

Materials Advances

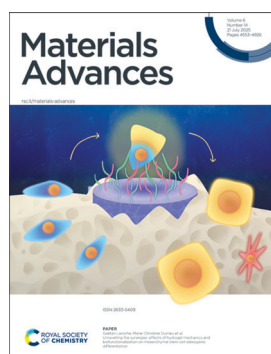
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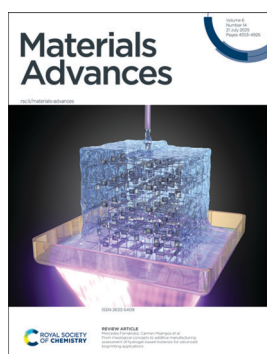
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See Gaétan Laroche, Marie-Christine Durrieu *et al.*, pp. 4646–4659. Image reproduced by permission of Marie-Christine Durrieu from *Mater. Adv.*, 2025, 6, 4646.



Inside cover

See Mercedes Fernández, Carmen Mijangos *et al.*, pp. 4566–4597. Image reproduced by permission of M. Itxaso Calafel Martínez from *Mater. Adv.*, 2025, 6, 4566.

EDITORIAL

4564

Introduction to Advances in nanoporous metal films: production methods and applications

Eva Pellicer* and Maria Eugenia Toimil-Molares*

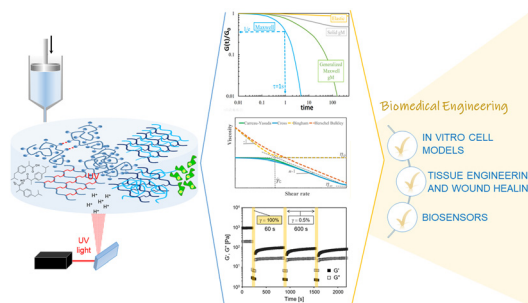


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From rheological concepts to additive manufacturing assessment of hydrogel-based materials for advanced bioprinting applications

M. Itxaso Calafel, Miryam Criado-Gonzalez, Robert Aguirresarobe, Mercedes Fernández* and Carmen Mijangos*



RSC Applied Polymers

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Fundamental questions
Elemental answers

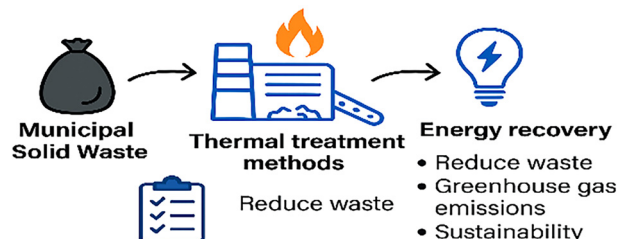
REVIEWS

4598

Waste-to-energy technologies: a sustainable pathway for resource recovery and materials management

Ashish Soni, Sonu Kumar Gupta, Natarajan Rajamohan and Mohammad Yusuf*

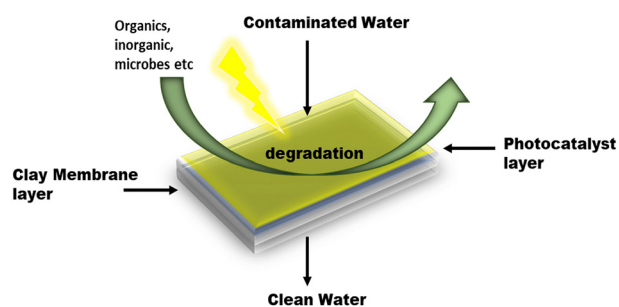
Waste-to-Energy (WtE) Techniques



4623

Clay-based photocatalytic membranes: low-cost alternative materials for water treatment

Chidinma G. Olorunnisola,* Damilare Olorunnisola, Morenike. O. Adesina, Moses O. Alfred, Abisola O. Egbedina, Oluwayimika O. Oluokun, Martins O. Omorogie, Emmanuel I. Unuabonah and Andreas Taubert*

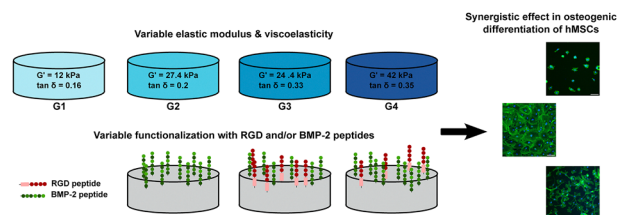


PAPERS

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Unravelling the synergies: effects of hydrogel mechanics and biofunctionalization on mesenchymal stem cell osteogenic differentiation

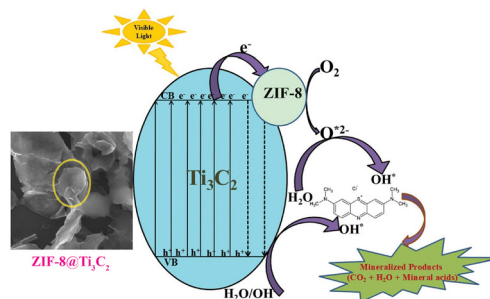
Cristina López-Serrano, Murielle Rémy, Thierry Leste-Lasserre, Gaétan Laroche* and Marie-Christine Durrieu*



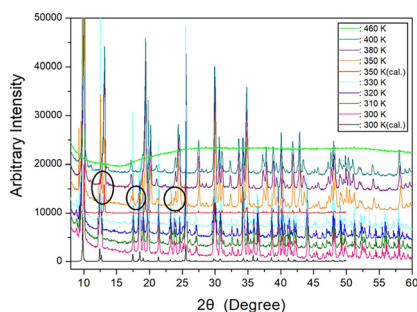
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In situ synthesis of 3D ZIF-8 on 2D MXene nanosheets for efficient photocatalytic degradation of methylene blue (MB)

Francis Ashamary, P. Catherine Neba, S. Harivarsha, Atchudan Raji, Padmanaban Annamalai, Mohamed Gamal Mohamed,* Pramod Kalambate,* Pandi Muthirulan, Shiao-Wei Kuo* and Devaraj Manoj*



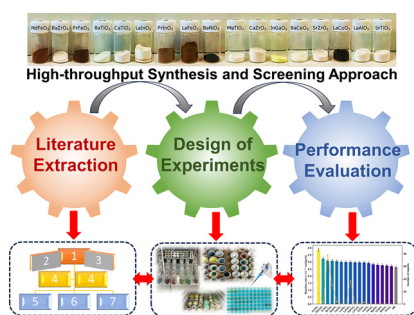
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Phase transition of $(\text{CH}_3)_2\text{CHNH}_3\text{CuCl}_3$: crystal growth, crystal structure, coordination geometry, and molecular motion

Hyunje Park and Ae Ran Lim*

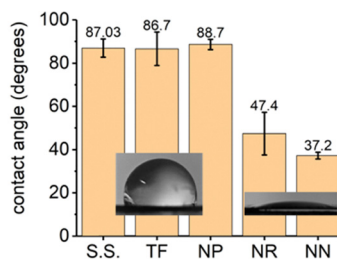
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Accelerated perovskite discovery: screening new catalysts for photocatalytic methylene blue degradation

Poulami Mukherjee,* Yohei Cho, Phulkerd Panitha and Toshiaki Taniike*

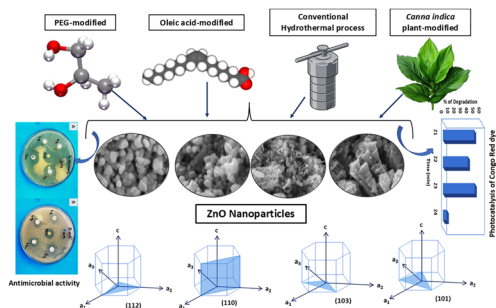
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Void engineering to promote the self-cleaning properties of bactericidal zinc oxide nanopillar array coatings

Amir Hassanpour,* Marie-Christine Groleau, Dalya Messaoudi, Andrea A. Greschner, Katharina Kohlmann, Andreas Ruediger, Eric Déziel, Shuhui Sun and Marc A. Gauthier*

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Crystallographic facet engineering of ZnO nanoparticles for photocatalytic organic pollutant degradation and antibacterial activity

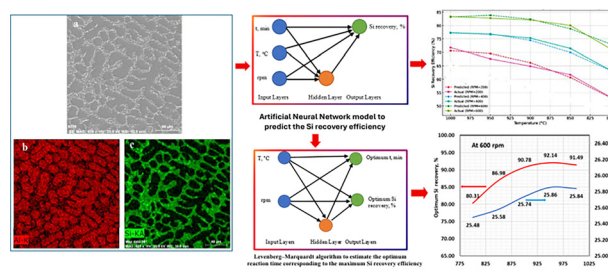
Priya Paul, Fataha Nur Robel, Newaz Mohammed Bahadur, Sumaya Tabassum, Subarna Sandhani Dey, Muhammad Shahriar Bashar, Nazmul Islam Tanvir, Samina Ahmed* and Md. Sahadat Hossain*



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Optimizing the processing parameters of producing Al–Si alloys using sodium fluosilicate via artificial neural network

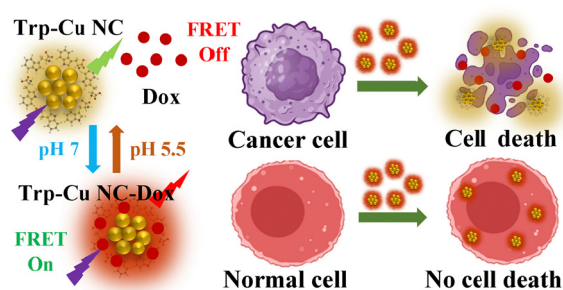
Gamal M. A. Mahran,* Abdel-Nasser M. Omran, Hassan E. M. Goma and Mahamed Abd-El-Hakeem Mahamed



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Mapping the L-tryptophan capped copper nanocluster mediated binding and targeted pH-responsive release of doxorubicin via fluorescence resonance energy transfer (FRET)

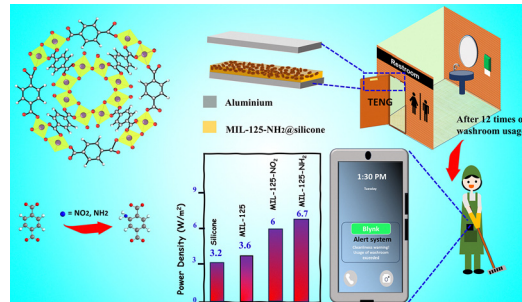
Aarya, Anna Sebastian, Kavya P., Indrajit Bhattacharjee, Abhishek S. Shekhawat, Bibhu Ranjan Sarangi and Supratik Sen Mojumdar*



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Functionalized MIL-125(Ti)-based high-performance triboelectric nanogenerators for hygiene monitoring

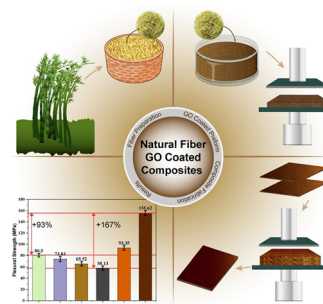
Anjaly Babu, Navaneeth Madathil, Rakesh Kumar Rajaboina, Hitesh Borkar, Kamakshaiah Charyulu Devarayapalli, Yogendra Kumar Mishra, Sugato Hajra, Hoe Joon Kim, Uday Kumar Khanapuram* and Dae Sung Lee*



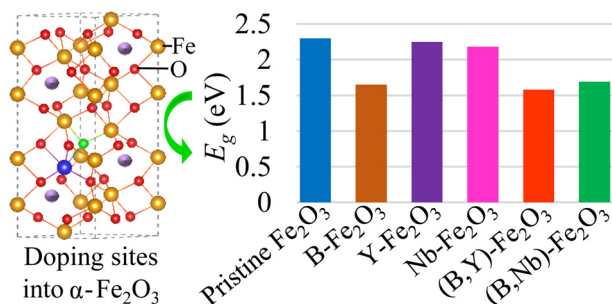
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Enhanced properties of bamboo short fiber reinforced polymer composites with alkali and graphene oxide

Md. Ariful Islam,* Mainul Islam, Md. Shariful Islam and Tarikul Islam*



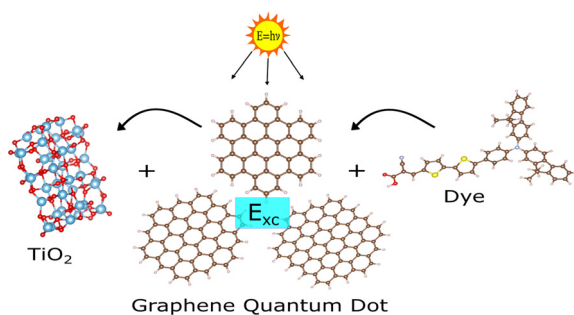
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Improved photocatalytic activity of $\alpha\text{-Fe}_2\text{O}_3$ by introducing B, Y, and Nb dopants for solar-driven water splitting: a first-principles study

Abdul Ahad Mamun and Muhammad Anisuzzaman Talukder*

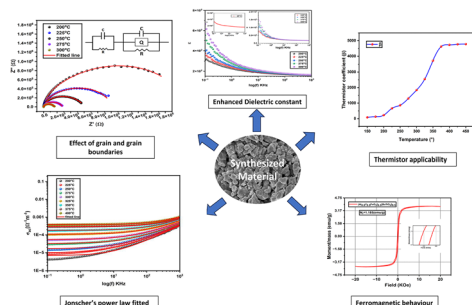
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A density functional theory study of dye-sensitized solar cells with graphene quantum dots: only a matter of size?

D. Gemberi,* Ž. S. Maršić and H. Bahmann*

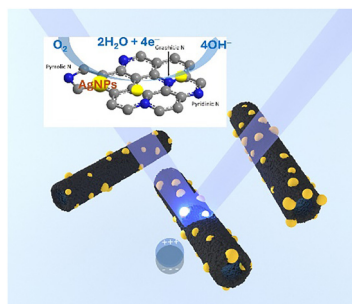
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Enhanced transport, dielectric and magnetic properties of Ni-doped $(\text{YFeO}_3)_{0.5}(\text{BaTiO}_3)_{0.5}$ perovskite for NTC thermistor and multifunctional applications

Harshavardhan Chouhan, Saurabh Prasad, B. N. Parida and R. K. Parida*

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Plasmon-enhanced oxygen reduction reaction using silver nanoparticle-decorated N-doped carbon nanotubes

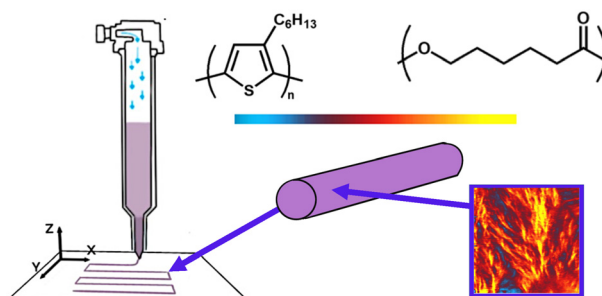
Tereza Jilková, Elena Miliutina, Andrii Trelin, Zdeňka Kolská, Václav Švorčík, Oleksiy Lyutakov and Roman Elashnikov*



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Towards additive manufacturing of semiconducting polymers: hot-melt extrusion of PCL:P3HT blends

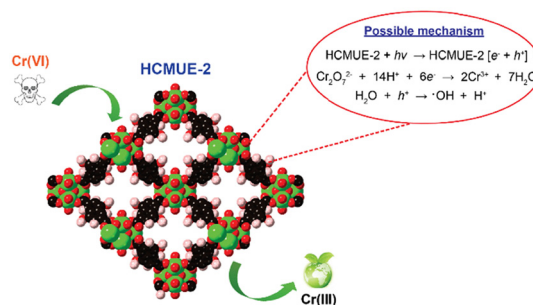
Jiayi Chen, Nahel Blanc and Audrey Laventure*



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An excellent photochemical reduction property of Cr(vi) upon visible light illumination in a hydroxyl-functionalized zirconium-based metal-organic framework

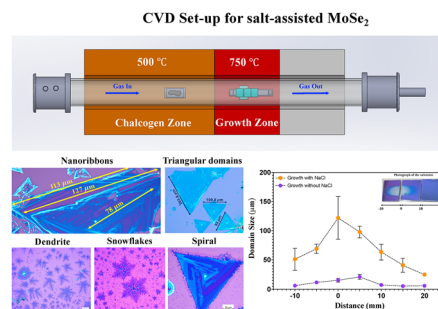
My V. Nguyen,* Vu T. Luu and An T. D. Phan



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Systematic study of CVD-growth parameters in NaCl-assisted growth of MoSe₂ nanostructures: nanoribbons, dendrites and spirals

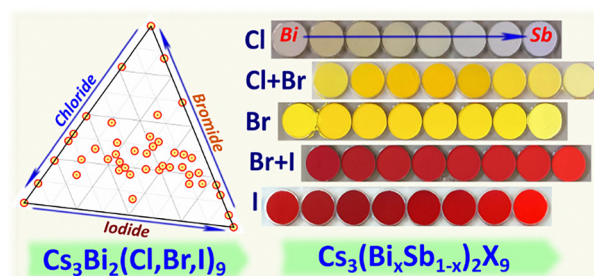
Mahima Tyagi,* Srijata Dey, Pinky Sahoo and Deshdeep Sahdev



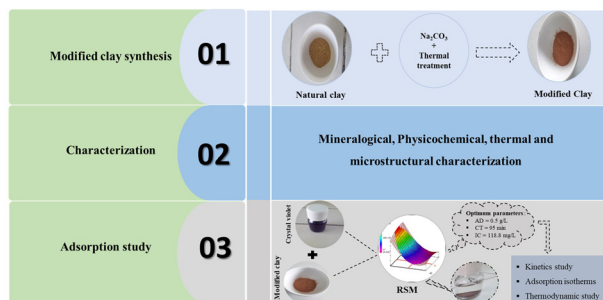
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Exploring compositional versatility of perovskite-like Cs₃(Bi,Sb)₂X₉ (X = Cl, Br, I) compounds by high-throughput experimentation

Oleksandr Stroyuk,* Oleksandra Raievska, Sachin Kinge, Jens Hauch and Christoph J. Brabec



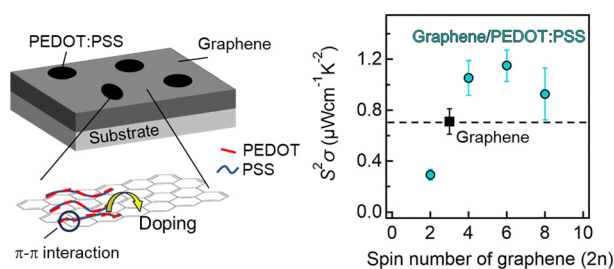
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Improving the adsorption efficiency of a low-cost natural adsorbent for the removal of an organic pollutant: optimization and mechanism study

Yahia Saghir,* Ayoub Chaoui, Salaheddine Farsad, Aboubakr Ben Hamou, Asma Amjlef, Mohamed Benafqir, Nouredine El Alem and Mohamed Ez-zahery

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Molecular interaction-induced thermoelectric performance enhancement of graphene thin films with an agglomerated conductive polymer

Keito Uchida, Shunya Sakane,* Takashi Shimizu, Akito Ayukawa, Haruhiko Udono and Hideki Tanaka*

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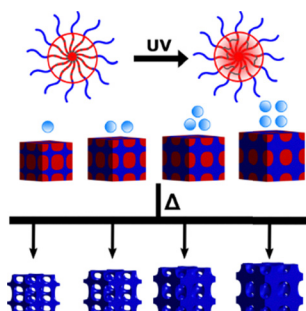
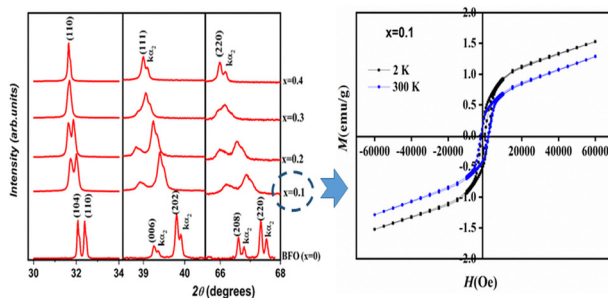


Photo-crosslinked persistent micelle templates with near universal solvent compatibility

Coby S. Collins, Mengxue Zhang, CJ Sturgill, Christian X. Ruff, Bryce Melton and Morgan Stefik*

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Substitution-induced changes in the structure, vibrational, and magnetic properties of BiFeO₃

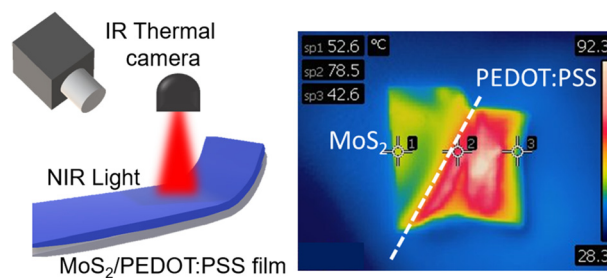
I. Kallel, Z. Abdelkafi,* N. Abdelmoula, H. Khemakhem, N. Randrianantoandro and E. K. Hlil



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An MoS₂/PEDOT:PSS-based flexible NIR-responsive soft actuator

Raksha D. Salian, Avijit Kumar Das and Partha Kumbhakar*



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An efficient strategy for simultaneous gold deposition and obtention of hierarchical Au/TS-1 applied to liquid-phase propylene epoxidation

Ignacio Centeno-Vega,* Lorenzo José González-Rubio, Cristina Megías-Sayago and Svetlana Ivanova

