

Journal of Materials Chemistry B

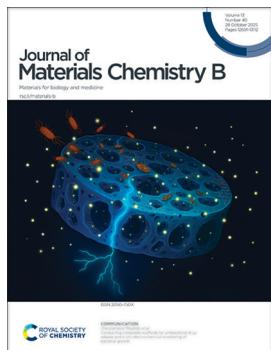
Materials for biology and medicine

rsc.li/materials-b

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

IN THIS ISSUE

ISSN 2050-750X CODEN JMCBDV 13(40) 12691–13112 (2025)



Cover

See Charalampos Pitsalidis *et al.*, pp. 12877–12889.
Image reproduced by permission of Khulood Hasan Alshehhi from *J. Mater. Chem. B*, 2025, 13, 12877.



Inside cover

See Joshua Tropp *et al.*, pp. 12918–12925.
Image reproduced by permission of Joshua Tropp from *J. Mater. Chem. B*, 2025, 13, 12918.
Art by the team of INMYWORK Studio (<https://inmywork.com>).

PROFILE

12701

Contributors to the *Journal of Materials Chemistry B* Emerging Investigators 2025 collection

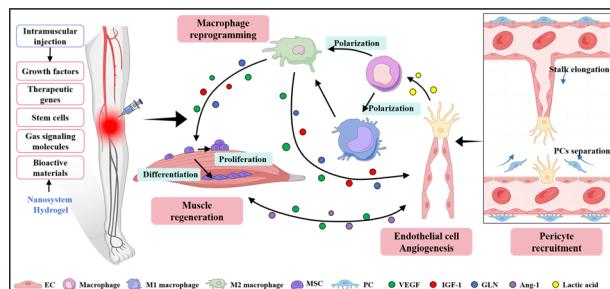


REVIEWS

12707

Therapeutic strategies for critical limb ischemia: a focus on endogenous cell behavior modulation

Haoran Wang, Xiaoyu Wang,* Chunlei Liu and Chunzhao Liu*



Advance your career in science

with professional recognition that showcases your **experience, expertise and dedication**

Stand out from the crowd

Prove your commitment to attaining excellence in your field

Gain the recognition you deserve

Achieve a professional qualification that inspires confidence and trust

Unlock your career potential

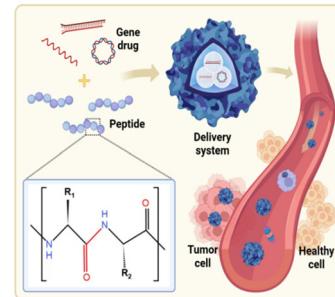
Apply for our professional registers (RSci, RSciTech) or chartered status (CChem, CSci, CEnv)

Apply now
rsc.li/professional-development



REVIEWS

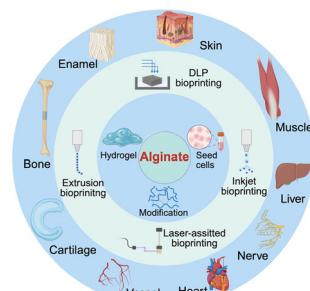
12738

Design of peptide-based gene delivery systems to overcome biological barriersZixuan Wang, Jialin Zhou, Rongxin Su, Wei Qi and Yuefei Wang*
Open Access Article. Published on 15 October 2025. Downloaded on 1/28/2026 1:58:42 AM. This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

12765

Alginate-based 3D bioprinting strategies for structure–function integrated tissue regeneration

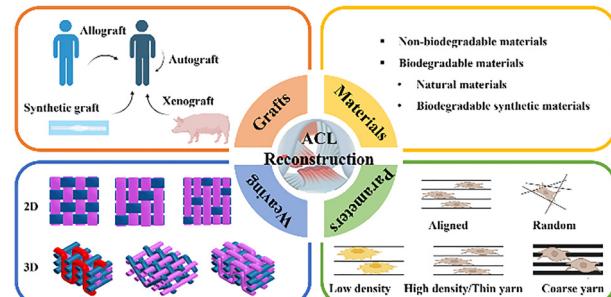
Fan Liu, Jiabao Jiang, Man Zhe, Peiyun Yu, Fei Xing* and Zhou Xiang



12812

Advancements in anterior cruciate ligament reconstruction based on weaving technology: current developments and future prospects

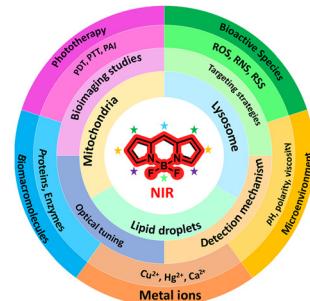
Danjie Yang, Faqian Shen and Xiaogang Chen*



12831

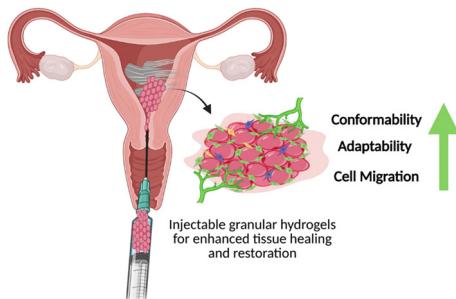
Far-red/NIR BODIPY probes in focus: tailored strategies for organelle-specific imaging and biomedical applications

Charutha Kalarikkal and Chinna Ayya Swamy P*



PERSPECTIVE

12869

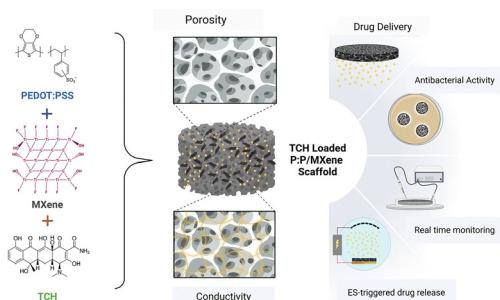


Toward next-generation therapies for intrauterine adhesions: a perspective on granular hydrogel systems

Kawai L. Lilly, Akhilesh Agrawal, Bapun Barik, Sriram Bharath Gugulothu, Subha Narayana Rath, Suk-Jung Oh and Akshat Joshi*

COMMUNICATIONS

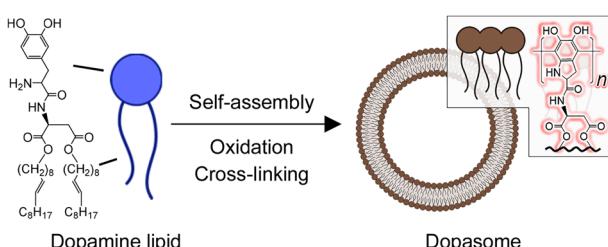
12877



Conducting composite scaffolds for antibacterial drug release and *in situ* electrochemical monitoring of bacterial growth

Khulood H. Alshehhi, Deema Islayem, Shahd B. Alshehhi, Bushara Fatma, Abdulrahim A. Sajini and Charalampos Pitsalidis*

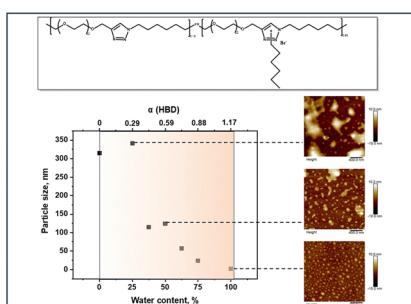
12890



Dopasomes: dopamine-mediated cross-linked lipid vesicles

Keita Yamana,* Kouki Fujihara, Miu Maeda, Tomoki Nishimura, Riku Kawasaki and Atsushi Ikeda*

12895



Alternating partially quaternized polytriazole amphiphiles: bridging neutral and ionic domains for tunable aggregation

Anastasiia Hubina,* Yevheniia Lobko, Ivan Khalakhan and Yuliya Khrunyuk

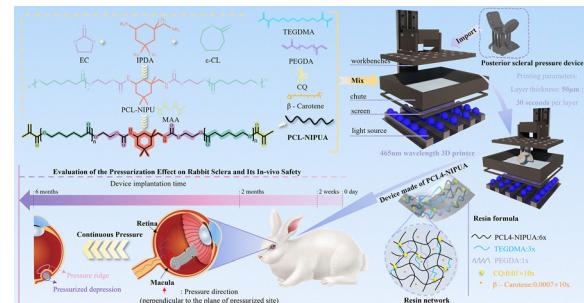


COMMUNICATIONS

12903

A biocompatible, eco-friendly 3D-printed PCL-NIPUA resin for macular bucking devices in myopic tractional maculopathy

Zi Fu, Yan Zhou, Ziyi Liu, Zhe Chen, Qiang Fu, Shiqun Lin, Rongping Dai* and Huade Zheng*

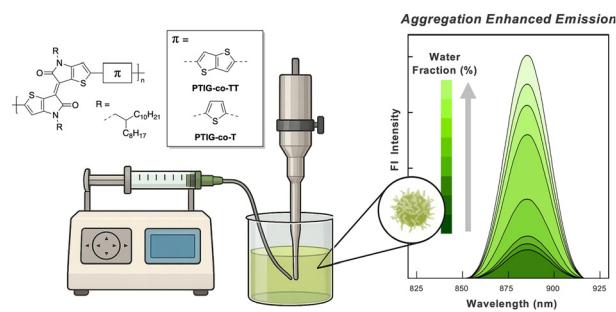


PAPERS

12918

Tuning the structure of thienoisoindigo (TIG) copolymers to afford bright near-infrared emission for bioimaging through aggregation-enhanced emission

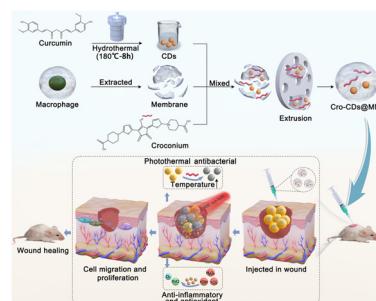
Robert Posey, Nikita Gill, Daniel Fernandez, Luan Gabriel Fonseca Dos Santos, Helena Garza, Jacquelyn Tran, Brenda Alfaro, Nicholas Payne, Tahamida Alam Oyshi, Colin Cashman, Boris Salinas, Isabella Vasquez, Alexander Mdzinarishvili, Indrajit Srivastava, Ulrich Bickel, Hans Lischka and Joshua Tropp*



12926

A croconium-functionalized macrophage biomimetic retention vesicle system for photothermal therapy of infected wounds

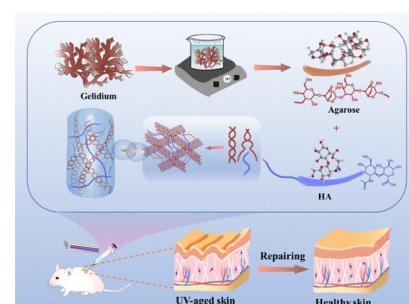
Lan Zheng, Minghai Zhao, Yuechao Yang, Bing Cao* and Judun Zheng*



12938

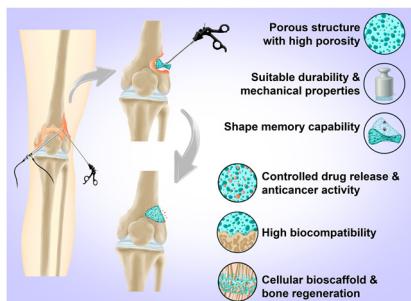
Physically crosslinked agarose–hyaluronic acid hydrogel for injectable treatment of photoaged skin

Ying Guo, Bei Tian, Yi Xie and Jianxi Xiao*



PAPERS

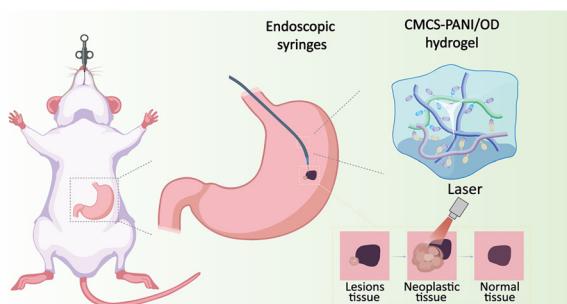
12949



A programmable shape memory bioscaffold incorporating doxorubicin for postoperative chemotherapy and enhanced bone regeneration

Hong-Phuc Nguyen, Quynh-Nhu Doan Nguyen, Thanh-Ngan Le Phong, Ngoc Hong T. Luu, Shehzadhi S. Moonshi, Hien Ngoc Trieu, Vinh-Han Dac Le, Thanh-Mai Ngoc Nguyen, Diep Phan, Cuong Hung Luu* and V. H. Giang Phan*

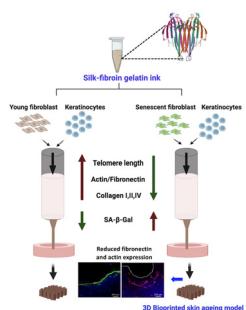
12967



An injectable carboxymethyl chitosan–polyaniline/oxidized dextran triple-network hydrogel for long-term gastrointestinal tissue marking and photothermal tumor therapy

Xiuyun Li, Jiaxuan Guo, Haibo Chen, Ximeng Duan, Min Cui and Shige Wang*

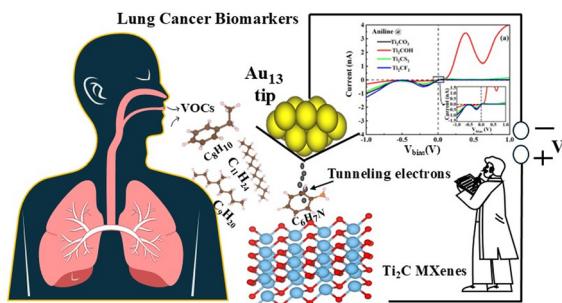
12981



A 3D bioprinted *in vitro* full-thickness skin aging model

Juhi Chakraborty, Abhishak C. Gupta and Sourabh Ghosh*

13000



Sensing of lung cancer biomarkers using titanium carbide (Ti₂C) MXenes

Mukesh K. Choudhary,* Puspamitra Panigrahi,* Ashok Kumar and Ravindra Pandey

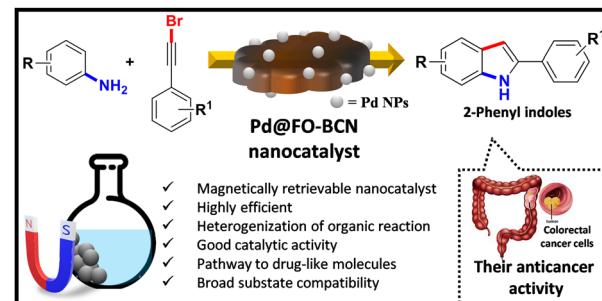


PAPERS

13013

Ligand-free C–H functionalization using a palladium nanocatalyst for the synthesis of 2-phenylindoles and their anticancer potential

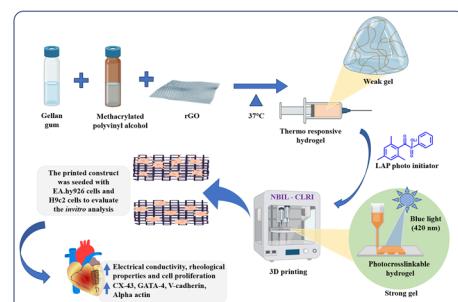
Harini G. Sampatkumar, S. Likitha, Maruboina Hemanth Kumar, M. S. Sudhanva, C. V. Yelamaggad, Ramesh B. Dateer, Kiran B. Manjappa* and Siddappa A. Patil*



13020

An electrically conductive gellan gum/polyvinyl alcohol interpenetrating network hydrogel: a dual crosslinked 3D printing ink for cardiac tissue

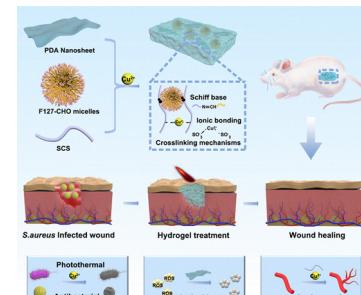
Mohandass Pachaiyappan, Mercy Jayapriya Jebakumar, Janani Radhakrishnan* and Niraikulam Ayyadurai*



13037

Dynamic multistage hydrogel with auto-adjusting networks for sequential anti-infection, anti-inflammation, and angiogenesis in infected wound regeneration

Genhua Liu, Zhiwen Deng, Ruichen Ma, Song Liu, Peng Liu* and Kaiyong Cai*



13048

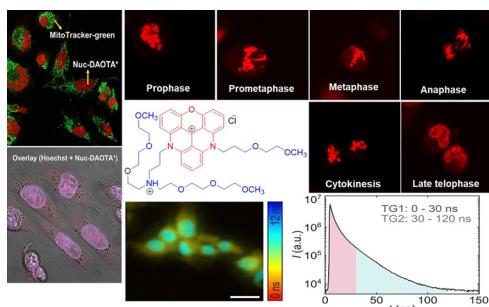
Gadolinium-doped carbon dots derived from peanut shell waste for bioimaging applications

Federica Mancini, Arianna Menichetti, Alessio Adamiano, Marco Montalti, Konstantin Palienko, Alain Géloën, Vladimir Lysenko and Michele Iafisco*



PAPERS

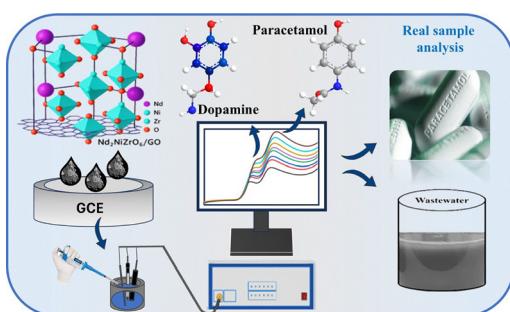
13062



A water-soluble, long fluorescent lifetime DNA probe for real-time dynamic visualization of mitosis in live cells and applicability for FLIM/time-gated imaging

Kapil Kumar,* Thomas Hartig Braunstein, Pablo Hernandez-Varas, Mikkel Baldtzer Liisberg and Bo W. Laursen*

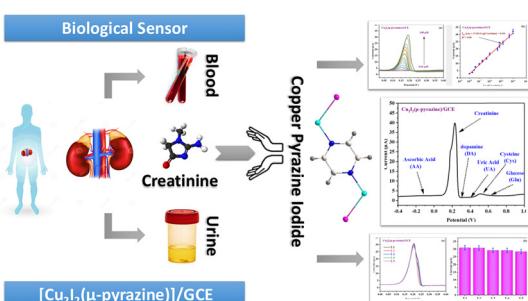
13075



Unlocking the dual-detection potential of $\text{Nd}_2\text{NiZrO}_6@\text{GO}$ electrodes for paracetamol and dopamine

Gagana Mahesh, Sirisha Subbareddy, Nanjundaswamy Gumatapura Siddamallappa, Manickam Selvaraj, Mohammed Ali Assiri, Nandini Seetharamaiah, Santhosh Arehalli Shivamurthy,* Nagesh Khadri Malayanur Jaiprakash, Puttaswamappa Mallu* and Sandeep Shadakshari*

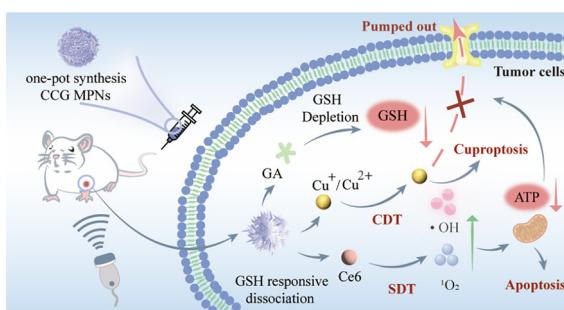
13088



A new multifunctional copper iodide-pyrazine hybrid for sensitive creatinine detection in biological samples: synthesis, structural features, characterization, and electrochemical evaluation

Wissem Hallab, Ahlem Guesmi, Raja Jlassi, Jassem Wannassi, Noureddine Mhadhbi, Abdellah Tahiri, Wesam Abd El-Fattah, Naoufel Ben Hamadi, Houcine Barhoumi and Houcine Naili*

13098



Ultrasound-activated copper-based sonosensitizer for dual-amplified ROS-mediated tumor therapy and cuproptosis induction

Penghui Wang, Runming Zhong, Yingzhe Wu, Lingli Jin, Yanan Zhang, Kailong Zhang and Fan Zhao*

