

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

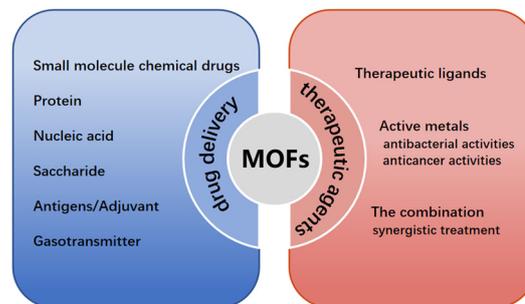
See Mi Ouyang, Rong Wang *et al.*, pp. 3373–3386. Image reproduced by permission of Rong Wang from *J. Mater. Chem. B*, 2023, 11, 3373.

REVIEWS

3273

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

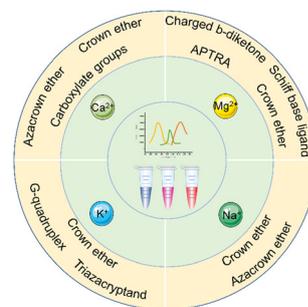
Zeyi Sun, Tiejian Li, Tianxiao Mei, Yang Liu, Kerui Wu, Wenjun Le* and Yihui Hu*



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 Hay

Editorial Production Manager

Jonathon 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

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

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

Xiaogang Qu, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, China

Jessica Winter, The Ohio State University, USA

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, 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, NCSST, 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, 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 Trieste, Italy

D. Martin, University of Delaware, USA

K. Masters, University of Wisconsin-Madison, USA

A. Miserez, Nanyang Technological University, Singapore

P. O'Reilly, University of Birmingham, UK

A. Pannier, University of Nebraska, USA

J. 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, 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. 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.

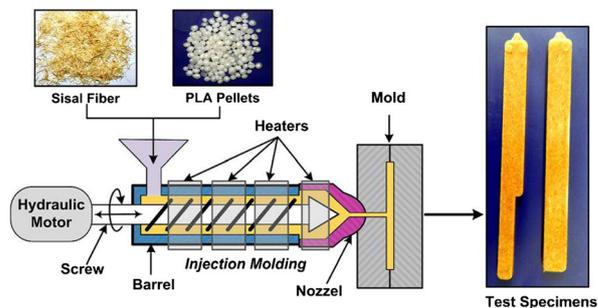
Apart from fair dealing for the purposes of research or private study for non-commercial purposes, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulation 2003, this publication may only be reproduced, stored or transmitted, 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

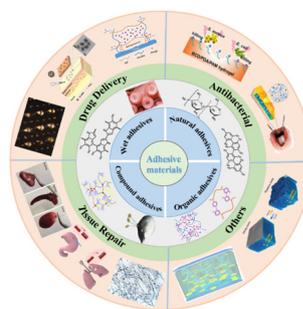
3307

Synthesis and thermomechanical properties of bioplastics and biocomposites: a systematic reviewL. Rajeshkumar, M. Ramesh,* V. Bhuvaneshwari,
D. Balaji and C. Deepa

3338

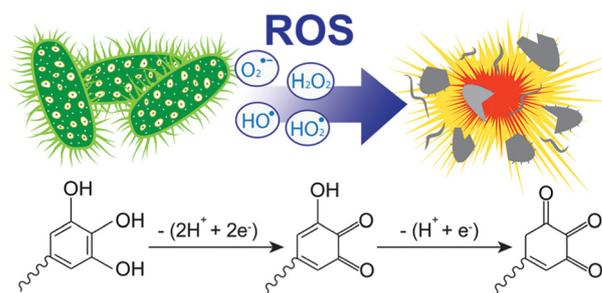
Recent advances in adhesive materials used in the biomedical field: adhesive properties, mechanism, and applications

Yongping Lu, Xinyuan Xu* and Jianshu Li*



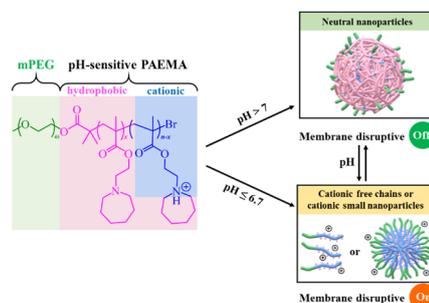
COMMUNICATION

3356

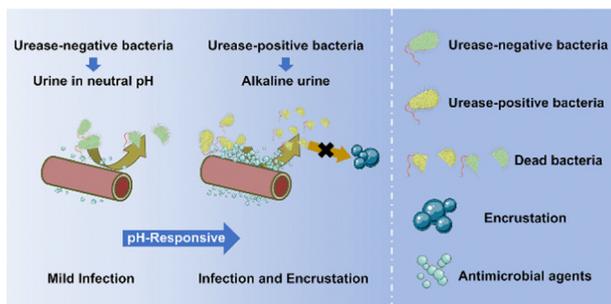
Synthesis of biologically derived poly(pyrogallol) nanofibers for antibacterial applicationsZhen Tian, Guo Wu, Matt Libby, Kang Wu,
Kyung Jae Jeong and Young Jo Kim*

PAPERS

3364

Membrane-disruptive homo-polymethacrylate with both hydrophobicity and pH-sensitive protonation for selective cancer therapyRongrong Yu, Tingting Geng, Taotian Wei, Meng Wang,
Yin Cao, Mengting Du, Weidong He, Abdul Haleem,
Rongfeng Hu, Yu Cao* and Shengqi Chen*

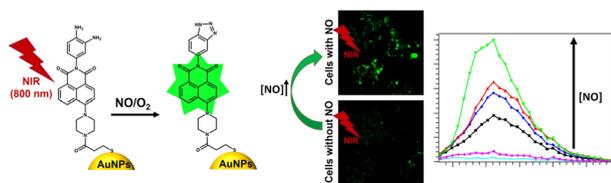
3373



Multifunctional hydrogel coatings with high antimicrobial loading efficiency and pH-responsive properties for urinary catheter applications

Jiru Miao, Xiang Wu, Yue Fang, Mingzhu Zeng, Zhimao Huang, Mi Ouyang* and Rong Wang*

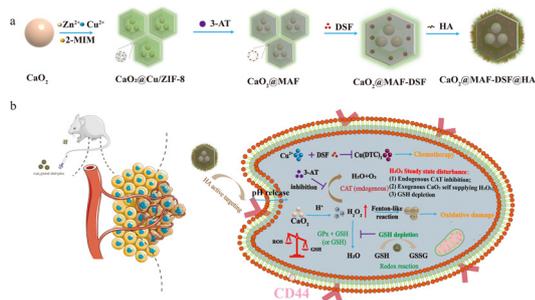
3387



Gold nanoparticle-based two-photon fluorescent nanoprobe for monitoring intracellular nitric oxide levels

Carla Arnau del Valle, Paul Thomas, Francisco Galindo, María Paz Muñoz and María J. Marín*

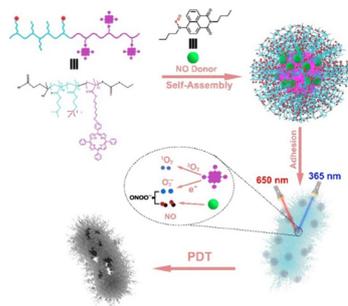
3397



pH-responsive nanocatalyst for enhancing cancer therapy via H₂O₂ homeostasis disruption and disulfiram sensitization

Jingjie Zuo, Siyuan Hao, Wenqiu Li, Haowu Huang, Mingxing Liu and Huiling Guo*

3406



In situ generation of peroxynitrite (ONOO⁻) for enhanced antibacterial photodynamic therapy

Tao Yue, Baoxuan Huang, Lei Xia, Jia Tian, Qu Liu* and Weian Zhang*

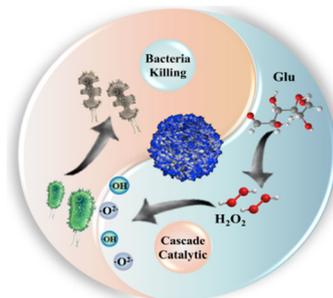


PAPERS

3413

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

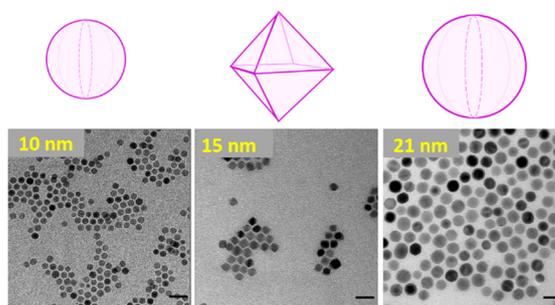
Qiaorong Tang, Lu Shi, Bing Yang, Wei Liu, Baoxin Li and Yan Jin*



3422

Ultrasmall superparamagnetic iron oxide nanoparticles for enhanced tumor penetration

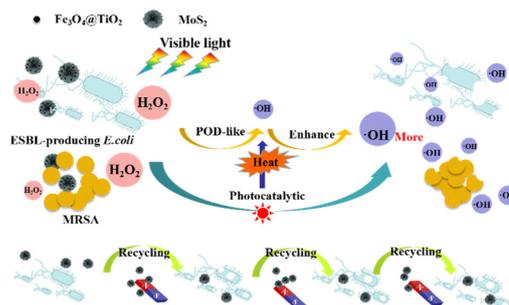
Xue Feng, Yuxiang Xue, Sevil Gonca, Kunlang Ji, Mei Zhang, Francisco R. Garcia-Garcia, Quan Li, Yi Huang, Konstantin V. Kamenev and Xianfeng Chen*



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

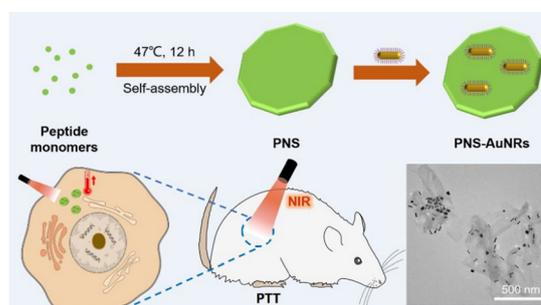
Yiping Sun, Wenhui Yue, Bin Niu, Yu Lin, Xiangyong Liu, Tianming Wu, Gong Zhang, Ke Qu,* Lu Wang* and Yusheng Niu*



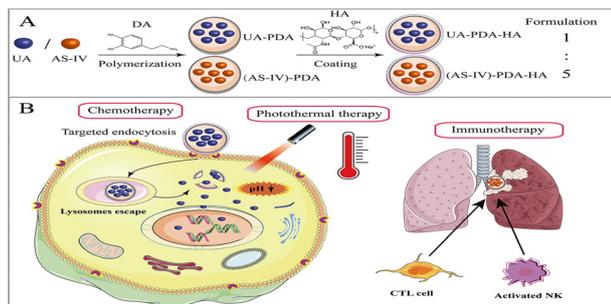
3445

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*



3453



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*

