

Materials Advances

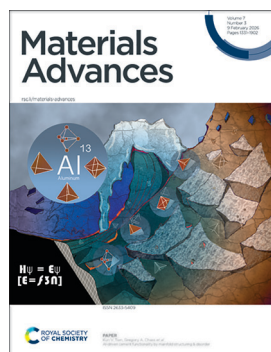
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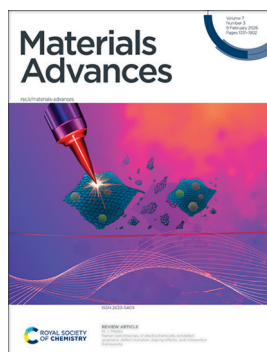
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ISSN 2633-5409 CODEN MAADC9 7(3) 1331-1902 (2026)



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See Kun V. Tian, Gregory A. Chass *et al.*, pp. 1405–1416. Image reproduced by permission of Gregory A. Chass from *Mater. Adv.*, 2026, 7, 1405. Artwork creation assisted by Studio de Matos, Italy.



Inside cover

See M. J. Madito, pp. 1345–1356. Image reproduced by permission of Moshawe Madito from *Mater. Adv.*, 2026, 7, 1345. Background designed by Canva.com.

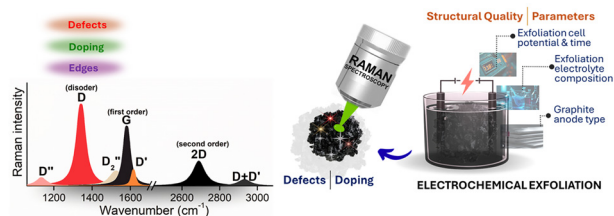
REVIEWS

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Raman spectroscopy of electrochemically exfoliated graphene: defect evolution, doping effects, and interpretive frameworks

M. J. Madito

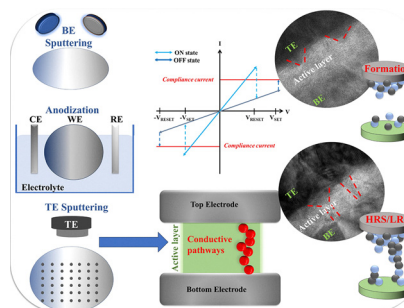
Raman Reveals Defect- and Doping-Driven Signatures in Electrochemically Exfoliated Graphene



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A brief overview of anodic memristors: fundamentals, classification and properties

Elena Atanasova, Andreas Greul, Achim Walter Hassel, Andrea Zaffora, Monica Santamaria and Andrei Ionut Mardare*



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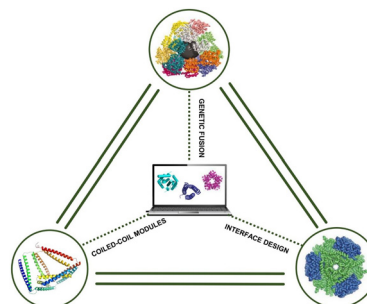


REVIEWS

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Self-assembling protein cages: from coiled-coil module to machine learning-driven *de novo* design of next-generation biomaterials

Arvind Kumar Gupta, Hana Esih, Helena Gradišar and Roman Jerala*

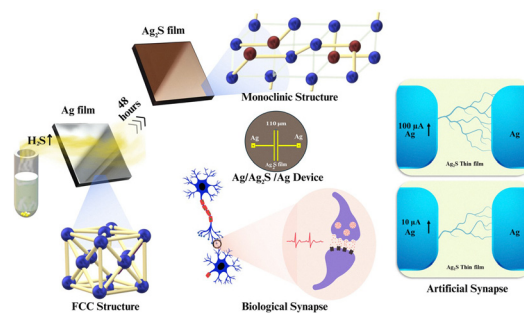


COMMUNICATION

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Controlled sulfidation of silver: a pathway to Ag_2S for short-term synaptic emulation

Shreepooja Bhat, Namitha Bannur, Nanditha Thayyath Kizhakkeveetil, Rajashekhar Pujar and Gurusurthy Sangam Chandrasekhar*

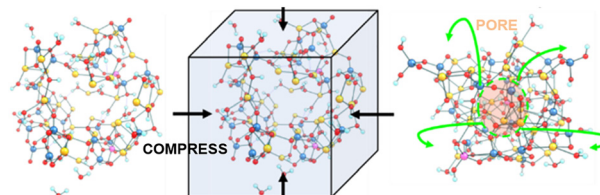


PAPERS

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AI-driven cement functionality by manifold structuring & disorder

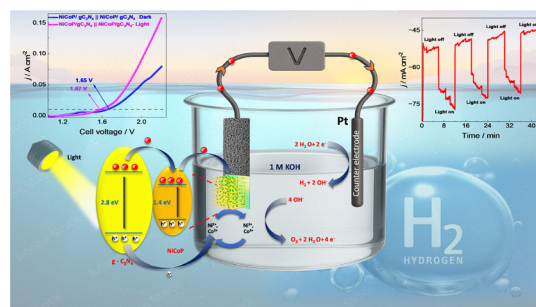
Mohammed S. Salha, Henry Adenusi, David H. Setiadi, Rickey Y. Yada, David H. Farrar, Devis Di Tommaso, Kun V. Tian* and Gregory A. Chass*



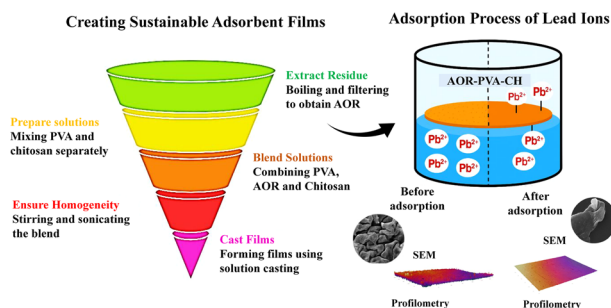
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Photo-assisted water splitting over a NiCoP/g- C_3N_4 heterostructure: understanding the role of visible light in electrochemical water splitting

Mahesha P. Nayak, John D. Rodney, Sushmitha S and Badekai Ramachandra Bhat*



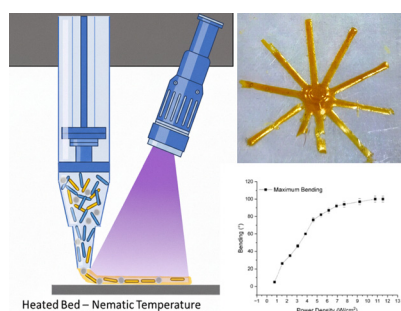
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Sustainable fabrication of arecanut waste-based polymer blend adsorbents for enhanced lead(II) ion removal from water

Jasmine Jose, Binish CJ, Jobish Johns, Aniz CU, Sony J. Chundattu and Vijayasankar AV*

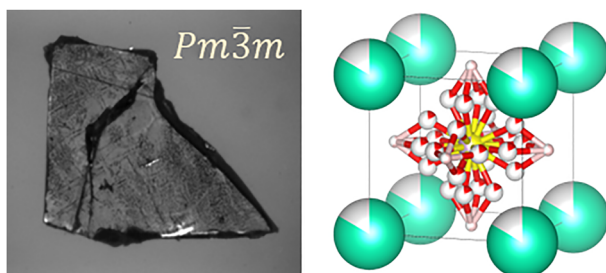
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4D printing of unaligned LCE: a facile approach to print photo mobile polymers

Domenico Sagnelli,* Amalia D'Avino, Bryan Guilcapi, Tommaso Fasolino, Anna De Girolamo Del Mauro, Fausta Loffredo, Fulvia Villani, Giuseppe Nenna* and Lucia Petti*

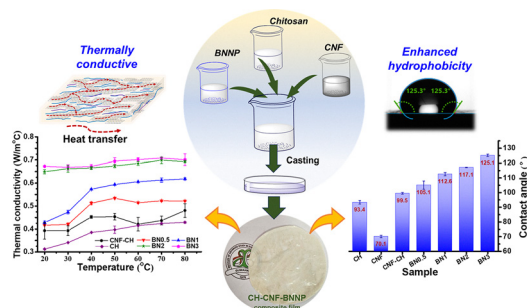
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X-ray and neutron diffraction studies of single-crystal cubic $\text{Cs}_2(\text{HSO}_4)(\text{H}_2\text{PO}_4)$

Grace Xiong and Sossina M. Haile*

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Enhanced performance of biobased composite films: the role of boron nitride nanoplatelets in tuning their hydrophobic, chemical resistance, thermal and electrical properties

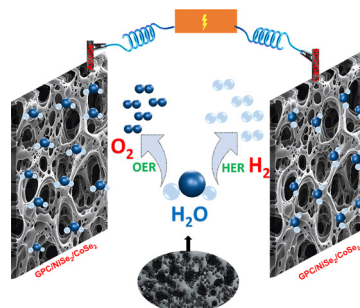
Bitupan Mohan, Rahul Sonkar, Mridusmita Barman and Devasish Chowdhury*



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In situ synthesis of bimetallic selenides on green porous carbon: density functional theory-proven electrocatalysts for efficient water splitting

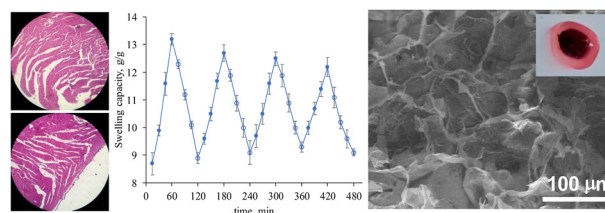
Anjana Sajeevan, Nijash Neermunda, Sampath Karingula, Pooja, Soumyajit Jana, Ravindar Pawar and Yugender Goud Kotagiri*



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Fabrication of a superabsorbent and pH-responsive glucomannan-based hydrogel: crosslinking, characterization, toxicological evaluation, and sustained-release of itopride

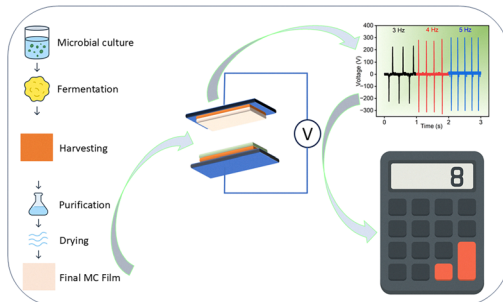
Fasiha Amjad, Arshad Ali, Muhammad Ajaz Hussain,* Muhammad Tahir Haseeb, Muhammad Farid-ul-Haq, Izza Ajaz, Muhammad Sher and Muhammad Imran



1508

An edible microbial cellulose-based triboelectric nanogenerator: a sustainable approach for energy harvesting

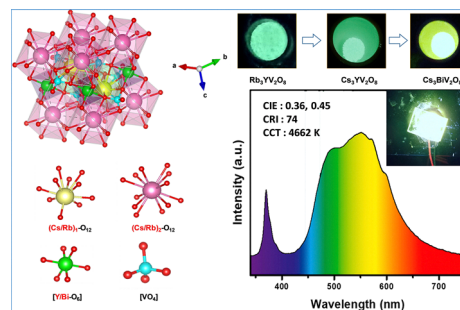
Raj Ankit, Simranjeet Kaur, Shinar Athwal, Taranveer Kaur and Jayant Kolte*



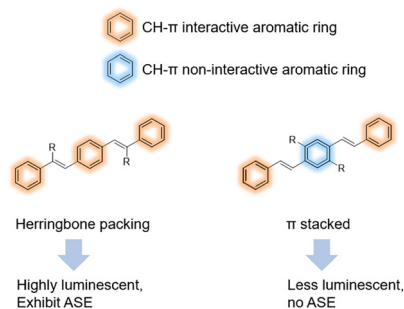
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Single-host white light emission in self-activated $\text{Rb}_{3-x}\text{Cs}_x\text{Y}_{1-y}\text{Bi}_y\text{V}_2\text{O}_8$: crystal engineering for high-performance indoor lighting

J. S. Revathy, Monalisha Behera, Shisina S, Jatin Dhanuka, Sudipta Som,* R. K. Dubey and Subrata Das*



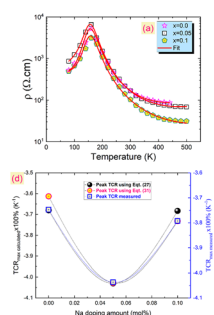
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Crystal engineering focusing on intermolecular CH- π interactions in the 1,4-distyrylbenzene backbone for organic crystal laser media

Takumi Matsuo,* Daisuke Furusho, Shinsuke Inagi and Shotaro Hayashi*

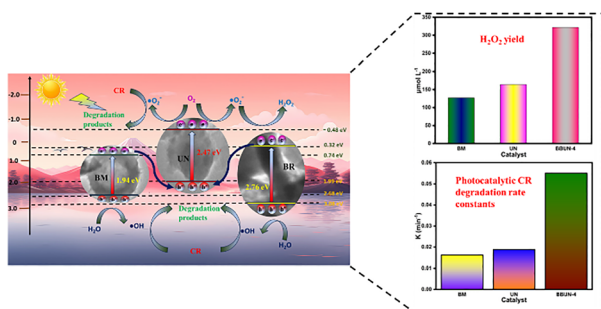
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TCR parameter study for examining the possibility of the usefulness of perovskite $\text{Pr}_{0.8}\text{K}_{0.2-x}\text{Na}_x\text{MnO}_3$ ($x = 0.0, 0.05$ and 0.1) systems for thermistor and bolometer applications

Issam Ouni* and Hedi Rahmouni

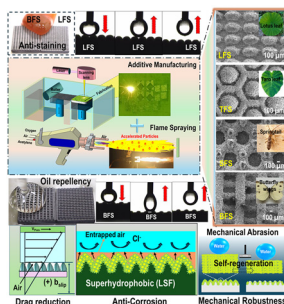
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Amplified photocatalytic performance of UiO-66-NH₂/BiOI@ α -Bi₂O₃ ternary heterojunctions towards Congo red degradation and H₂O₂ production

Anubhav Naik, Kundan Kumar Das, Prakash Chandra Sahoo and Rashmi Acharya*

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Bioinspired superhydrophobic surfaces for anti-corrosion and drag reduction using additive manufacturing for marine applications

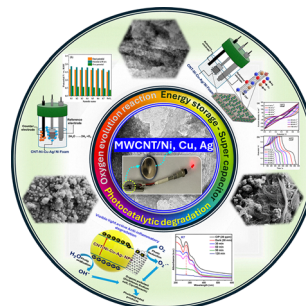
Aishwarika Raj Sharma, Harpreet Arora and Harpreet Singh Grewal*



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Synergistic effects of metal-modified carbon nanotubes: experimental characterization and theoretical modeling for energy and environmental solutions

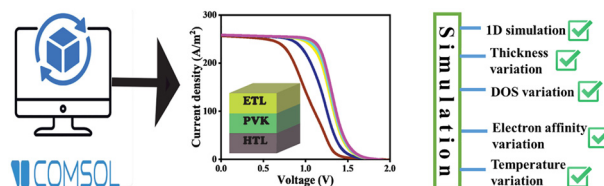
Govindhasamy Murugadoss,* Nachimuthu Venkatesh, Narthana Kandhasamy, Irina Zaporotskova, Durai Govindarajan, Natesan Kumaresan, Kamalan Kirubaharan, Uday Kumar Khanapuram* and Soorathep Kheawhom*



1604

Optimization of lead-free BiFeO₃ perovskite solar cells for efficient solar-energy conversion in futuristic green technologies

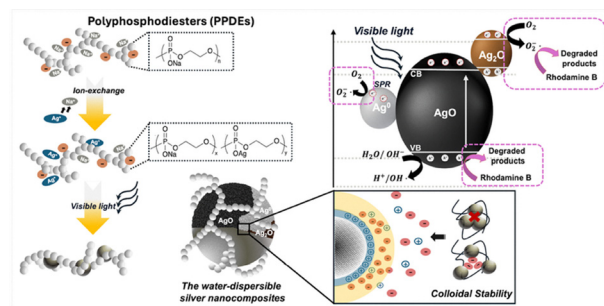
Muhammad Umar Salman* and Shahid Atiq*



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Visible light-driven photocatalytic properties of polyphosphodiester-protected silver nanocomposites

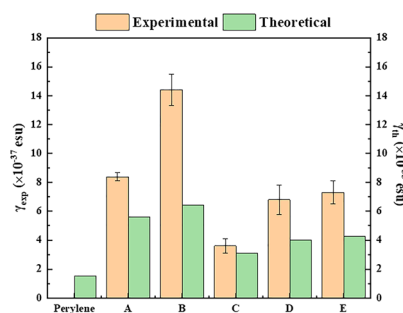
Thanaporn Jullabuth, Yota Okuno, Hideya Kawasaki, Satoshi Ichikawa and Yasuhiko Iwasaki*



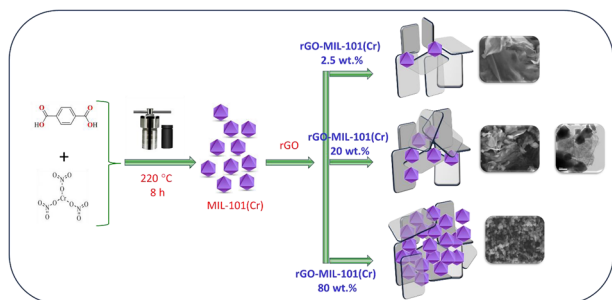
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Functionalization tuning of the nonlinear optical response of perylene diimide derivatives

George Skentzos, Efrosyni Pramatoti, Nathalie Zink-Lorre, Ana María Gutiérrez-Vilchez, Eleni Nikoli, Ruben Canton-Vitoria, Aggelos Avramopoulos,* Nikos Tagmatarchis,* Fernando Fernández-Lázaro* and Stelios Couris*



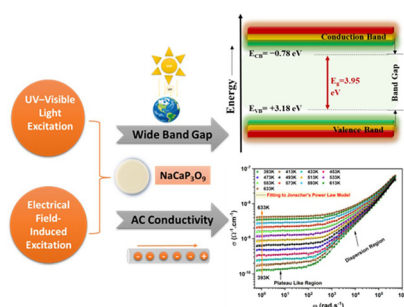
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Synergistic potential of MIL-101(Cr) and reduced graphene oxide (rGO) in designing high-performance ammonia sensors

Shrinivas C. Motekar, Govind G. Umarji, Amol G. Kadlag, Bharat B. Kale and Sudhir S. Arbuji*

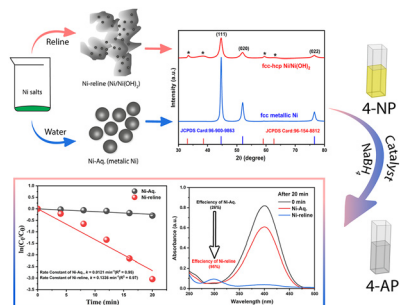
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Enhanced optical, electrical and charge transport properties of NaCaP₃O₉ ceramics for emerging advanced technologies

Mayssa Karray, Iheb Garoui, Saber Nasri, Nourah A. Alsobai, Noweir Ahmad Alghamdi and Abderrazek Oueslati*

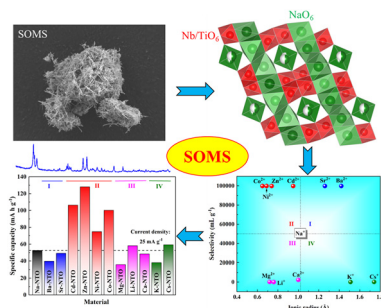
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Reline-assisted synthesis of fcc-hcp Ni/Ni(OH)₂ nanocatalyst for effective reductive hydrogenation of 4-nitrophenol

Md. Minhajul Alam Khan, Shawon Saha, Sumaya Nur Mithila, Yeasin Arafat Tarek, Akter Hossain Reaz and Shakhawat H. Firoz*

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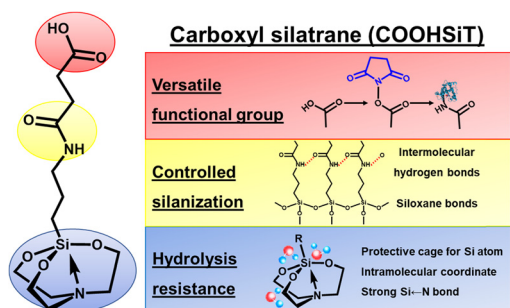


Niobium-oxide-based octahedral molecular sieves as novel anode materials for sodium-ion batteries

Y. Bhaskara Rao, Naser Tavajohi* and C. André Ohlin*



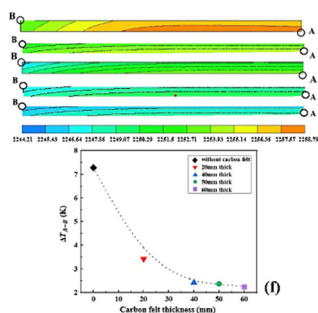
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Controlled silanization and biomolecular conjugation *via* ultra-stable carboxyl silatrane for neurofilament light chain detection

Van-Truc Vu, Pei-Yun Hsiao, Ting-Chou Chang, Lai-Kwan Chau* and Chun-Jen Huang*

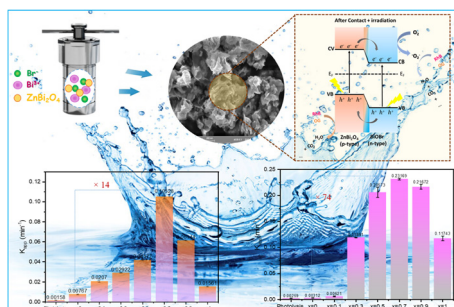
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A numerical study on the effect of temperature gradient on the growth stability of Yb:YAG crystals grown using the EFG method

Qiming Fan, Bowen Jiang, Lu Zhang, Shaoqing Cui, Yexi Huang, Ning Jia, Hongji Qi and Mingyan Pan*

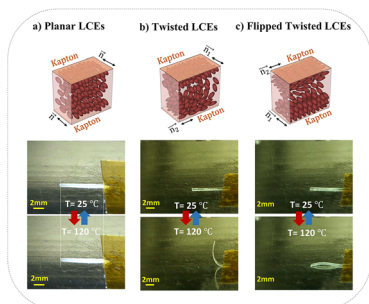
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Construction of p-ZnBi₂O₄/n-BiOBr heterojunctions for efficient visible-light photocatalytic degradation of dyes

L. Mllaoui,* B. Bakiz,* A. Bouddouch, S. Villain, A. Taoufyq, F. Guinneton, J.-R. Gavarri and A. Benlhachemi

1805



Surface-induced alignment of liquid crystal elastomers on commercial polyimide-based films

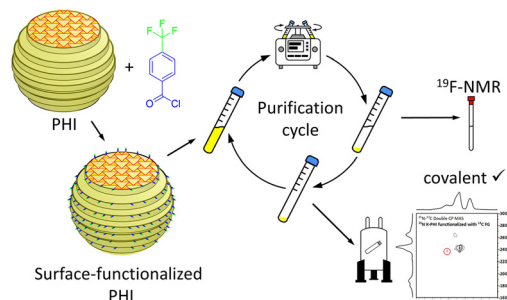
Elaheh Asgari,* Alexandre Robichaud, Paul-Vahé Cicek and Andy Shih



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Covalent surface functionalization of carbon nitrides: a case study of poly(heptazine imide)

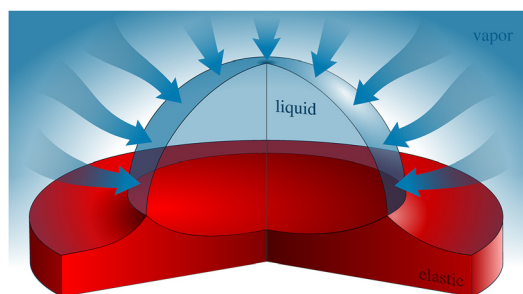
Florian Binder, Igor Moudrakovski, Nils L. Kötter, Saunak Das, Kathrin Küster, Sebastian Bette and Bettina V. Lotsch*



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Condensation on soft substrates: a mesoscopic perspective

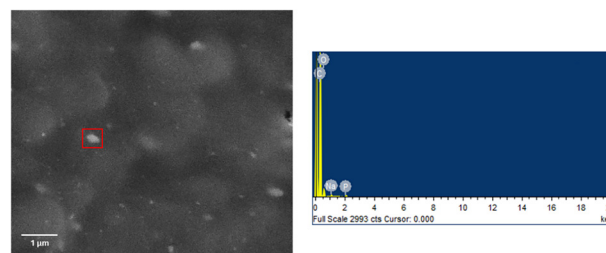
Christopher Henkel,* Ambre Bouillant, Jacco H. Snoeijer and Uwe Thiele



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Nanostructured lignin carriers for efficient flame retardant delivery in natural rubber composites

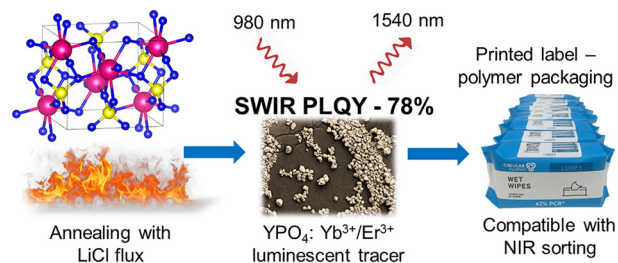
Periklis D. Alikiotis and Tizazu H. Mekonnen*



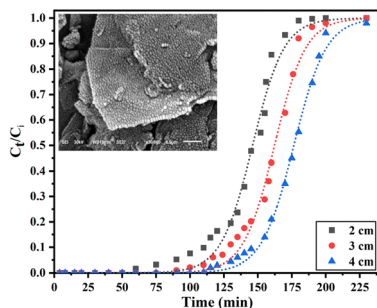
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Boosting the brightness of short-wave infrared emission in $\text{YPO}_4:\text{Yb}^{3+}/\text{Er}^{3+}$ phosphors: optimal photoluminescence quantum yield versus particle size

Krishnan Rajagopalan,* Guojun Gao, Lucas J. B. Erasmus, Dmitry Busko, Bryce S. Richards and Andrey Turshatov*



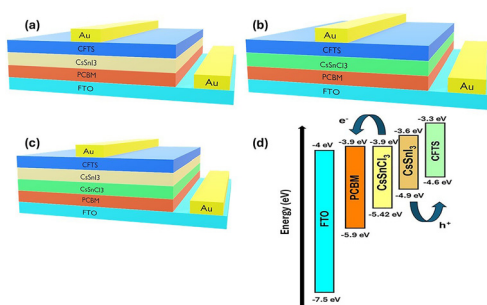
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Eco-inspired synthesis of a melamine formaldehyde-reinforced onion peel biochar/alginate composite for efficient lead ion removal from wastewater

Sarah A. Felemban* and Alaa O. Baryan

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Numerical investigation of high-performance bilayer tin-based perovskite solar cells with SCAPS-1D

Hariharan Rajasekaran, Thangaraji Vasudevan and Lung-Chien Chen*

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Correction: A multiplexed tension sensor reveals the distinct levels of integrin-mediated forces in adherent cells

Xiaojun Liu, Jiangtao Li, Xiaoyun Wang, Feng Shao, Xingyou Hu, Juan Li, Lei Yu, Jicheng Zang,* Guixue Wang* and Yongliang Wang*

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Correction: Optimization of photodegradation of crystal violet dye and biomedical applications of greenly synthesized NiO nanoparticles

Abu Bakar Siddique, Muhammad Ashraf Shaheen,* Shakra Shafeeq, Azhar Abbas, Yasir Zaman, Muhammad Zahid Ishaque and Muhammad Aslam

