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(15) 3265-3474 (2023)



Cover See Yu Cao, Shengqi Chen *et al.*, pp. 3364–3372. Image reproduced by permission of Shengqi Chen from *J. Mater. Chem. B*, 2023, **11**, 3364.



Inside cover

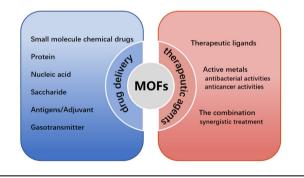
See Mi Ouyang, Rong Wang *et al.*, pp. 3373–3386. Image reproduced by permission of Rong Wang from *J. Mater. Chem. B*, 2023, **11**, 3373.

REVIEWS

3273

Nanoscale MOFs in nanomedicine applications: from drug delivery to therapeutic agents

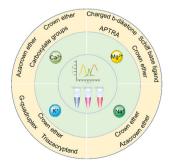
Zeyi Sun, Tieyan Li, Tianxiao Mei, Yang Liu, Kerui Wu, Wenjun Le* and Yihui Hu*



3295

Organic small-molecule fluorescent probe-based detection for alkali and alkaline earth metal ions in biological systems

Mengting Xu, Jie Xing, Bo Yuan, Lulu He, Liheng Lu, Nengwen Chen, Peijun Cai,* Aiguo Wu* and Juan Li*



Editorial Staff

Executive Editor Michaela Mühlberg

Deputy Editor Geraldine Hav

Editorial Production Manager Ionathon Watson

Senior Publishing Editor Fiona Iddon

Development Editor Rose Wedgbury

Publishing Editors

Blake Baker, 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

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 Jiang Chang, Shanghai Institute of Ceramics, China Elizabeth Cosgriff-Hernandez, The University of Texas at Austin, USA
- Gemma-Louise Davies, University College London, UK Jian Ji, Zhejiang University, China Shaoqin Liu, Harbin Institute of Technology, China
- Yoshiko Miura, Kyushu University, Japan Marc in het Panhuis, University of Wollongong, Australia

A. Higuchi, National Central University,

Xiaogang Qu, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, China Jessica Winter, The Ohio State University,

ΠSΔ.

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 K. Chatterjee, Indian Institute of Science, India H. Cölfen, University of Konstanz, Germany T. Da Ros, Trieste University of Kolistanz, Ger 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, 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

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, USA A. Miserez, Nanyang Technological

University, Singapore R. O'Reilly, University of Birmingham, UK A. Pannier, University of Nebraska, USA I. Park, KAIST, Korea

S. Perrier, University of Warwick, UK 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, Iapan 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, USA P. Théato, Karlsruhe Institute of Technology,

Germany R. Ulijn, City University of New York, US

J. Zheng, University of Akron, USA

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

China 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

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 ar fun types, of minimum and the second seco

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



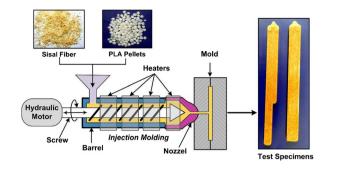
article is licensed under a Creative Commons Attribution 3.0 Unported Licence. Published on 12 April 2023. Downloaded on 6/20/2025 9:10:07 PM. Open Access Article. This

REVIEWS

3307

Synthesis and thermomechanical properties of bioplastics and biocomposites: a systematic review

L. Rajeshkumar, M. Ramesh,* V. Bhuvaneswari, D. Balaji and C. Deepa



3338

Recent advances in adhesive materials used in the biomedical field: adhesive properties, mechanism, and applications

Yongping Lu, Xinyuan Xu* and Jianshu Li*

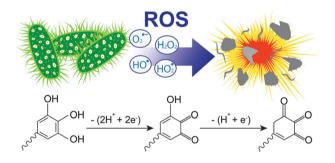


COMMUNICATION

3356

Synthesis of biologically derived poly(pyrogallol) nanofibers for antibacterial applications

Zhen Tian, Guo Wu, Matt Libby, Kang Wu, Kyung Jae Jeong and Young Jo Kim*

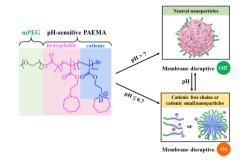


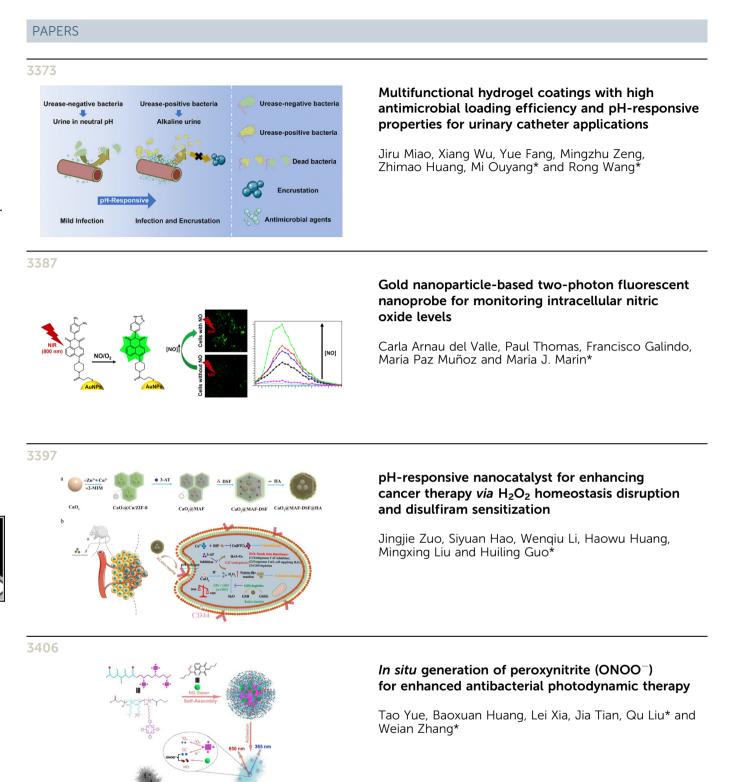
PAPERS

3364

Membrane-disruptive homo-polymethacrylate with both hydrophobicity and pH-sensitive protonation for selective cancer therapy

Rongrong Yu, Tingting Geng, Taotian Wei, Meng Wang, Yin Cao, Mengting Du, Weidong He, Abdul Haleem, Rongfeng Hu, Yu Cao* and Shengqi Chen*



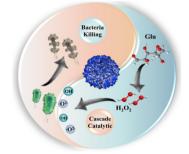


PAPERS

3413

A biomineralized bi-functional hybrid nanoflower to effectively combat bacteria *via* a glucose-powered cascade catalytic reaction

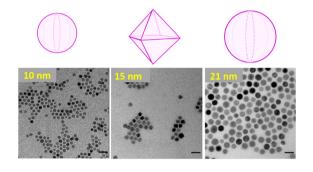
Qiaorong Tang, Lu Shi, Bing Yang, Wei Liu, Baoxin Li and Yan Jin*



3422

Ultrasmall superparamagnetic iron oxide nanoparticles for enhanced tumor penetration

Xue Feng, Yuxiang Xue, Sevil Gonca, Kunlang Ji, Mei Zhang, Francisco R. García-García, Quan Li, Yi Huang, Konstantin V. Kamenev and Xianfeng Chen*



3434

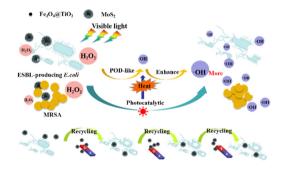
Recyclable ferroferric oxide@titanium dioxide@molybdenum disulfide with enhanced enzyme-like activity under visible light for effectively inhibiting the growth of drug-resistant bacteria in sewage

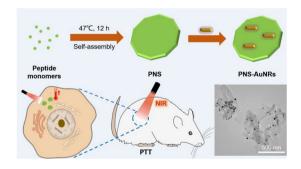
Yiping Sun, Wenhui Yue, Bin Niu, Yu Lin, Xiangyong Liu, Tianming Wu, Gong Zhang, Ke Qu,* Lu Wang* and Yusheng Niu*

3445

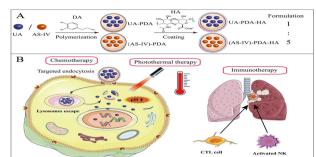
Two-dimensional peptide nanosheets functionalized with gold nanorods for photothermal therapy of tumors

Hao Kong, Jinru Han, Ming Yang, Liangxue Lai, Yabing Sun, Xin Luan, Wenzhi Ren,* Aiguo Wu and Gang Wei*





PAPERS



Combined chemo-immuno-photothermal therapy based on ursolic acid/astragaloside IV-loaded hyaluronic acid-modified polydopamine nanomedicine inhibiting the growth and metastasis of non-small cell lung cancer

Fan Xu, Minghua Li, Zujun Que, Mingliang Su, Wang Yao, Yu Zhang, Bin Luo, Yan Li, Zhanxia Zhang* and Jianhui Tian*