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ISSN 2633–5409 CODEN MAADC9 4(22) 5375–5852 (2023)

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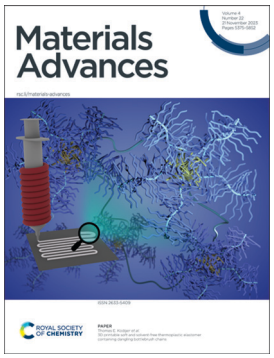

Inside cover
See Thomas E. Kodger *et al.*, pp. 5535–5545. Image reproduced by permission of Thomas E. Kodger from *Mater. Adv.*, 2023, **4**, 5535.

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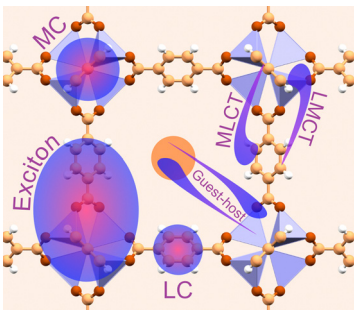
Simulating excited states in metal organic frameworks: from light-absorption to photochemical CO_2 reduction

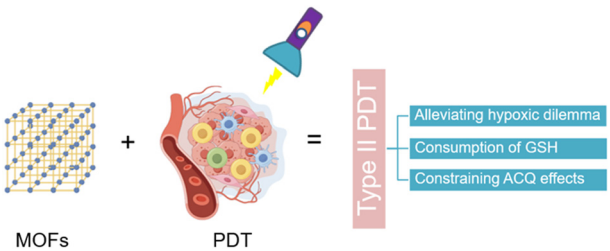
Michael Ingham, Alex Aziz, Devis Di Tommaso* and Rachel Crespo-Otero*



5420

An oxygen-generating metal organic framework nanoplatform as a "synergy motor" for extricating dilemma over photodynamic therapy

Meihong Zhang, Yixian Zhou, Biyuan Wu, Chao Lu,* Guilan Quan,* Zhengwei Huang,* Chuanbin Wu and Xin Pan



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REVIEWS

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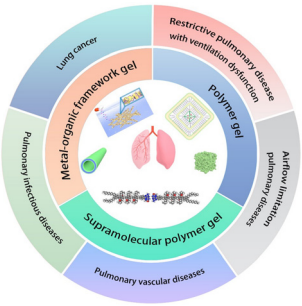
Research progress on gel-based nanocomposites for diagnosis and treatment of respiratory diseases

Jing Ye, Wenjing Pei, Jing Zhu, Ping Li, Hui Liu, Lei Gao, Changxiu Ma, Rongrong Gu, Sheng Ye* and Dahai Zhao*



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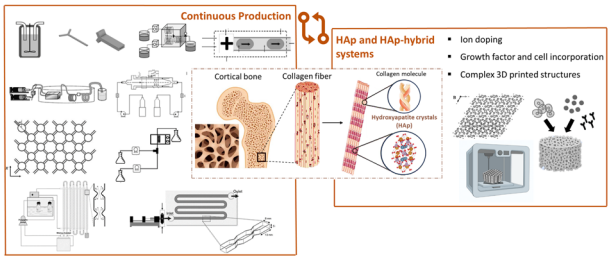
Tackling current production of HAp and HAp-driven biomaterials

Anabela Veiga, Sara Madureira, João B. Costa,* Filipa Castro, Fernando Rocha and Ana L. Oliveira*



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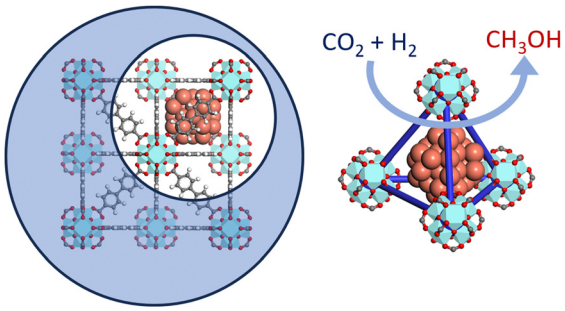
Direct CO_2 to methanol reduction on Zr_6-MOF based composite catalysts: a critical review

Elif Tezel, Dag Kristian Sannes, Stian Svelle, Petra Ágota Szilágyi* and Unni Olsbye*



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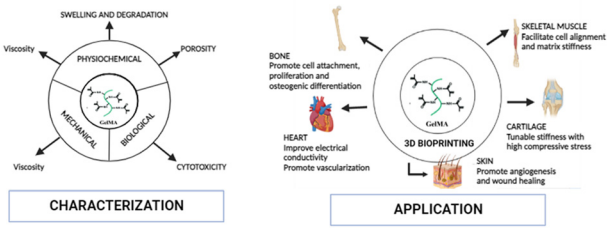
An insight into synthesis, properties and applications of gelatin methacryloyl hydrogel for 3D bioprinting

Rudra Nath Ghosh, Joseph Thomas, Vaidehi B. R., Devi N. G., Akshitha Janardanan, Pramod K. Namboothiri and Mathew Peter*



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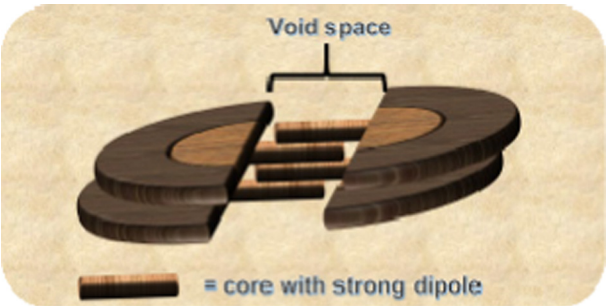

Direct evidence of mesogenic dendrons with free void space by Brunauer–Emmett–Teller (BET) isotherms

Yao-Chih Lu, Jun-Cheng Wang, Yun-He Yang and Long-Li Lai*

PAPERS

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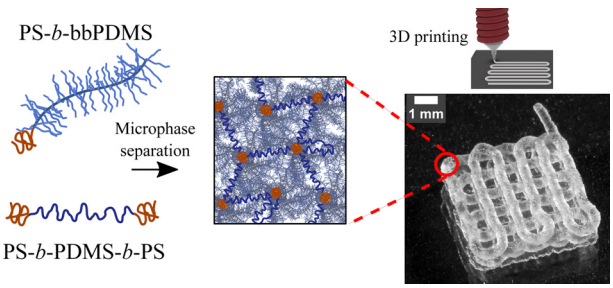

3D printable soft and solvent-free thermoplastic elastomer containing dangling bottlebrush chains

Vahid Asadi, Renee Dolleman, Jasper van der Gucht and Thomas E. Kodger*

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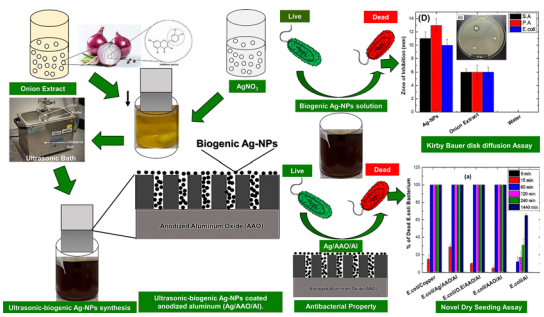

Ultrasonic–biogenic synthesis of silver on anodized aluminum with superior antibacterial properties

Henry Agbe,* Dilip Kumar Sarkar, X.-Grant Chen and David Dodoo-Arhin

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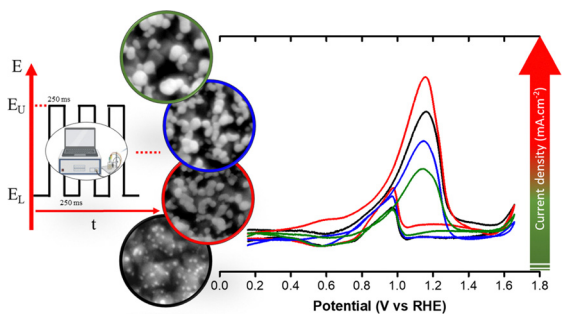

Square-wave pulse electrodeposition of gold nanoparticles for ethanol electrooxidation

Setia Budi,* Annisa Auliya, Suci Winarsih, Mohammad Hamzah Fauzi and Yusmaniar

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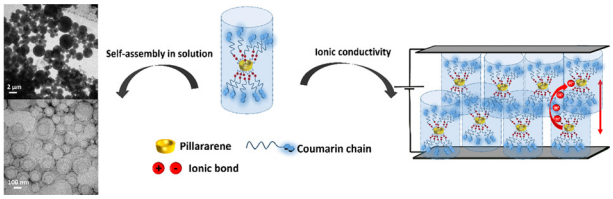
Ionic self-assembly of pillar[5]arenes: proton-conductive liquid crystals and aqueous nanoobjects with encapsulation properties

Iván Marín, Rosa I. Merino, Joaquín Barberá, Alberto Concellón and José L. Serrano*



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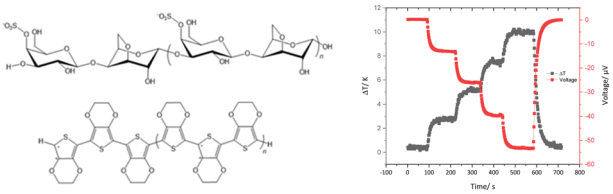
Conducting poly(3,4-ethylenedioxythiophene) materials with sustainable carrageenan counter-ions and their thermoelectric properties

Zhongnan Duan, Joseph Phillips, Letizia Liirò-Peluso, Simon Woodward, Oleg Makarovsky, Michael P. Weir, H. Jessica Pereira* and David B. Amabilino*



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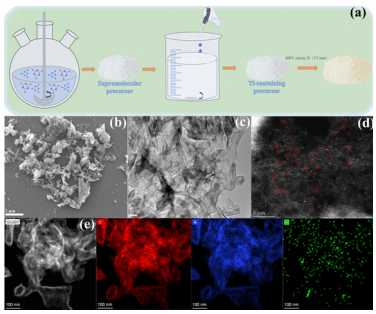
Application of single-atom Ti-doped g-C_3N_4 in photocatalytic H_2O_2 production

Tinglei Wang, Jiayu Xin, Zhen Li, Yong Fan* and Yu Wang*



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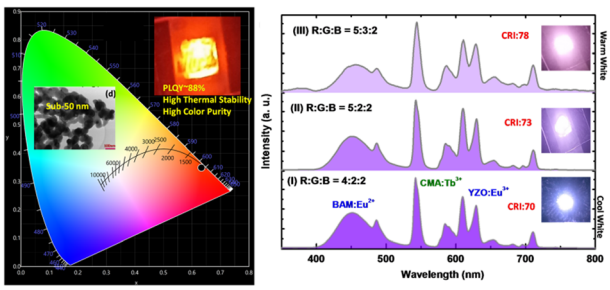
Ultra-bright and thermally stable deep red emitting doped yttrium zirconate nanoparticles for tunable white LEDs and indoor plant growth

Reshmi Thekke Parayil, Santosh Kumar Gupta,* Malini Abraham, Subrata Das, Shreyas S. Pitale, Kathi Sudarshan and Manoj Mohapatra



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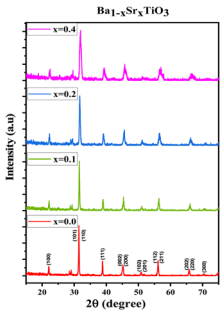

Structural and dielectric characterization of synthesized nano-BSTO/PVDF composites for smart sensor applications

Marwa M. Hussein,* Samia A. Saafan, H. F. Abosheiasha, Amira A. Kamal, Abd El-razek Mahmoud, Di Zhou, Sergei V. Trukhanov,* Tatiana I. Zubar, Alex V. Trukhanov and Moustafa A. Darwish*

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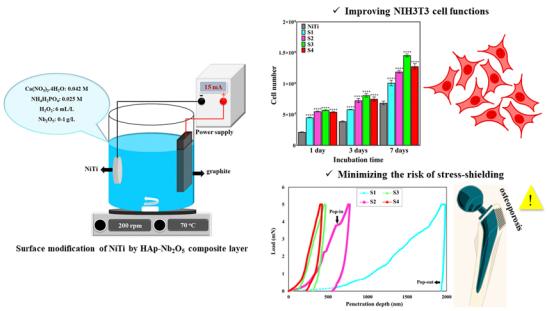

Encouraging tribomechanical and biological responses of hydroxyapatite coatings reinforced by various levels of niobium pentoxide particles

Mir Saman Safavi,* Jafar Khalil-Allafi,* Amir Motallebzadeh, Cristina Volpini, Vida Khalili and Livia Visai*

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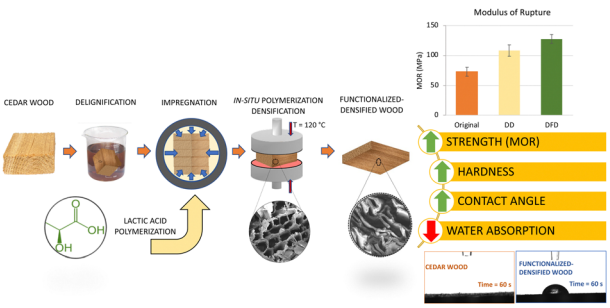

Polylactic acid/wood-based *in situ* polymerized densified composite material

Akash Madhav Gondaliya, Kieran Foster and E. Johan Foster*

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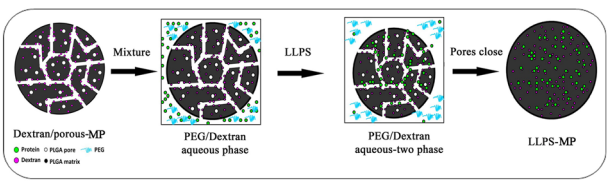

Liquid–liquid phase separation for microencapsulation of native cytokine to enhance immune activation

Zhenhua Hu, Li Cheng, Qiuling Chen, Tianqing Xin and Xiaoyan Wu*

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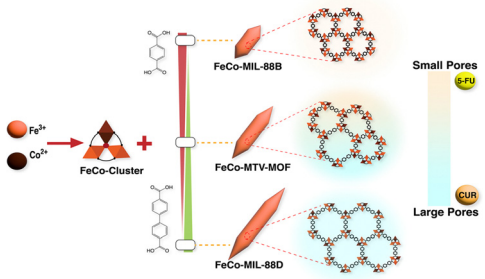
A multivariate metal–organic framework based pH-responsive dual-drug delivery system for chemotherapy and chemodynamic therapy

Muhammad Usman Akbar, Arslan Akbar, Umair Ali Khan Saddozai, Malik Ihsan Ullah Khan, Muhammad Zaheer* and Muhammad Badar*



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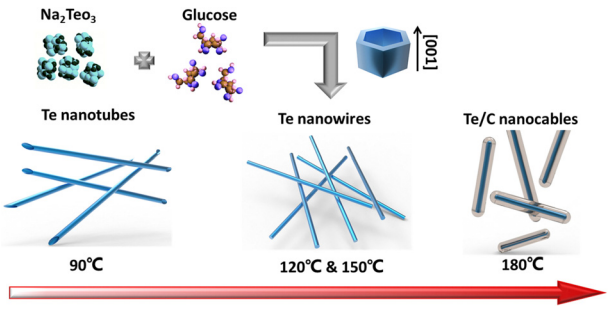
Morphology-controlled green synthesis of tellurium nanostructures and applications of Te/MXene hybrid structures

Mengchen Xu, Jinshu Li, Qingshan Yang, Lu Jiang, Jiaqi He, Dawei He,* Yongsheng Wang* and Yajie Yang*



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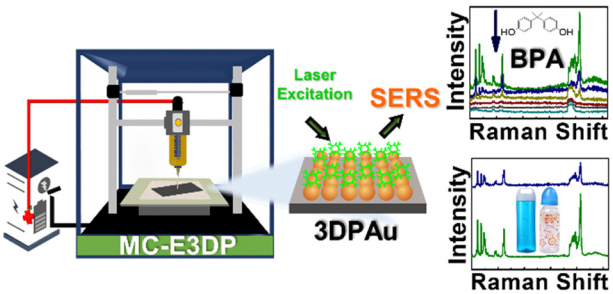
Meniscus-confined capping-free 3D printed gold nanoparticles for quantitative SERS detection of bisphenol A

Netrapal Singh, Manoj Kumawat, Hafsa Siddiqui, Koyalada Bhavani Srinivas Rao, Satendra Kumar, Manoj Goswami, Sathish Natarajan, Mohammed Akram Khan, Avanish Kumar Srivastava and Surender Kumar*



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Environmentally benign fabrication of superparamagnetic and photoluminescent Ce, Tb-codoped Fe_3O_4-gluconate nanocrystals from low-quality iron ore intended for wastewater treatment

Utsav Sengupta, Muthaimanoj Periyasamy, Sudipta Mukhopadhyay and Arik Kar*

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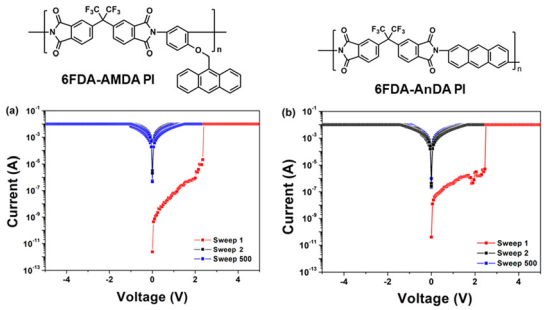
PAPERS

5706



Memory characteristics of anthracene-based polyimides in non-volatile resistive memory devices

Seung-Hyun Lee, Sechang Park, Ju-Young Choi, Yun-Je Choi, Hyung Woo Ji, Hyeyoung Joung, Dam-Bi Kim, Kang-Hoon Yoon, Gyumin Ji, Daeho Choi, Jaekang Lee, Ki-Jung Paeng, Jaesung Yang, Soohaeng Cho* and Chan-Moon Chung*

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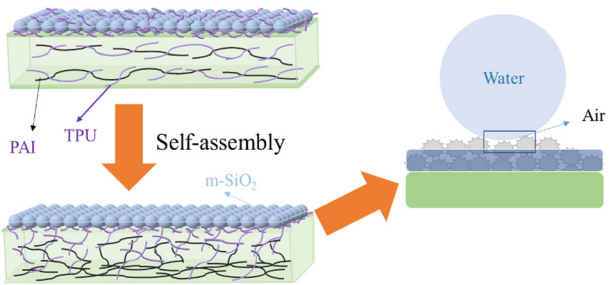

Self-assembly of hierarchical porous structure for stretchable superhydrophobic films by delicately controlling the surface energy

Shuhan Hou, Insub Noh, Meng Yue, Yanbin Wang,* Hyung Do Kim,* Hideo Ohkita* and Biaobing Wang*

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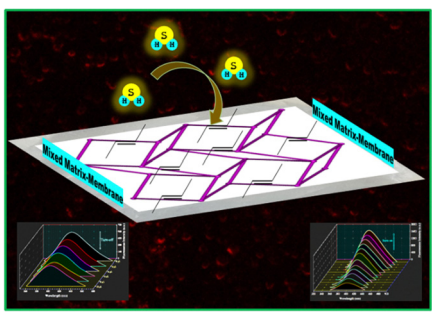

Enhancing the sensitivity of a water stable MOF as a H_2S gas sensor by the fabrication of a mixed-matrix membrane

Mouli Das Dawn, Karabi Nath, Subhajit Saha, Pritam Kumar Roy, Mahitosh Mandal and Kumar Biradha*

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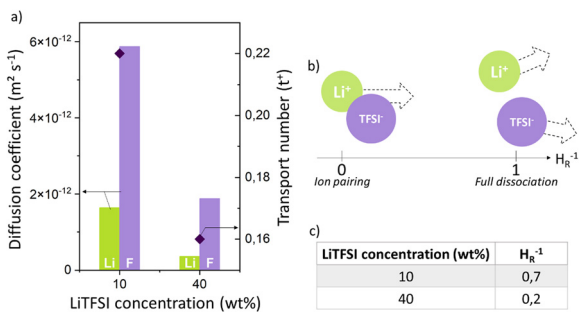

LiTFSI concentration (wt%)	H_R^{-1}
10	0,7
40	0,2

Towards N-rich solid polymer electrolytes for Li-ion batteries?

L. Artigues, M. Deschamps, F. Salles, V. Chaudoy, V. Lapinte and L. Monconduit*

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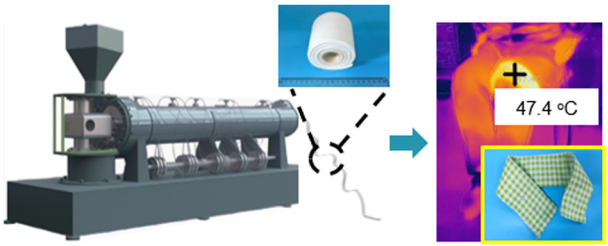
Flexible, antibacterial porous phase change thermal management film prepared by a one-step extrusion casting-foaming method

Xinyu Guo, Tianyu Xing, Yanqin Huang and Jiachun Feng*



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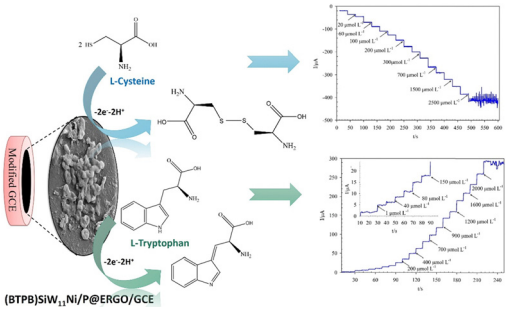
A novel bio-electrochemical sensor based on a 1,4-bis(triphenylphosphonium)-butane)$_3$[$SiW_{11}O_{39}Ni(H_2O)$]/P@ERGO nanocomposite for the selective determination of L-cysteine and L-tryptophan

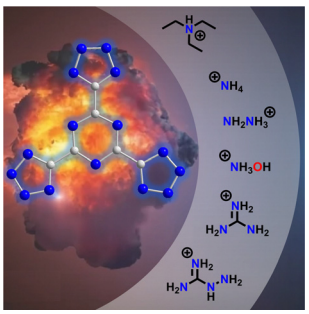
Saeide Ahmadi Direstani and Somayeh Dianat*



5775

Synthesis and detonation performance of novel tetrazolyl–triazine nitrogen-rich energetic materials

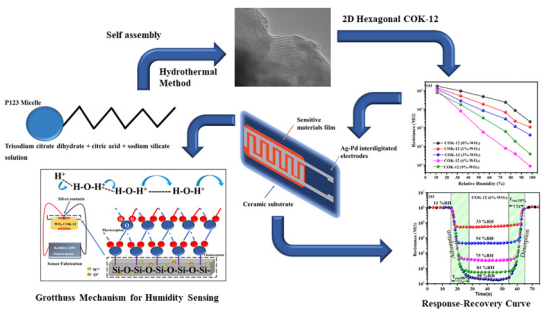
Paul Richardson, Alexandros A. Kitos, Michael Triglav, Jeffrey S. Ovens, Isabelle Laroche, Stéphanie Delisle, Benoit Jolicoeur, Jaclyn L. Brusso* and Muralee Murugesu*



5785

Exploring 2D hexagonal WO_3/COK-12 nanostructures for efficient humidity detection

Bhavna Rohilla, Aryan Boora, M. S. Goyat and Surender Duhan*



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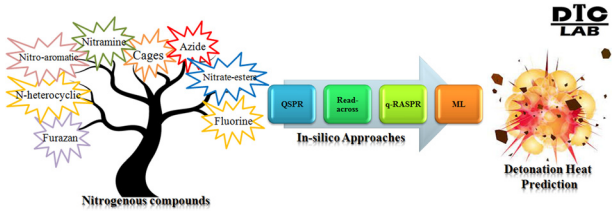
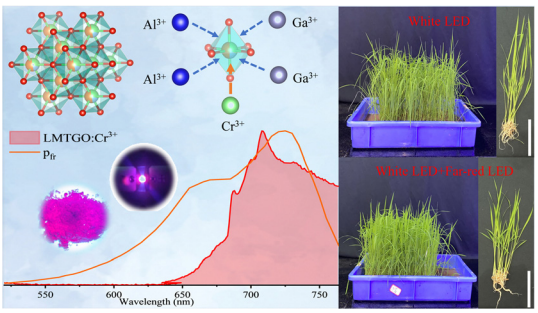


Machine learning-based q-RASPR predictions of detonation heat for nitrogen-containing compounds

Shubham Kumar Pandey, Arkaprava Banerjee and Kunal Roy*

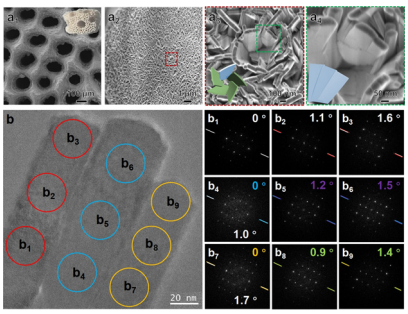
5808



Spectroscopically enhanced far-red phosphor $Li_2Mg_3TiO_6:Cr^{3+}$ and its application prospects to the cold resistance of rice

Yibiao Ma, Siying Li, Jiaqi Wei, Weifang Liao, Beibei Quan, Maxim S. Molokeev, Ming Cheng, Xiaoyan Chen, Zhi Zhou* and Mao Xia*

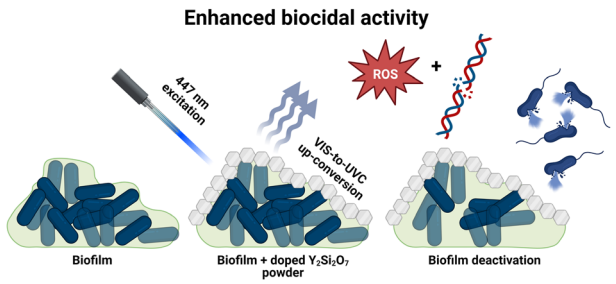
5817



Chiral mesostructured hydroxyapatite on 3D macroporous coralline scaffolds for enantio-selective osteogenesis

Chao Zhou, Anqi Liu, Ping Li, Jing Ai, Lu Han, Shaoyang Zhang, Shuai Chen, Yuanming Ouyang,* Baojie Li,* Shunai Che* and Cunyi Fan*

5827



Enhanced biocidal activity of Pr^{3+} doped yttrium silicates by Tm^{3+} and Yb^{3+} co-doping

Patryk Fałat, Min Ying Tsang, Irena Maliszewska, Szymon J. Zelewski, Bartłomiej Cichy, Tymish Y. Ohulchanskyy, Marek Samoć, Marcin Nyk and Dominika Wawrzyńczyk*

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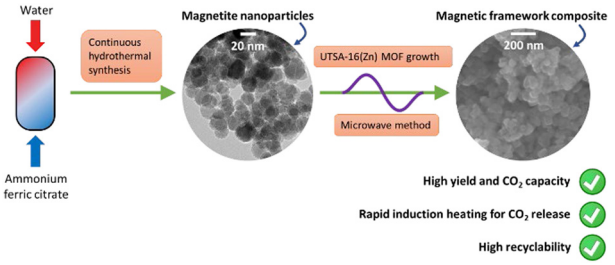
Rapid microwave synthesis of sustainable magnetic framework composites of UTSA-16(Zn) with Fe_3O_4 nanoparticles for efficient CO_2 capture

John Luke Woodliffe, Amy-Louise Johnston, Michael Fay, Rebecca Ferrari, Rachel L. Gomes, Ed Lester, Ifty Ahmed and Andrea Laybourn*



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