

Journal of Materials Chemistry B

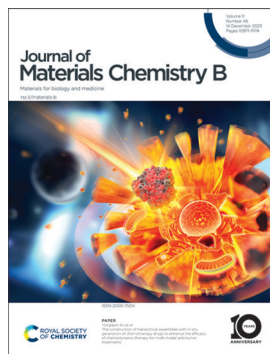
Materials for biology and medicine

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 11(46) 10971–11174 (2023)



Cover

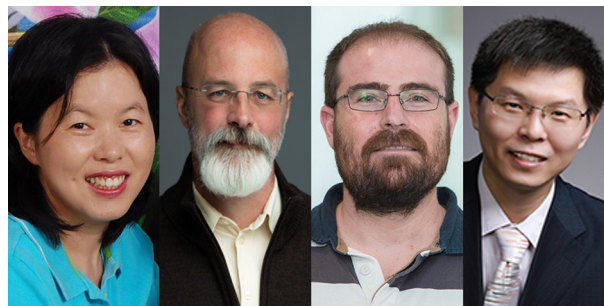
See Yongqian Xu *et al.*,
pp. 11044–11051.
Image reproduced
by permission of
Yongqian Xu from
J. Mater. Chem. B,
2023, **11**, 11044.

EDITORIAL

10979

Introduction to nanozymes

Shaoqin Liu,* Vincent M. Rotello,*
Asier Unciti-Broceta* and Hui Wei*

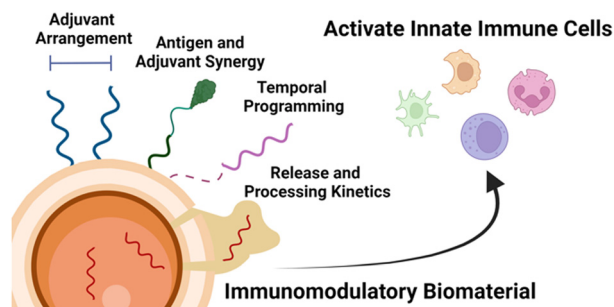


REVIEWS

10982

Harnessing biomaterial architecture to drive anticancer innate immunity

Meredith A. Davis, Ezra Cho and Michelle H. Teplensky*



Editorial Staff

Executive Editor

Michaela Mühlberg

Deputy Editor

Geraldine Hay

Editorial Production Manager

Jonathon Watson

Senior Publishing Editor

Fiona Iddon

Development Editor

Natalie Cotterell

Publishing Editors

Eleanor Griffiths, Clara Humann, Ash Hyde, Francesca Jacklin, Brian Li, Sam Mansell

Editorial Assistant

Daniel Smith

Publishing Assistant

Jane Paterson

Publisher

Sam Keltie

For queries about submitted papers, please contact Jonathon Watson, Editorial Production Manager in the first instance. E-mail: materialsB@rsc.org

For pre-submission queries please contact Michaela Mühlberg, Executive Editor. E-mail: materialsB-rsc@rsc.org

Journal of Materials Chemistry B (electronic: ISSN 2050-7518) is published

48 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF.

All orders, with cheques made payable to the Royal Society of Chemistry, should be sent to the Royal Society of Chemistry Order Department, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK. Tel +44 (0)1223 432398; E-mail orders@rsc.org

2023 Annual (electronic) subscription price: £2192; \$3516. Customers in Canada will be subject to a surcharge to cover GST. Customers in the EU subscribing to the electronic version only will be charged VAT.

If you take an institutional subscription to any Royal Society of Chemistry journal you are entitled to free, site-wide web access to that journal. You can arrange access via Internet Protocol (IP) address at www.rsc.org/ip

Customers should make payments by cheque in sterling payable on a UK clearing bank or in US dollars payable on a US clearing bank.

Whilst this material has been produced with all due care, the Royal Society of Chemistry cannot be held responsible or liable for its accuracy and completeness, nor for any consequences arising from any errors or the use of the information contained in this publication. The publication of advertisements does not constitute any endorsement by the Royal Society of Chemistry or Authors of any products advertised. The views and opinions advanced by contributors do not necessarily reflect those of the Royal Society of Chemistry which shall not be liable for any resulting loss or damage arising as a result of reliance upon this material. The Royal Society of Chemistry is a charity, registered in England and Wales, Number 207890, and a company incorporated in England by Royal Charter (Registered No. RC000524), registered office: Burlington House, Piccadilly, London W1J 0BA, UK, Telephone: +44 (0) 207 4378 6556.

Advertisement sales:

Tel +44 (0) 1223 432246; Fax +44 (0) 1223 426017; E-mail advertising@rsc.org

For marketing opportunities relating to this journal, contact marketing@rsc.org

Journal of Materials Chemistry B

rsc.li/materials-b

Journal of Materials Chemistry A, B & C cover high quality studies across all fields of materials chemistry. The journals focus on those theoretical or experimental studies that report new understanding, applications, properties and synthesis of materials. *Journal of Materials Chemistry B* covers materials with applications in biology and medicine.

Editorial Board

Editor-in-Chief

Jeroen Cornelissen, University of Twente, The Netherlands

Associate Editors

Kaushik Chatterjee, Indian Institute of Science, India
Elizabeth Cosgriff-Hernandez, The

University of Texas at Austin, USA
Gemma-Louise Davies, University of Birmingham, UK
Håkan Engqvist, Uppsala University, Sweden
Jian Ji, Zhejiang University, China
Shaoqin Liu, Harbin Institute of Technology, China
Yoshiko Miura, Kyushu University, Japan

Jessica Winter, The Ohio State University, USA
Chengzhong Yu, University of Queensland, Australia

Member

Claus Feldmann, Karlsruhe Institute of Technology, Germany

Advisory Board

D. Benoit, University of Rochester, USA
C. Bettinger, Carnegie Mellon University, USA
W. Chan, University of Toronto, Canada
J. Chang, Shanghai Institute of Ceramics, China
H. Cölfen, University of Konstanz, Germany
T. Da Ros, Trieste University, Italy
T. Davis, Monash University, Australia
T. Desai, University of California, San Francisco, USA
X. Deng, Peking University, China
E. Duguet, University of Bordeaux, France
C. Fan, Shanghai Jiao Tong University, China
Y. Fang, CNST, China
R. Forgan, University of Glasgow, UK
J. Fu, Ningbo Institute of Industrial Technology, Chinese Academy of Sciences, China
A. Gedanken, Bar-Ilan University, Israel
M. Grunlan, Texas A&M University, USA
Y. Gun'ko, Trinity College Dublin, Ireland
J. van Hest, Radboud University Nijmegen, The Netherlands
K. Hamad-Schifferli, University of Massachusetts Boston, USA
B. Harley, University of Illinois, USA
A. Higuchi, National Central University, Chinese Taipei, and Wenzhou Medical

University, China
S. Inal, KAUST, Saudi Arabia
Y. Ito, RIKEN, Japan
B. Keselowsky, University of Florida, USA
J. Khandare, MIT WPU Campus, India
A. Kloxin, University of Delaware, USA
N. Kotov, University of Michigan, USA
Z.-C. Li, Peking University, China
E. Lipke, Auburn University, USA
L. Liz-Marzan, CIC biomaGUNE, Spain
D. Lynn, University of Wisconsin, USA
E. D.-L. Ma, Hong Kong Baptist University, Hong Kong
G. Malliaras, University of Cambridge, UK
H.-Q. Mao, Johns Hopkins University, USA
S. Marchesan, University of Trieste, Italy
D. Martin, University of Delaware, USA
K. Masters, University of Wisconsin-Madison, USA
A. Miserez, Nanyang Technological University, Singapore
R. O'Reilly, University of Birmingham, UK
M. in het Panhuis, University of Wollongong, Australia
A. Pannier, University of Nebraska, USA
J. Park, KAIST, Korea
S. Perrier, University of Warwick, UK
X. Qu, Changchun Institute of Applied

Chemistry, Chinese Academy of Sciences, China
M. Resmini, Queen Mary University of London, UK
K. Schenke-Layland, NMI Natural and Medical Sciences Institute, University of Tübingen, Reutlingen, Germany
C. Schmidt, University of Florida, USA
L. Segatori, Rice University, USA
T. Serizawa, Tokyo Institute of Technology, Japan
Y. Shen, Zhejiang University, China
S. Staniland, University of Sheffield, UK
N. Steinmetz, University of California, San Diego, USA
M. Stenzel, University of New South Wales, Australia
M. Stevens, Imperial College London, UK
S. Stoll, Georgetown Washington, USA
L. Stugs, University of Texas at Austin, USA
M. Takai, University of Tokyo, Japan
J. Temenoff, Georgia Institute of Technology, USA
P. Théato, Karlsruhe Institute of Technology, Germany
R. Uljin, City University of New York, US
J. Zheng, University of Akron, USA

Information for Authors

Full details on how to submit material for publication in Journal of Materials Chemistry B are given in the Instructions for Authors (available from <http://www.rsc.org/authors>). Submissions should be made via the journal's homepage: rsc.li/materials-b. Submissions: The journal welcomes submissions of manuscripts for publication as Full Papers, Communications, Reviews, Highlights and Applications. Full Papers and Communications should describe original work of high quality and impact which must highlight the novel properties or applications (or potential properties/applications) of the materials studied.

Additional details are available from the Editorial Office or <http://www.rsc.org/authors>

Authors may reproduce/republish portions of their published contribution without seeking permission from the Royal Society of

Chemistry, provided that any such republication is accompanied by an acknowledgement in the form: (Original Citation)-Reproduced by permission of the Royal Society of Chemistry.

This journal is © The Royal Society of Chemistry 2023.

Apart from fair dealing for the purposes of research or private study for non-commercial purposes, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulation 2003, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publishers or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency in the UK. US copyright law is applicable to users in the USA.

Registered charity number: 207890

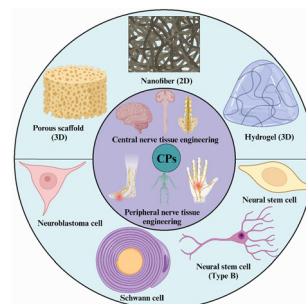


REVIEWS

11006

Conducting polymer-based scaffolds for neuronal tissue engineering

Hagje Yi, Rajkumar Patel, Kapil D. Patel,
Louis-S. Bouchard, Amitabh Jha,
Adam Willis Perriman and Madhumita Patel*

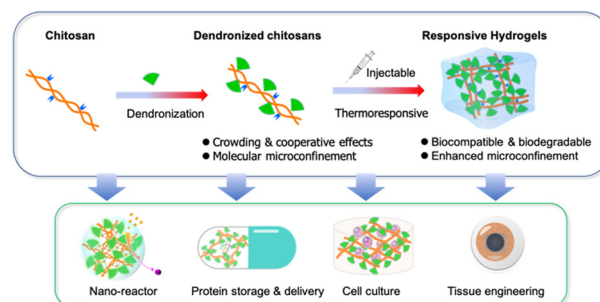


PERSPECTIVE

11024

Dendronization of chitosan to afford unprecedented thermoresponsiveness and tunable microconfinement

Yi Yao, Xiaoxin Shi, Zihong Zhao, Afang Zhang* and
Wen Li*

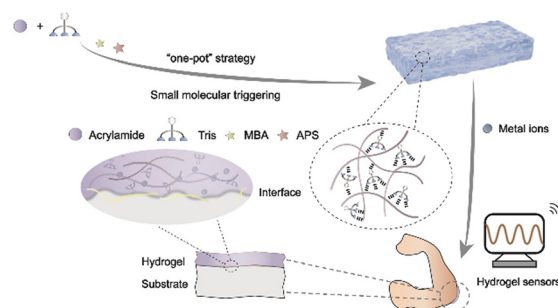


COMMUNICATION

11035

A facile strategy to fabricate a skin-like hydrogel with adhesive and highly stretchable attributes through small molecule triggering toward flexible electronics

Qi Chen, Xiang Ke, Yusong Cai, Hao Wang, Zhiyun Dong,
Xinlong Li, Jinlin Li, Xinyuan Xu, Jun Luo* and
Jianshu Li*

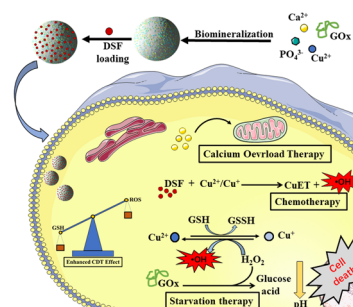


PAPERS

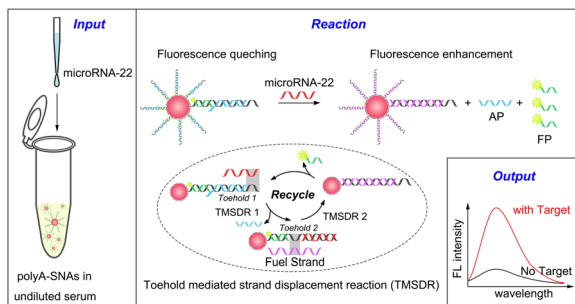
11044

The construction of hierarchical assemblies with *in situ* generation of chemotherapy drugs to enhance the efficacy of chemodynamic therapy for multi-modal anti-tumor treatments

Wei-Nan Zhao, Hongjuan Li, Shiguo Sun and Yongqian Xu*



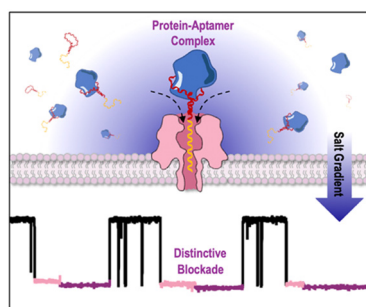
11052



A fuel-initiated DNA molecular machine for microRNA detection in serum via poly-adenine-mediated spherical nucleic acids

Menghan Gu, Xiaoqing Yi, Zhiwei Shang, Xianliang Nong, Meihua Lin* and Fan Xia

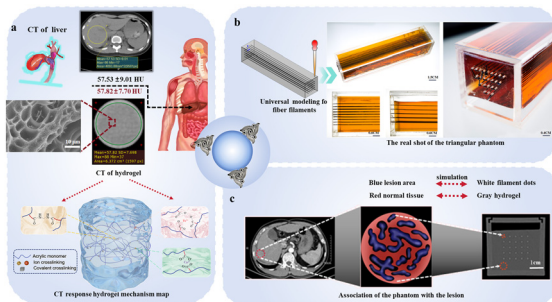
11064



An aptamer-assisted nanopore strategy with a salt gradient for direct protein sensing

Bohua Yin, Peng Tang,* Liang Wang, Wanyi Xie, Xiaohan Chen, Yunjiao Wang, Ting Weng, Rong Tian, Shuo Zhou, Zuobin Wang* and Deqiang Wang*

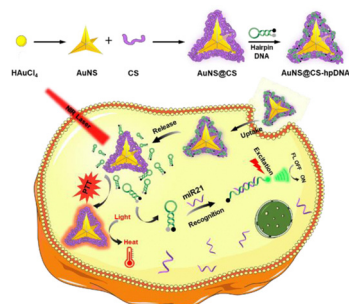
11073



A novel CT-responsive hydrogel for the construction of an organ simulation phantom for the repeatability and stability study of radiomic features

Xiaokai Gu, Zhenyu Shu, Xiaoli Zheng, Sailong Wei, Meng Ma, Huiwen He, Yanqin Shi, Xiangyang Gong,* Si Chen* and Xu Wang*

11082



Chitosan functionalized gold nanostars as a theranostic platform for intracellular microRNA detection and photothermal therapy

Xiaoxue Dong, Zongwei Zhu, Qian Sun, Hongqian Zhang and Chuanxu Yang*

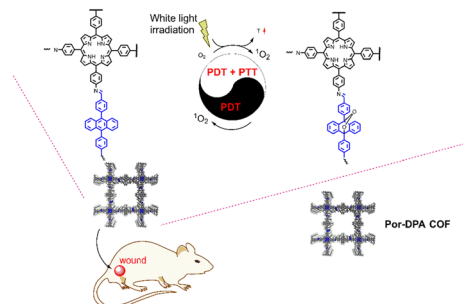


PAPERS

11094

Porphyrin–anthracene covalent organic frameworks for sustainable photosterilization

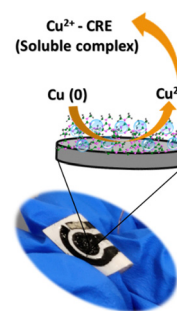
Jing-Xuan Guo, Xue-Mei Gao, Tian-Yue Gu, Hao-Ze Li, Li-Jian Chen, Xu Zhao* and Xiu-Ping Yan*



11103

Flexible electrochemical sensor for highly sensitive and selective non-enzymatic detection of creatinine via electrodeposited copper over polymelamine formaldehyde

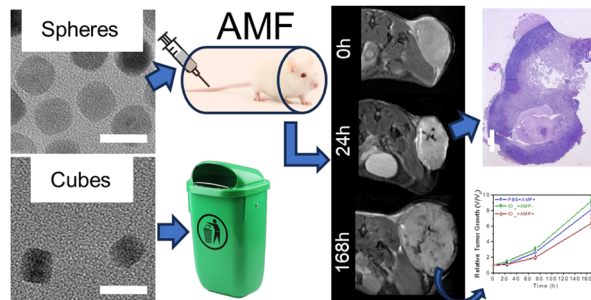
Daisy Mehta, Alankar Kafle and Tharamani C. Nagaiah*



11110

Optimization of iron oxide nanoparticles for MRI-guided magnetic hyperthermia tumor therapy: reassessing the role of shape in their magnetocaloric effect

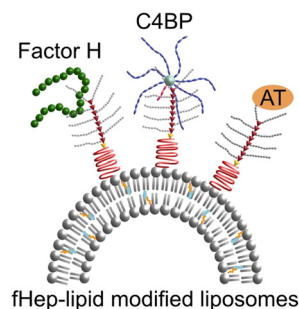
José María Paez-Muñoz, Francisco Gámez, Yilian Fernández-Afonso, Roberto Gallardo, Manuel Pernia Leal, Lucía Gutiérrez, Jesús M. de la Fuente, Carlos Caro* and María Luisa García-Martín*



11121

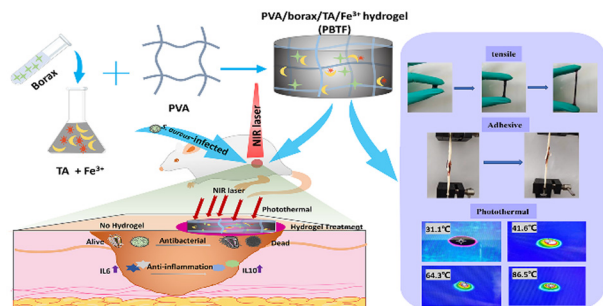
Regulation of the innate immune system by fragmented heparin-conjugated lipids on lipid bilayered membranes *in vitro*

Anna Adler, Marlene Fritsch, Karin Fromell, Gero Leneweit, Kristina N. Ekdahl, Bo Nilsson and Yuji Teramura*



PAPERS

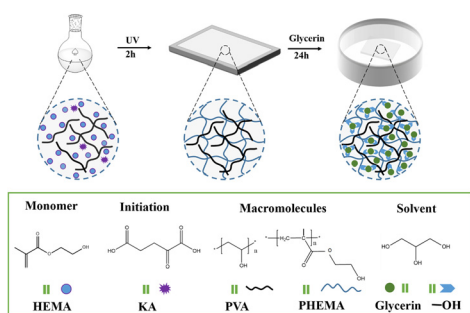
11135



A multifunctional hydrogel dressing with high tensile and adhesive strength for infected skin wound healing in joint regions

Chen Zhang, Kaiyue Liu, Yuanmeng He, Rong Chang, Fangxia Guan* and Minghao Yao*

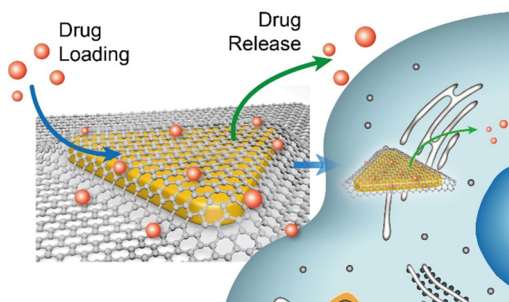
11150



Physically cross-linked organo-hydrogels for friction interfaces in joint replacements: design, evaluation and potential clinical applications

Zheng Li, Yongzhi Liang, Jia Wan, Wanbo Zhu, Yingjie Wang, Yuan Chen, Baoliang Lu, Junchen Zhu,* Chen Zhu* and Xianzuo Zhang*

11164



Plasmonic nanoprobe on single AuNTs for evaluating and monitoring the dynamic release of 2D drug carriers

Zejie Yu, Yi Wang, Miaomiao Cai, Jiachang Chen, Qirong Zou, Quli Fan and Lei Zhang*

