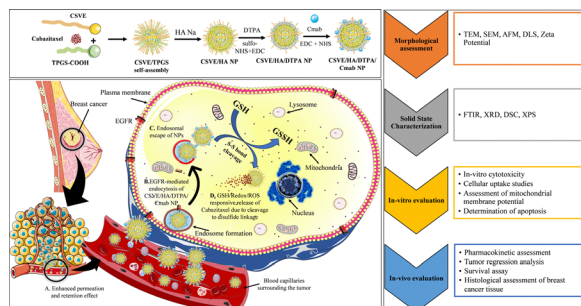
7778

Zinc(II)-heteroligand compounds for wet processing OLEDs: a study on balancing charge carrier transport and energy transfer

Emmanuel Santos Moraes, Luís Gustavo Teixeira Alves Duarte, Fabiano Severo Rodembusch, José Carlos Germino,* Luiz Fernando Ribeiro Pereira* and Teresa Dib Zambon Atvars*



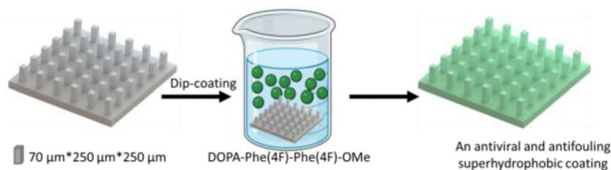
7789



Cabazitaxel-loaded redox-responsive nanocarrier based on D-alpha-tocopheryl-chitosan and hyaluronic acid for improved anti-tumor efficacy in DMBA-induced breast cancer model

Abhishek Jha, Manish Kumar, Pooja Goswami, Kanchan Bharti, Manjit Manjit, Ashutosh Gupta, Sudheer Moorkoth, Biplob Koch* and Brahmeshwar Mishra*

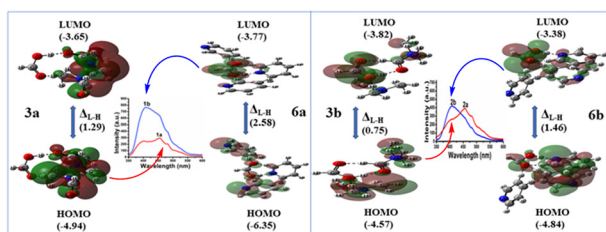
7809



An antifouling and antiviral superhydrophobic elastomer formed by 3D printing and a peptide-based coating

Tan Hu, Noa Trink, Shlomo Magdassi* and Meital Rechtes*

7817



Development of photoluminescent hydrogen-bonded frameworks based on pyromellitic diimide-tethered carboxylic acid hosts and multi-bonding solvent guests

Raju Ram Puniya, Priyanka Takhar, Monika Chhapoliya, Rinki Deka, Dhruva Jyoti Kalita and Devendra Singh*

