## 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(35) 8293-8554 (2023)



#### Cover

See Wei Kang, Bo Li et al., pp. 8302-8314. Image reproduced by permission of Bo Li from J. Mater. Chem. B, 2023, 11, 8302.



#### Inside cover

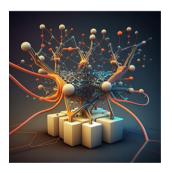
See Ling Chen et al., pp. 8411-8421. Image reproduced by permission of Ling Chen and Bo Zheng from J. Mater. Chem. B, 2023, 11, 8411.

#### **REVIEWS**

8302

Control of charge transport in electronically active systems towards integrated biomolecular circuits (lbC)

Ryan Dumont, Juwaan Dowdell, Jisoo Song, Jiani Li, Suwan Wang, Wei Kang\* and Bo Li\*



#### 8315

Beyond traditional light: NIR-II light-activated photosensitizers for cancer therapy

Sa Wang, Chuang Zhang, Fang Fang, Yueyun Fan, Jiani Yang and Jinfeng Zhang\*



#### **Editorial Staff**

**Executive Editor** 

Michaela Mühlberg

**Deputy Editor** 

Geraldine Hav

**Editorial Production Manager** 

Ionathon Watson

Senior Publishing Editor

Fiona Iddon

**Development Editor** 

**Publishing Editors** 

Eleanor Griffiths, Francesca Jacklin, Brian Li

Editorial Assistant

Daniel Smith

Publishing Assistant

Iane Paterson

Publisher

Sam Keltie

For queries about submitted papers, please contact Ionathon 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

Cambridge, UK CB4 0WF.

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,

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

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 College London, UK Håkan Engqvist, Uppsala University, Sweden Jian Ji, Zhejiang University, China

Shaoqin Liu, Harbin Institute of Technology, Yoshiko Miura, Kyushu University, Japan

Chengzhong Yu, University of Queensland,

Claus Feldmann, Karlsruhe Institute of Technology, Germany

Jessica Winter. The Ohio State University.

#### **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,

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

F. Forgan, Shanghai Jiao Tong University, China Y. Fang, NCNST, China R. Forgan, University of Glasgow, UK J. Fu, Ningbo Institute of Industrial Technology, Chinese Academy of Sciences,

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, Saudia 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 Triest , Italy D. Martin, University of Delaware, USA K. Masters, University of Wisconsin-Madison,

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,

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. Suggs, University of Texas at Austin, USA M. Takai, University of Tokyo, Japan J. Temenoff, Georgia Institute of Technology,

P. Théato, Karlsruhe Institute of Technology,

Germany R. Ulijn, 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

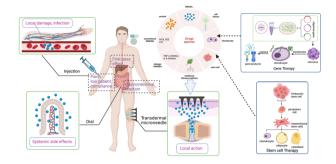


#### **REVIEWS**

#### 8327

#### Transdermal drug delivery via microneedles for musculoskeletal systems

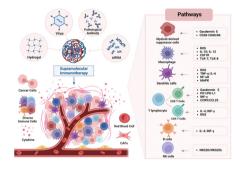
Haibin Zheng, Xuankun Xie, Haocong Ling, Xintong You, Siyu Liang, Rurong Lin, Renjie Qiu and Honghao Hou\*



#### 8347

#### Supramolecular immunotherapy on diversiform immune cells

Jiahui Wang, Ziyi Zhang and Yueyue Chen\*



#### 8368

#### Application of nanotechnology in bladder cancer diagnosis and therapeutic drug delivery

Hang-zhuo Li, Jian Zhu,\* Guo-jun Weng, Jian-jun Li, Lei Li and Jun-wu Zhao\*



#### 8387

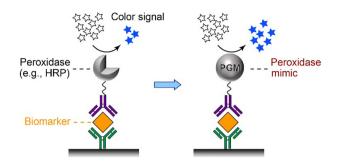
### Platinum based theranostics nanoplatforms for antitumor applications

Heying Li, Shaowen Cheng, Jingming Zhai, Kun Lei,\* Ping Zhou, Kaiyong Cai\* and Jinghua Li\*



#### **PERSPECTIVE**

#### 8404

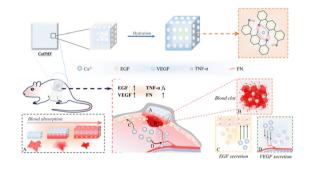


# Peroxidase mimics of platinum-group metals for *in vitro* diagnostics: opportunities and challenges

Weiwei Gao, Hannah Eastwood and Xiaohu Xia\*

#### **PAPERS**

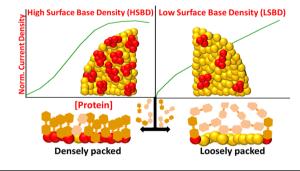
#### 8411



### 3D printing-mediated microporous starch hydrogels for wound hemostasis

Bo Zheng, Zhipeng Qiu, Jinchuan Xu, Xixi Zeng, Kun Liu and Ling Chen\*

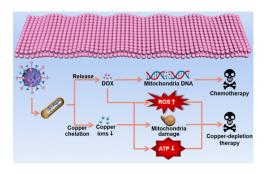
#### 8422



# Single stop analysis of a protein surface using molecular probe electrochemistry

Jewel Ann Maria Xavier, Isabel Fuentes, Miquel Nuez-Martínez, Clara Viñas and Francesc Teixidor\*

#### 8433



# Smart design of a therapeutic nanoplatform for mitochondria-targeted copper-depletion therapy combined with chemotherapy

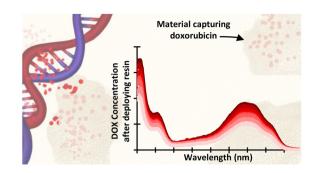
Taishun Hu, Xiyu Gong, Xinli Liu, Hui Xu, Fangfang Zhou, Songwen Tan and Yongju He\*

#### **PAPERS**

#### 8449

#### Polymer-nucleobase composites for chemotherapy drug capture

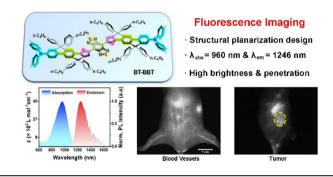
Gillian A. Su. Ophelia J. Wadsworth, H. Suzanne Muller, William R. Archer, Steven W. Hetts and Michael D. Schulz\*



#### 8456

#### Revisiting molecularly conformation-planarized organic dyes for NIR-II fluorescence imaging

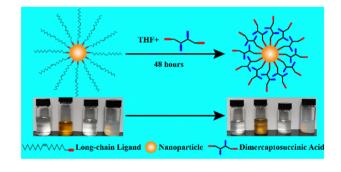
Lei An, Liangyu Zheng, Ziqi Zhao, Xinyu Qu, Chen liang, Changjin Ou,\* Xiaozhou Mou, Xiaochen Dong\* and Yu Cai\*



#### 8464

#### A general method for endowing hydrophobic nanoparticles with water dispersion abilities

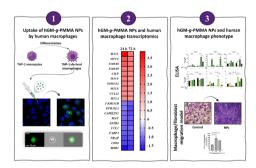
Han Wang, Zi Fu, Xiuru Ji, Min Lu, Lianfu Deng, Zhuang Liu,\* Bo Yin\* and Dalong Ni\*



#### 8471

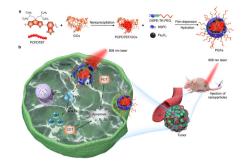
### Galactomannan-graft-poly(methyl methacrylate) nanoparticles induce an anti-inflammatory phenotype in human macrophages

Alejandro Sosnik,\* Ivan Zlotver and Ella Peled



#### **PAPERS**

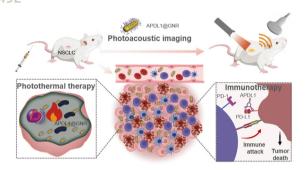
#### 8484



Near-infrared light-activated ROS generation using semiconducting polymer nanocatalysts for photodynamic-chemodynamic therapy

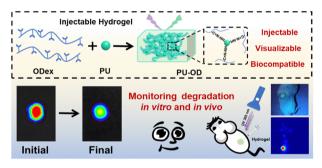
Yingyi Deng, Mengbin Ding, Liyun Zhu, Yijing Zhang, Fengshuo Wang, Lingzhou Zhao\* and Jingchao Li\*

#### 8492



### A PD-L1 targeting nanotheranostic for effective photoacoustic imaging guided photothermal-immunotherapy of tumor

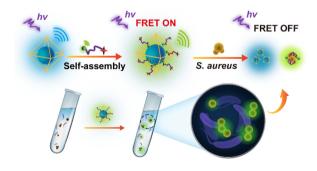
Ruimin Chang, Tan Li, Yao Fu, Zeyu Chen, Yilang He, Xin Sun, Yiyi Deng, Yanging Zhong, Zuozhong Xie, Yang Yang, Jing Liu, Xiang Chen,\* Hong Liu\* and Yuetao Zhao\*



#### A biodegradable injectable fluorescent polyurethane-oxidized dextran hydrogel for non-invasive monitoring

Xiao Wang, Yangcen Ou, Xiaofei Wang, Lei Yuan, Nan He, Zhen Li, Feng Luo,\* Jiehua Li and Hong Tan

#### 8519



### A metal-organic framework-based fluorescence resonance energy transfer nanoprobe for highly selective detection of Staphylococcus Aureus

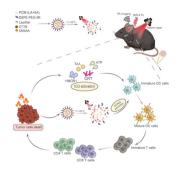
Jinq Qiao, Xuanbo Chen, Xingliang Xu, Ben Fan, Ying-Shi Guan,\* Hong Yang\* and Quan Li\*

#### **PAPERS**

#### 8528

NIR-II fluorescence and PA imaging guided activation of STING pathway in photothermal therapy for boosting cancer immunotherapy by theranostic thermosensitive liposomes

Qi Long, Yuliang Yang, Fangling Liao, Haoting Chen, Dongyue He, Shengliang Li, Pengcheng Li,\* Weisheng Guo\* and Yafang Xiao\*



#### 8541

A novel multi-scale pressure sensing hydrogel for monitoring the physiological signals of long-term bedridden patients

Wenhui Zhao, Yao Li, Jing Tian, Chenyang Tang, Xu Fei,\* Longquan Xu and Yi Wang

