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See Ha M. Nguyen, Carlos Wexler *et al.*, pp. 6682–6693. Image reproduced by permission of Ha M. Nguyen from *Mater. Adv.*, 2025, **6**, 6682. Image created with assistance from iStock by Getty Images.

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See Yang Bai *et al.*, pp. 6694–6710. Image reproduced by permission of Yang Bai from *Mater. Adv.*, 2025, **6**, 6694. Image created by Miia Törmänen, Design Inspis Oy, Finland.

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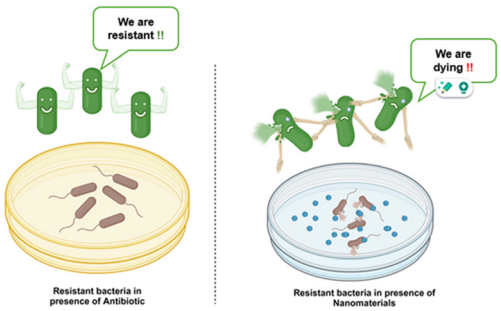
A one health nanotechnology approach to address antimicrobial resistance: state-of-the-art and strategic outlook

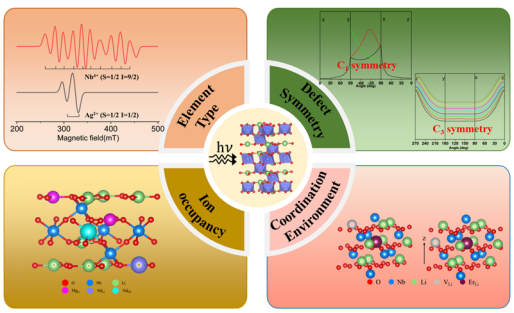
Ansh Desai, Subhojit Ghosh, Subramanian Sankaranarayanan, Dhiraj Bhatia* and Amit K. Yadav*



6648

Electronic paramagnetic resonance analysis of point defects in lithium niobate: progress and prospects

Huaize Qin, Xu Chen, Jiankang Zhang, Yukun Song, Longxi Zhang, Qilu Liu, Fulei Wang,* Dongzhou Wang,* Yuanhua Sang* and Hong Liu



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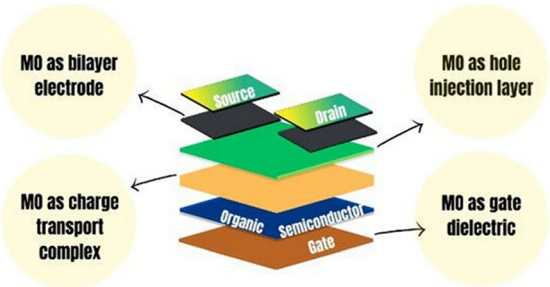
REVIEWS

6664

Metal oxide doped organic thin film transistors: a comprehensive review

Nikhil Pais, Manav Jeetendra Shirodkar and Poornima Bhagavath*



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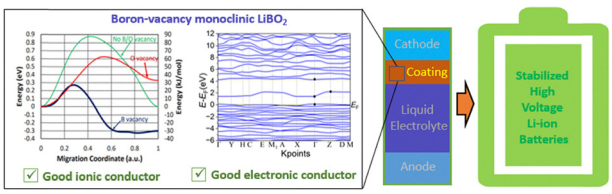
Vacancy-induced modification of the electronic band structure of $LiBO_2$ materials as cathode surface coatings for lithium-ion batteries

Ha M. Nguyen,* Carson D. Ziemke, Narendirakumar Narayanan, Sebastian Amaya-Roncanci, John Gahl, Yangchuan Xing, Thomas W. Heitmann and Carlos Wexler*

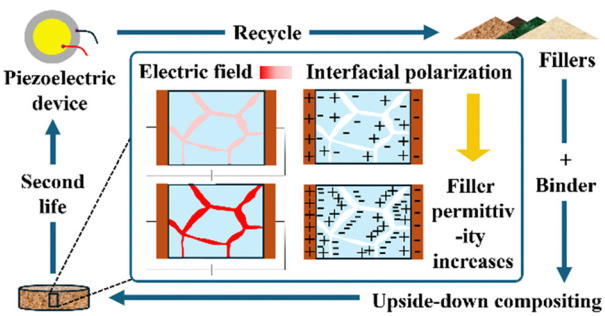


Conformal Coating to stabilize cathode for safer Li-ion batteries

6694

Influence of the permittivity between fillers and binders on the properties of upside-down composites for recycling purposes

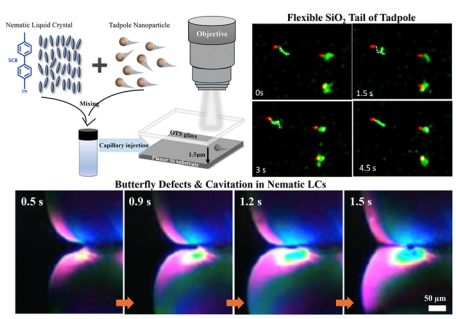
Sivagnana Sundaram Anandakrishnan, Mikko Nelo, Mohadeseh Tabeshfar, Viktoria Kraft, Neamul Hayet Khansur, Jani Peräntie and Yang Bai*



6711

Asymmetry-driven irregular topological defects and hydrodynamic cavitation of tadpole particles in nematic liquid crystals

Xiaowei Wang, Teagan Hamlett, Sid Hashemi, Joseph E. Doebler, Tasha Joy, Giordano Tierra, Ying Bao* and Xiao Li*



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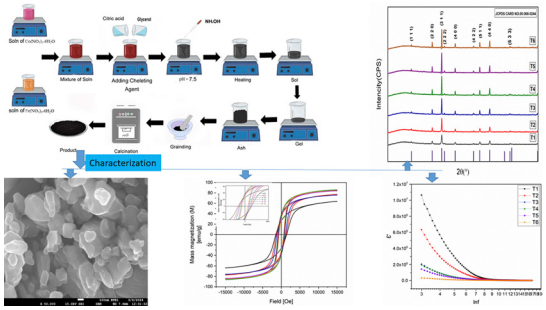

Effect of calcination temperature on nano-cobalt ferrite synthesized by a sol–gel method for modification of its structural, morphological, magnetic, electrical and optical properties

Md. Farid Ahmed,* Afia Yasmin, Bristy Biswas, Md. Lutfor Rahman, Juliya Khanam, Rabeya Jahan Rakhi, Mahmuda Hakim, Md. Sahadat Hossain, Firoz Ahmed, Israt Jahan Lithi and Nahid Sharmin

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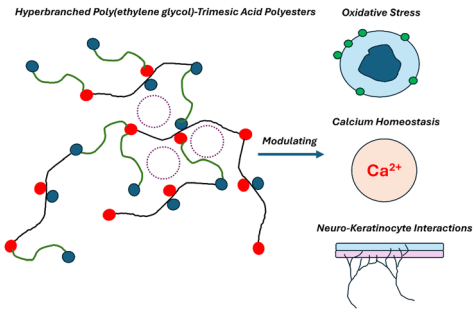
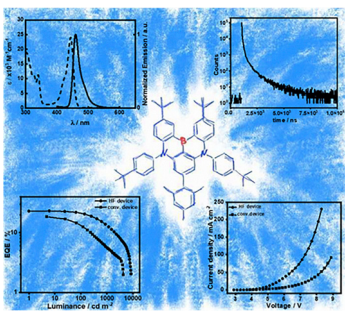


Hyperbranched poly(ethylene glycol)–trimesic acid polyesters as tunable scaffolds for modulating oxidative stress, calcium homeostasis, and neuro–keratinocyte interactions in tissue engineering

Aniruddha Mukherjee, Satish Kumar, Sayan Basak, Luna Goswsmi, Chandan Goswami, Jagannath Chanda, Prasenjit Ghosh, Rabindra Mukhopapdhyay and Abhijit Bandyopadhyay*

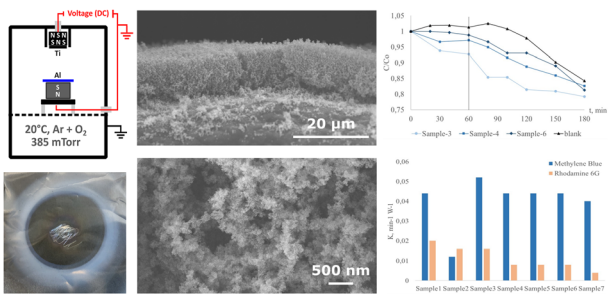
6755



Blue emission in sterically shielded multiresonant thermally activated delayed fluorescence emitters

Mahni Fatahi, Dongyang Chen and Eli Zysman-Colman*

6764



Hierarchical magnetic self-assembly of few-nanometer rutile TiO_2 particles *via* magnetron sputtering

Jarkko Etula, Camilla Tossi,* Niklas Wester, Daryna Ihnatiuk, Sami Sainio, Kai Arstila, Timo Sajavaara, Ilkka Tittonen and Jari Koskinen

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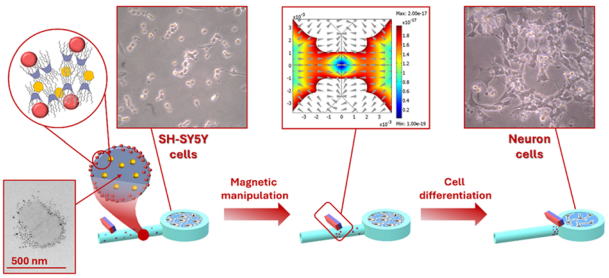
6775

Amphiphilic cyclodextrin-based nanocarriers for magnetic delivery of a morphogen in microfluidic environments

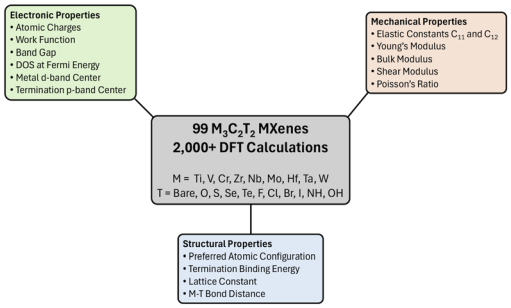
Alessandro Surpi,* Roberto Zagami, Marianna Barbalinardo, Nina Burduja, Giuseppe Nocito, Riccardo Di Corato, Maria Pia Casaletto, Francesco Valle, Angelo Nicosia, Placido Giuseppe Mineo, Valentin Alek Dediu and Antonino Mazzaglia*



6787

Impact of composition on the structural, electronic, and mechanical properties of $M_3C_2T_2$ MXenes

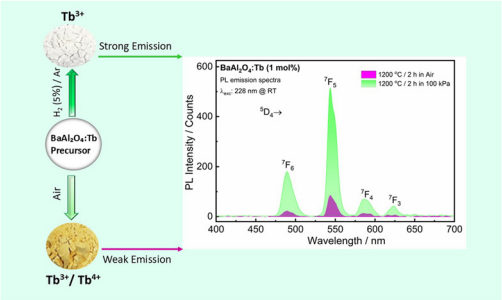
Emily Sutherland, Benjamin Traverso and N. Aaron Deskins*



6803

Annealing $BaAl_2O_4$:Tb^{3+}/Tb^{4+} in air and a reducing atmosphere: a strategy to enhance luminescence by eliminating Tb^{4+}

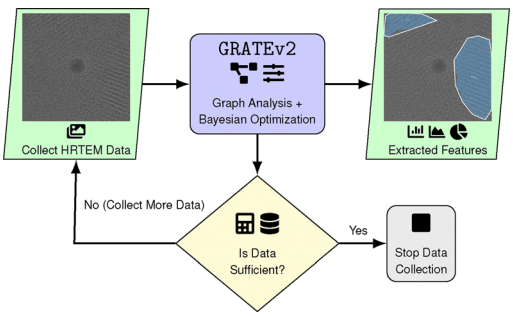
Divya Janardhana, Shivaramu Nagarasanakote Jayaramu,* Elizabeth Coetsee, David E. Motaung and Hendrik C. Swart*



6820

GRATEv2: computational tools for real-time analysis of high-throughput high-resolution TEM (HRTEM) images of conjugated polymers

Dhruv Gamdha, Ryan Fair, Adarsh Krishnamurthy, Enrique D. Gomez and Baskar Ganapathysubramanian*



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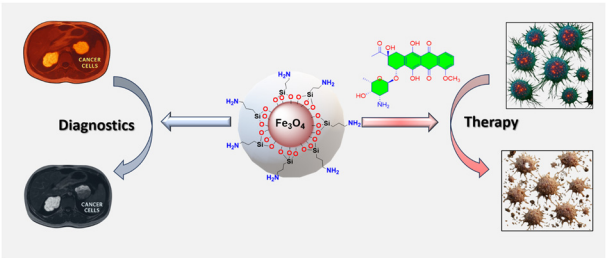
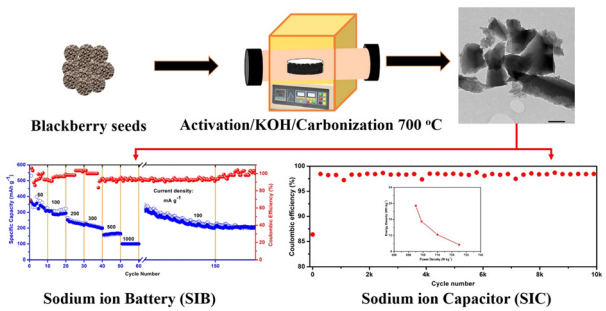


APTES modified magnetite nanoparticles as a theranostic nanocarrier: a study of loading and sustained release of daunorubicin

Vivekananda Saha, Pohlee Cheah, Ranajit Saha, Yongfeng Zhao* and Goutam Biswas*

6856



Biowaste-derived carbon as an electrode material for sodium batteries and capacitors

Chandra Sekhar Bongu and Edreese H. Alsharaeh*

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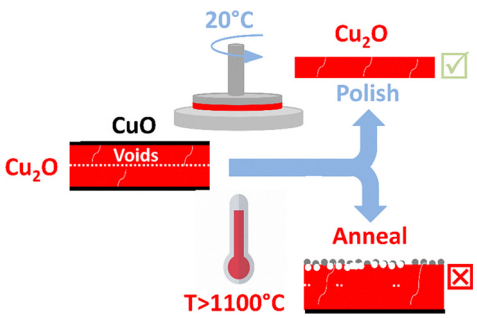

Very high temperature annealing of Cu_2O obtained by the bifacial oxidation of free-standing Cu foils

Matthew Zervos,* George M. Georgiadis, Ioannis Paschos, Matin Ashurov and Pavlos Savvidis

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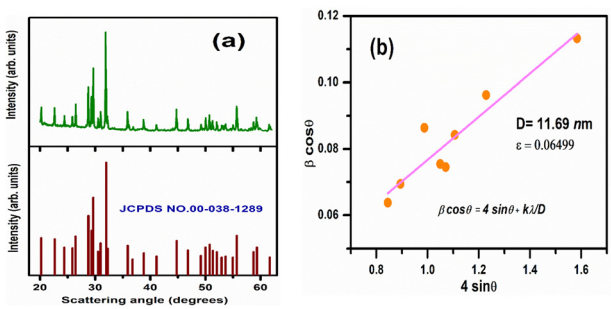

Comprehensive impedance spectroscopy, Raman, and infrared studies of the ferroelectric properties and application of $BiFeWO_6$

B. S. Tripathy, Balaji Umapathi, Priyabrata Nayak and S. K. Parida*

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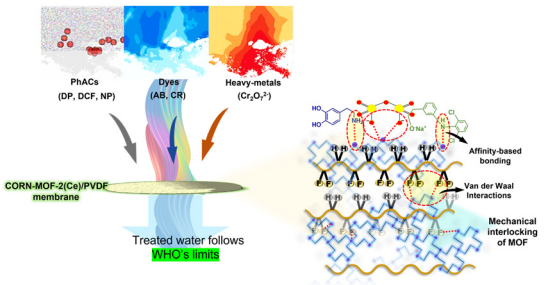
Revolutionizing environmental clean-up: novel CORN-MOF-2/PVDF composite membranes for the removal of multi-pollutants

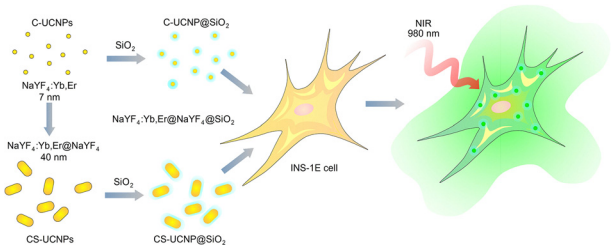
Usha Nellur and Mahesh Padaki*



6907

Lanthanide-based UCNPs: toxicity evaluation and interaction of ultrasmall core *vs.* core–shell nanoparticles with cells

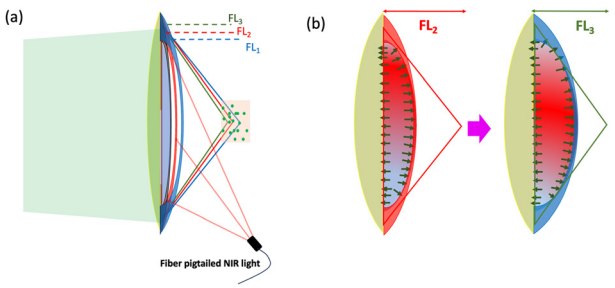
Mykhailo Nahorniak, Daniel Horák,* Miroslav Šlouf, Miloš Steinhart, Oleksandr Shapoval, Hana Engstová and Petr Ježek



6919

Optical and photothermal properties of $CsWO_3$ nanoparticles endow poly(dimethylsiloxane) fluidic lenses with non-invasive thermo-optic and thermo-expansion effects for fluorescence imaging

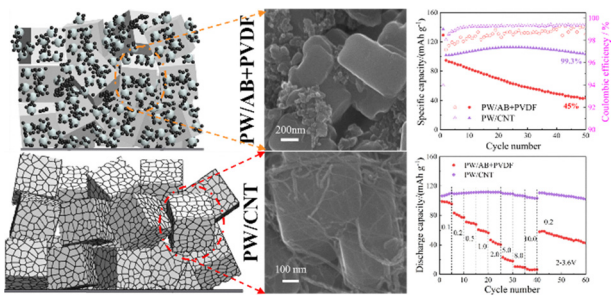
Yu-Hang Cheng, Sheng-Yu Kao, Ming-Hsuan Ho, Jui-Wen Pan and Po-Sheng Hu*



6931

Conductive 3D SW-/MW-CNTs hybrid frameworks for ultra-high-content Prussian white cathodes in sodium-ion batteries

Yang He, Tingru Chen and Nobuyuki Zettsu*



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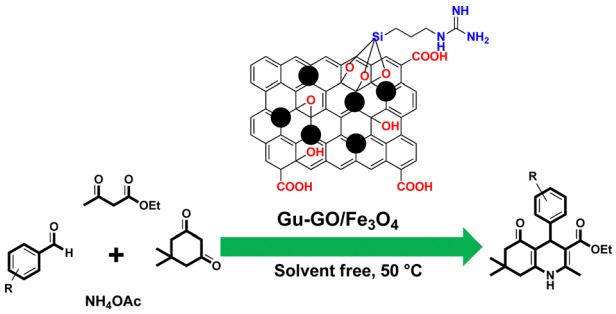

A guanidine-functionalized graphene oxide/Fe_3O_4 nanocomposite as a magnetically recoverable heterogeneous catalyst for the Hantzsch reaction

Akram Rahro, Alireza Salimi Beni* and Somayeh Abaeezadeh

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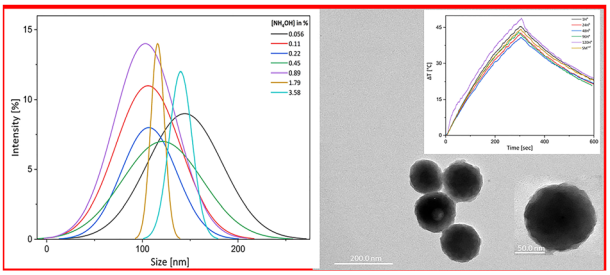
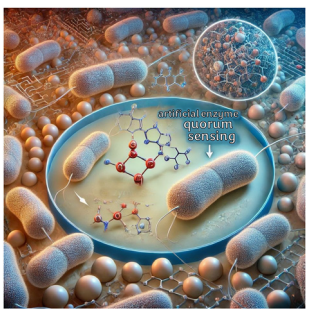


Size and surface properties of polydopamine nanoparticles tunable *via* controlled oxidation conditions

Antonello Nucera, Rita Guzzi, Giovanni Desiderio, Antonio Ferraro, Giovanni Dal Poggetto, Marco Castriota and Oriella Gennari*

6970



Modulation of *P. aeruginosa* quorum sensing and host immune response with biomimetic cyclodextrin enzyme models

Safaa Altves, Nezahat Gokce Ozsamur, Emrah Kavak and Sundus Erbas-Cakmak*

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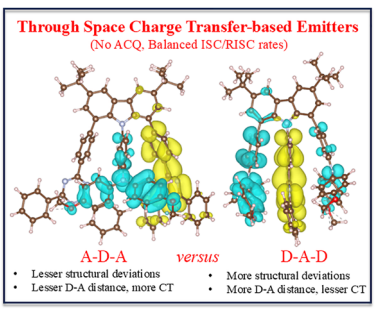

Carbazole-linked through-space TADF emitters for OLEDs: tuning photophysics *via* molecular architecture and exciton dynamics

Sanyam, Nishi Tejiyan and Anirban Mondal*

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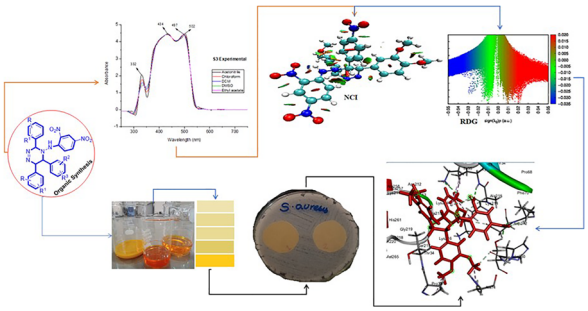
Synthesis of novel azo dye-based 1,2,4-triazine derivatives and their spectral, fabric and anti-bacterial applications: an integration of solvatochromism, photochromism, colorfastness, TD-DFT and molecular docking analysis

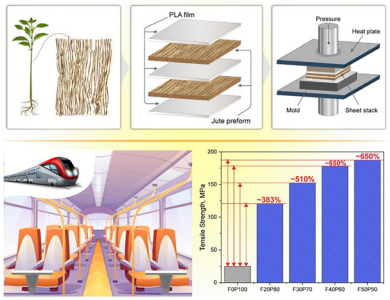
Saima Aslam, Basharat Ali,* Shahzad Murtaza and Nusrat Shafiq*



7016

Development and characterization of compressed unidirectional jute fibre-reinforced polylactic acid (PLA) composite materials

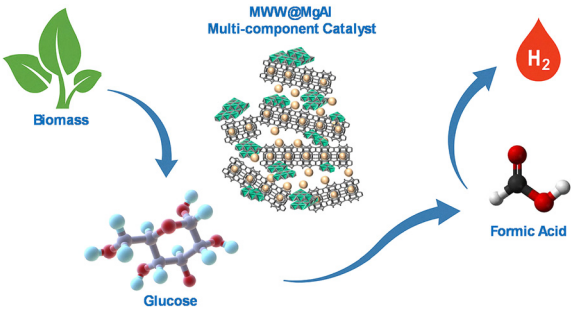
Rowshanuzzaman Kanon, Ariful Islam, Mainul Islam, Emdadul Haq, Hurazannat Monira and Forkan Sarker*



7032

Multi-component catalysts with integrated MWW-type layers and mixed oxide domains for glucose-to-formic acid oxidation

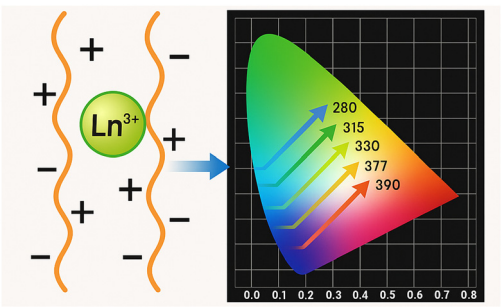
Cristina Esteban, Alexandra Velty* and Urbano Díaz*



7056

Colour tuneable luminescent organic–inorganic hybrid materials based on lanthanide-doped ionic liquid polymers

Olivier Renier, Guillaume Bousrez, Veronica Paterlini, Magdalena Wilk-Kozubek and Anja-Verena Mudring*



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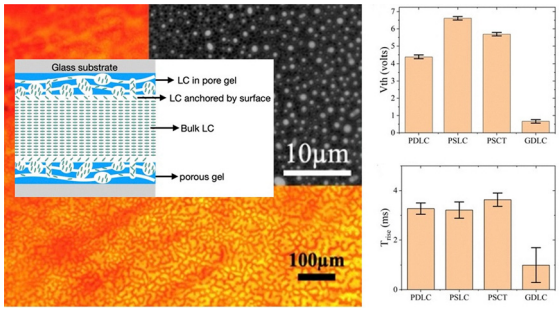
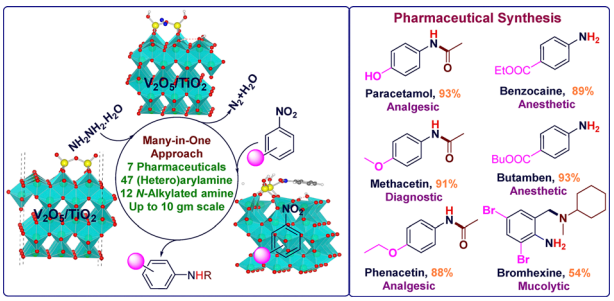


A comparison of smart window approaches with polymer-modified and gel-glass dispersed liquid crystals

Chung-Hao Chen, Yaiza Lozano Vilches, David Levy and Ingo Dierking*

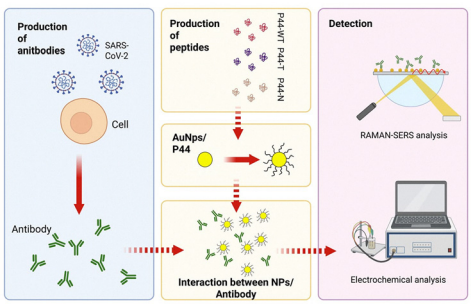
7076



Selective and sustainable nitro reduction and reductive *N*-alkylation using a recyclable V_2O_5/TiO_2 catalyst for amine synthesis

Rahul Upadhyay, Shashi Kumar, Kancharlapalli Srinuvasu, Chinnakonda S. Gopinath, K. R. S. Chandrakumar* and Sushil K. Maurya*

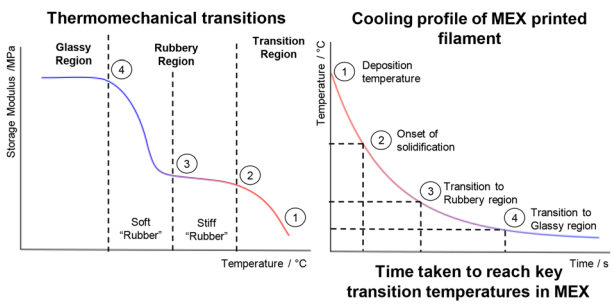
7090



Peptide-based biosensors for variant-specific detection of SARS-CoV-2 antibodies

Amanda E. Sabaine, Ana C. H. Castro-Kochi, Rodrigo S. N. Mancini, Marcos R. A. Silva, Anderson F. Sepulveda, Jamille R. Oliveira, Cesar Remuzgo, Keity S. Santos, Vivian L. Oliveira, Leandro T. Kochi, Lauro T. Kubota, Mónica B. Mamián-López and Wendel A. Alves*

7104



Thermal and rheological transitions of high performance semicrystalline polyaryletherketone (PAEK) polymers in material extrusion (MEX)

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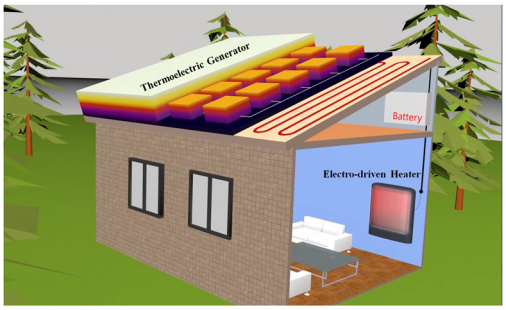
Cost-effective carbon foam/paraffin composites for enhanced multifunctional energy conversion and storage

Arya Rahmani, Ali Mohseni Ahangar, Mahdi Maleki,* Rouhollah Ahmadi and Ahmad Shokrieh



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