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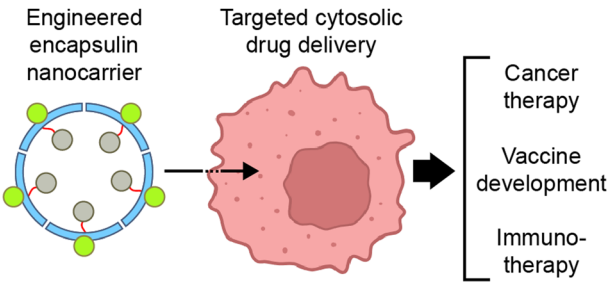
Cover
See Daniel B. Straus *et al.*, pp. 6262–6268. Image reproduced by permission of Zheng Zhang and Daniel B. Straus from *Mater. Adv.*, 2025, **6**, 6262.

REVIEWS

6209

Engineering encapsulin nanocages for drug delivery

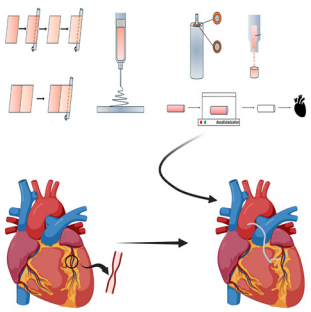
Seokmu Kwon and Tobias W. Giessen*



6221

An overview of small diameter vascular grafts: from materials to fabrication

Qian Li, Xili Ding, Cong Chen, Kui Zhang* and Ran Dong*



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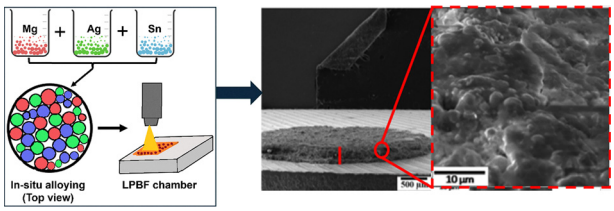
COMMUNICATIONS

6243

Additive manufacturing of commercially pure magnesium and Mg–2Ag–2Sn alloys by *in situ* alloying during laser powder bed fusion

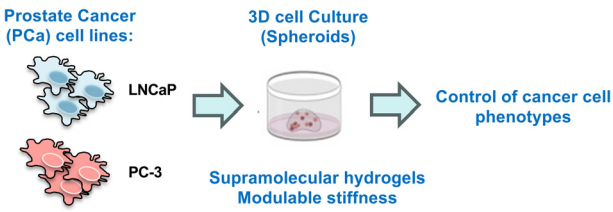
Ajit Kumar, Muralidhar Yadav, C. P. Paul, Sanjay Mishra, Satyam Suwas and Kaushik Chatterjee*



6257

Control of cancer cell phenotypes *via* supramolecular hydrogels: the role of extracellular matrix stiffness

Virginie Baylot, Bruno Alies, Palma Rocchi and Philippe Barthélémy*

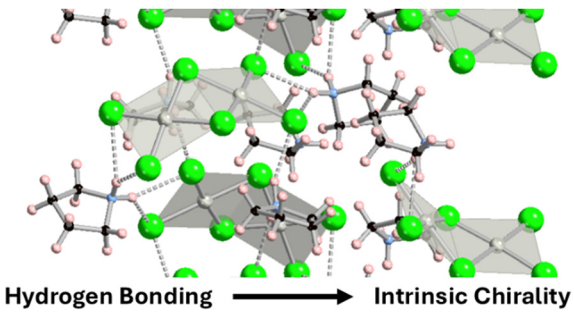


PAPERS

6262

The emergence of intrinsic chirality in copper and palladium chloride materials

Zheng Zhang, Santu Biswas, Matthew M. Montemore and Daniel B. Straus*



6269

Natural dielectrics for organic field effect transistors: a study on resins derived from larch, spruce and Atlas cedar Pinaceae trees

Corina Schimanofsky, Andreas Petritz, Boyuan Ban, Cristian Vlad Irimia, Rosarita D'Orsi, Cigdem Yumusak, Felix Mayr, Yasin Kanbur, Sunwoo Kim, Alessandra Operamolla, Klara Saller, Manuela Schiek, Yolanda Salinas, Oliver Brüggemann, Christian Teichert, Chunlin Xu, Bong Sup Shim, Clemens Schwarzinger, Barbara Stadlober, Niyazi Serdar Sariciftci and Mihai Irimia-Vladu*

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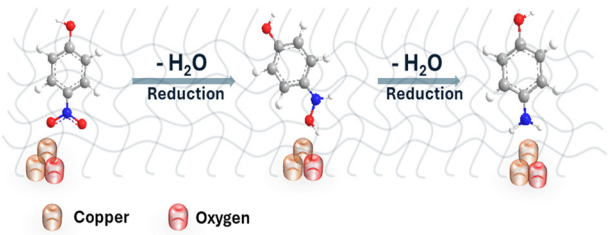
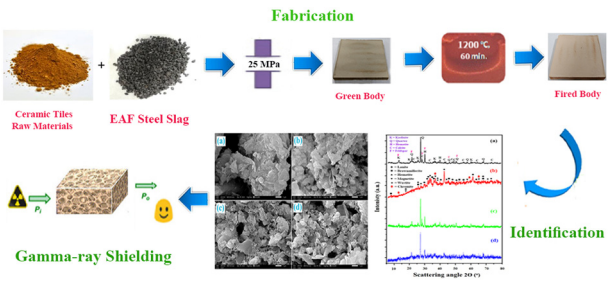
6291



Revealing an efficient copper oxide nanoparticle catalyst for the reduction of the hazardous nitrophenol: experimental and DFT studies

Elsayed Elbayoumy,* Emadeldin M. Ibrahim, Ashraf El-Bindary, Tamaki Nakano and Mohamed M. Aboelnga

6305



Doping of steel slag waste as a sustainable filler in ceramic tile composites for enhanced gamma-ray shielding

Rehab M. El-Sharkawy,* Meshari Almeshari, Yasser Alzamil, Ahmad Abanomy, Bader Alshoumr, Asmaa M. Halbas, Elhassan A. Allam, Mohamed E. Mahmoud, H. A. Saudi and Atef El-Taher

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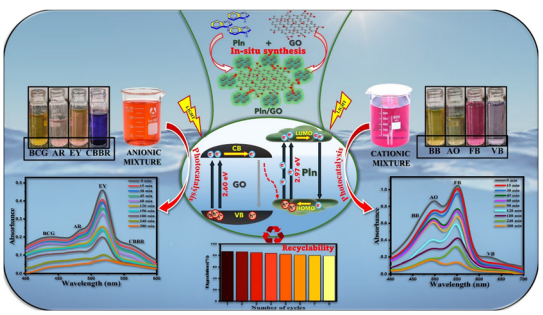

Graphene oxide/polyindole nanocomposite: a highly efficient multi-cyclic, stable and sustainable photocatalyst platform for wastewater remediation under visible light

Arisha Bi, Sarfaraz Mahmood, Nitika Garg, Sahil Thakur, Saif Ali Chaudhry, Sarita Yadav, Madhulika Gupta, Mikhael Bechelany, Jai Prakash* and Zeba Haque*

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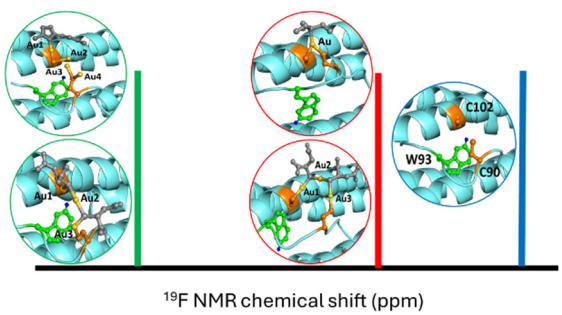

^{19}F NMR as a tool to probe drug binding and structural dynamics in ferritin-based nanocarriers

Veronica Ghini, Giorgio Di Paco, Lucrezia Cosottini, Antonio Rosato and Paola Turano*

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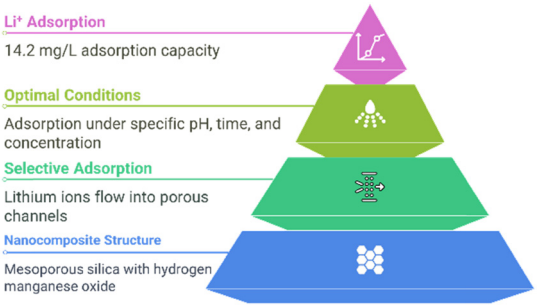
6345

Lithium recovery using a spinel-type hydrogen manganese oxide (HMO)–SBA-15 nanocomposite

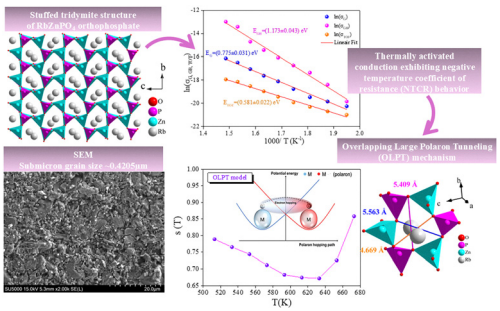
Keivan Sohrabpour,* Antonio Grisolia, Francesco Chidichimo, Pietro Argurio, Efrem Curcio, Salvatore Straface and Luigi Pasqua



6358

Comprehensive study of the structural, microstructural, and electrical properties of $RbZnPO_4$: insights into conduction mechanisms and the OLPT models

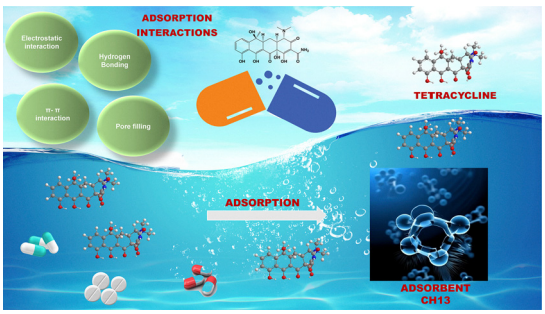
Imen Gharbi, Arafet Ghoudi, Najoua Weslati, Mohamed Tliha and Abderrazek Oueslati*



6370

CuBTC–clay composites with tunable ratios for antibiotic removal: unraveling isotherm, kinetic, and thermodynamic study

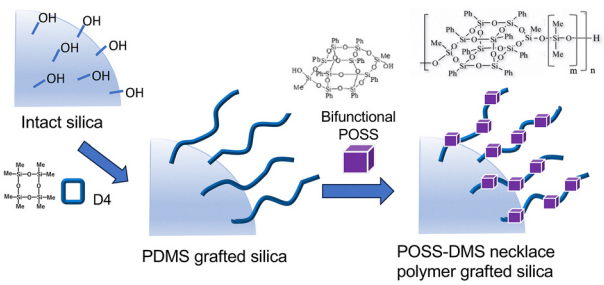
Palkaran Sethi, Sanghamitra Barman* and Soumen Basu*



6386

Silica-based hybrid materials formed by surface grafting with necklace polymers containing POSS–DMS structures

Shota Hikake, Hisao Oikawa and Masashi Kunitake*



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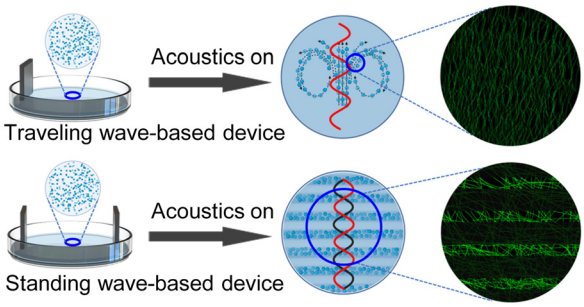

In-Petri-dish traveling and standing acoustic wave-assisted fabrication of anisotropic collagen hydrogels

Yingshan Du, Jiali Li, Chongpeng Qiu, Liang Shen, Teng Li, Bowen Cai, Luyu Bo and Zhenhua Tian*

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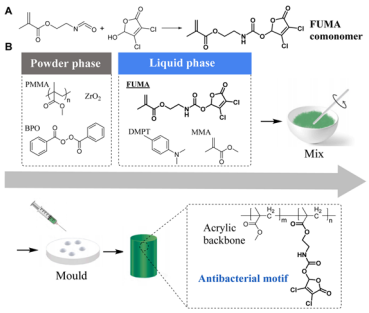

Furanone-based comonomer used to manufacture antibacterial bone cement with simultaneously enhanced mechanical strength and antibacterial activity

Xin Wang, Wen-Han Bu, Lu-Yang Han, Long-Xu Han, Qi-Ling Liang, Shan He, Zhe Gao, Yang Xu,* Jian-Jun Chu* and Fang He*

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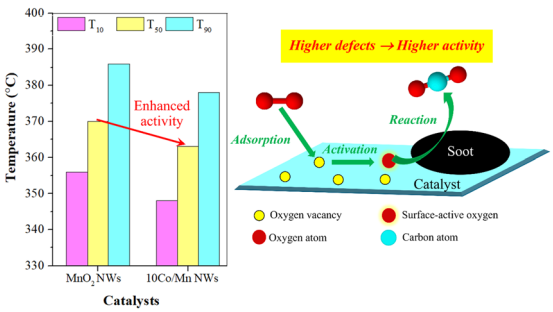

Enhanced catalytic performance of MnO_2 nanowires for soot combustion by cobalt incorporation

Issara Sereewatthanawut, Chalempol Khajonvittayakul, Notsawan Swadchaipong, Vut Tongnan, Panupun Maneesard, Rossarin Ampairojanawong, Ammarika Makdee, Tawiwan Kangsadan, Matthew Hartley and Unalome Wetwatana Hartley*

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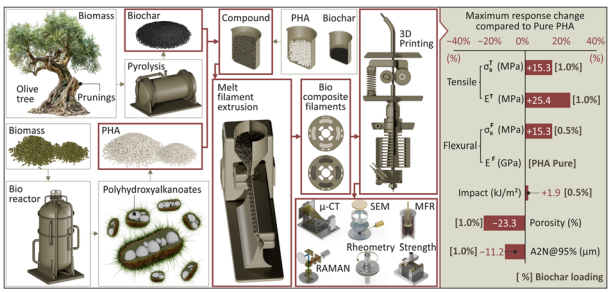

Biodegradable polyhydroxyalkanoate (PHA) composites with biochar ratios optimized for the additive manufacturing method of material extrusion: engineering, rheological, and morphological insights

Nectarios Vidakis, Nikolaos Michailidis, Dimitrios Kalderis, Apostolos Argyros, Katerina Gkagkanatsiou, Maria Spyridaki, Ioannis Valsamos, Vassilis Papadakis and Markos Petousis*

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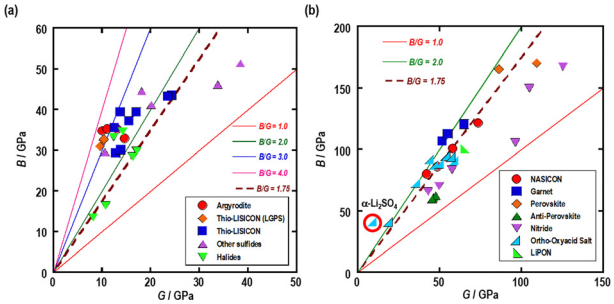
6445

First-principles evaluation of the elastic properties of crystalline Li-ion conductors

Masato Torii, Atsushi Sakuda,* Kota Motohashi and Akitoshi Hayashi



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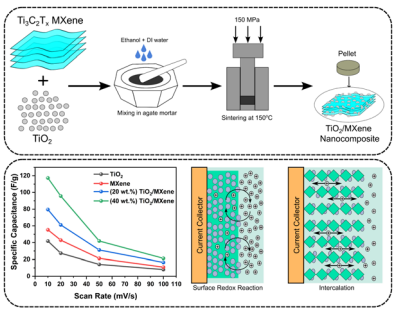
Cold sintered TiO_2–$Ti_3C_2T_x$ MXene nanocomposites for supercapacitor electrode materials

Abdul Hamid Rumman, Saimon Mahmud, Nishat Tasnim Mim, Janifa Akter, Ananya Roy, Ahsiur Rahman Nirjhar, Md. Nazmul Ahsan Dipon, Md. Shofiqul Islam, Md Abdul Gafur, Aninda Nafis Ahmed* and Kazi Md. Shorowordi*



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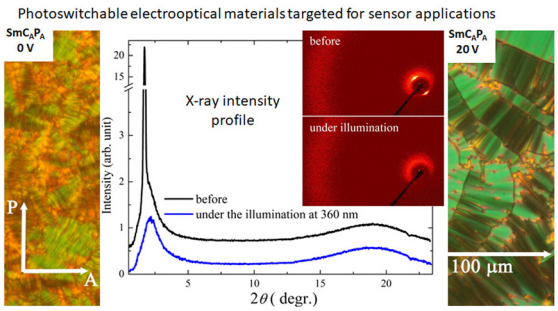
Design and synthesis of photoresponsive bent-core liquid crystals exhibiting polar smectic phases

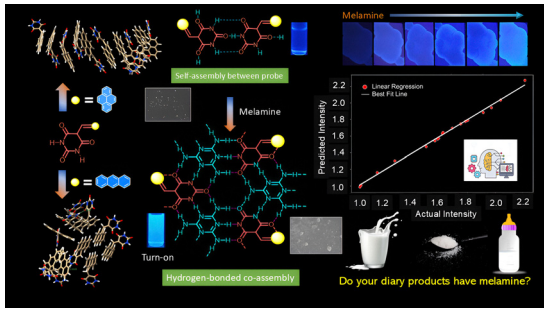
Barbora Jansová, Václav Kozmík, Jiří Svoboda, Martin Krupička, Damian Pociecha, Petr Bečvář, Marcel Bouvet,* Zuzana Böhmová, Vladimíra Novotná and Michal Kohout*



6479

Planar *vs.* twisted pyrimidine derivatives: insights from molecular dynamics and predictive modelling for melamine detection in dairy products

Harshal V Barkale, Bappa Maiti and Nilanjan Dey*



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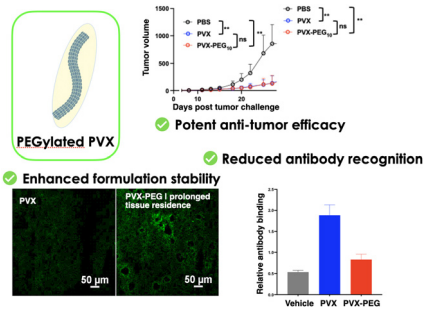
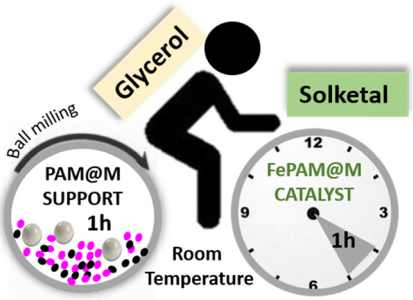


Efficacy of PVX and PEGylated PVX as intratumoral immunotherapy

Yifeng Ma, Mary G. Gorman, Juliane Schuphan and Nicole F. Steinmetz*

6500



Mechanochemical synthesis of poly(azomethine)s: a sustainable vehicle for metallic supports in valorisation of glycerol

Jean A. Medina, Angela Matarín, Patricio A. Sobarzo, Claudio A. Terraza and Eva M. Maya*

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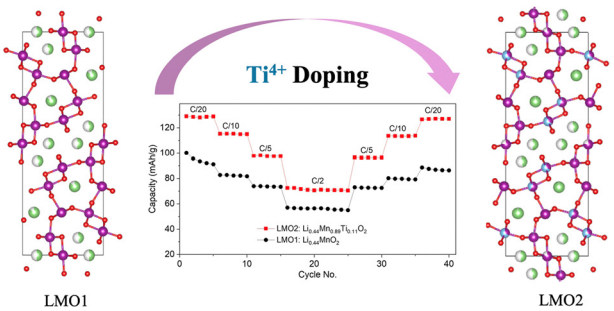
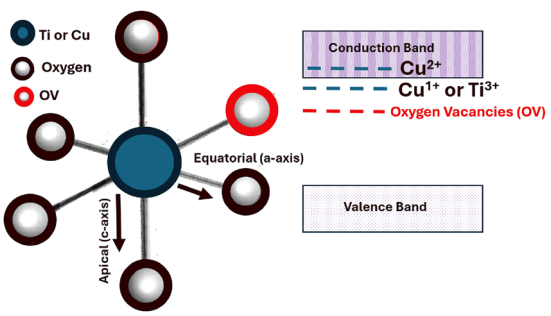


The effect of Ti-doping on the electrochemical activity of the $Li_{0.44}MnO_2$ cathode material for Li-ion batteries

Jaya Yadav, Sai Pranav Vanam, Shubham K. Parate, Nikhil Doddi, Velaga Srihari, Valérie Pralong, Maximilian Fichtner and Prabeer Barpanda*

6518



Photoinduced supercapacitance and photocatalytic performance of TiO_2 enhanced by electronic band structure modification using Cu-doping

Sakshi Chaudhary, Kanak Pal Singh Parmar,* Prachi Jain and Ankush Vij

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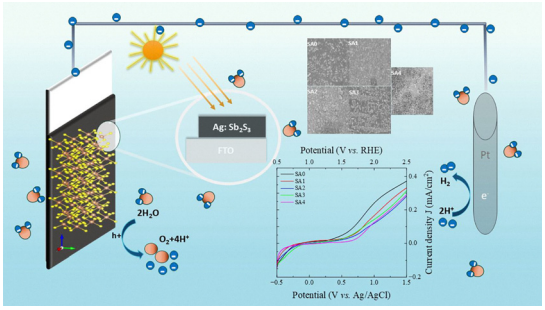
Unveiling the role of silver-promoted phase evolution in antimony sulfide thin films for photoelectrochemical activity

D. M. Kavya, Akshay Kumar Sonwane, Y. N. Sudhakar, Sajan D. George and Y. Raviprakash*



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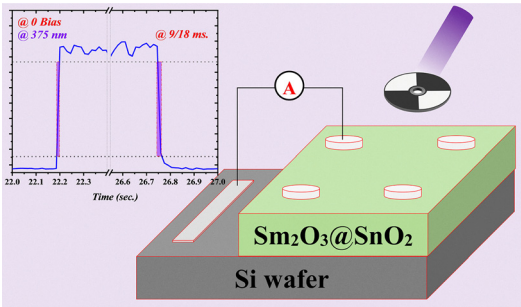
Rare-earth Sm_2O_3-doped SnO_2: tailoring optoelectrical behaviors for a self-driven heterojunction UV-NIR photodetector

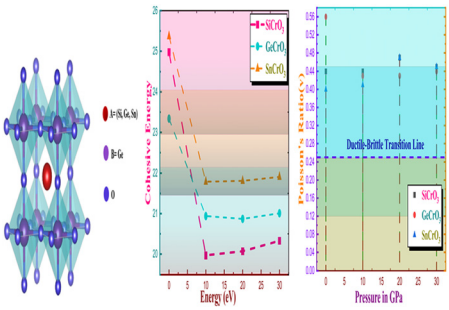
Jamal M. Rzaij, Noor F. Khdr Al Attwani, Ethar Yahya Salih* and Mustafa K. A. Mohammed



6550

Investigation of the half-metallicity signature and pressure-induced physical properties of cubic $ACrO_3$ (A = Si, Ge, Sn) multiferroic by DFT calculation

Md. Rony Hossain, Mst. Shamima Khanom, Prianka Mondal* and Farid Ahmed



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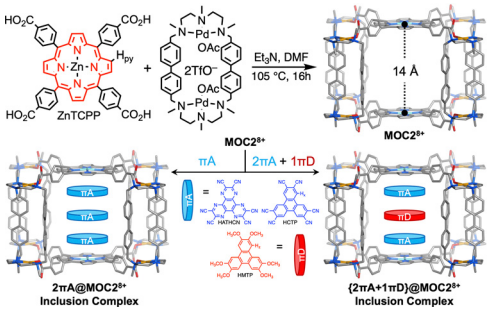
From an insulating Zn-porphyrin metallacage to electrically conducting inclusion complexes featuring extended π-donor/acceptor stacks

Evan Thibodeaux, Paola A. Benavides, Ellis Barger, Rakesh Sachdeva and Sourav Saha*



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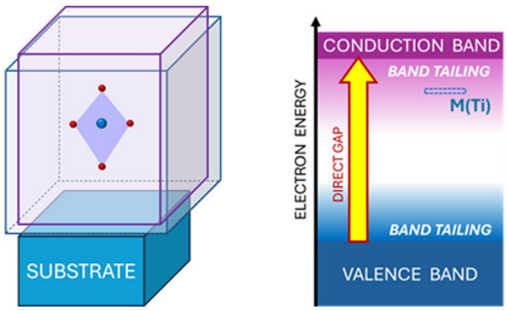

Substrate-induced strain control of (Mn, Fe, Co, Ni)-doping effects in $SrTiO_3$ thin films

M. Tyunina,* N. Nepomniashchaia, O. Pacherova, T. Kocourek, V. Vetokhina and A. Dejneka

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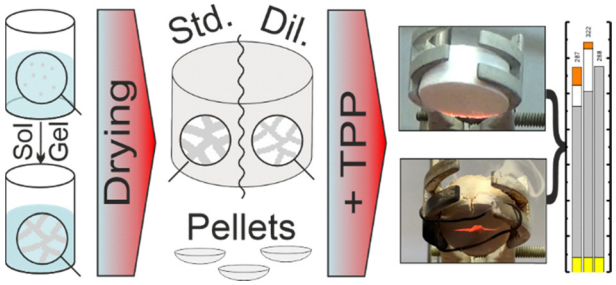

Flame-retardant impregnation of flexible hybrid-silica marshmallow aerogels for lightweight transportation

Danny Bialuschewski,* Kai Steffens and Barbara Milow

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