

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.

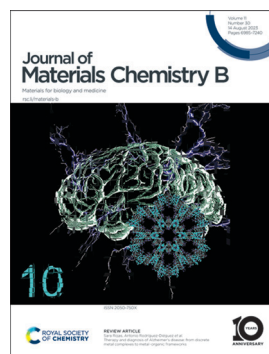
IN THIS ISSUE

ISSN 2050-750X CODEN JMCBDV 11(30) 6985–7240 (2023)



Cover

See Wenqi Zhao, Rongxin Su *et al.*, pp. 7004–7023. Image reproduced by permission of Rongxin Su from *J. Mater. Chem. B*, 2023, 11, 7004.



Inside cover

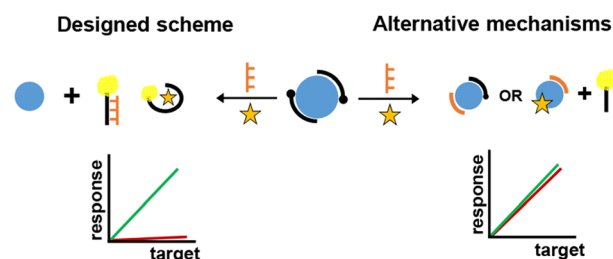
See Sara Rojas, Antonio Rodríguez-Diéguez *et al.*, pp. 7024–7040. Image reproduced by permission of Antonio Rodríguez-Diéguez from *J. Mater. Chem. B*, 2023, 11, 7024.

PERSPECTIVE

6994

Nanomaterials enabled and enhanced DNA-based biosensors

Stefen Stangherlin and Juewen Liu*

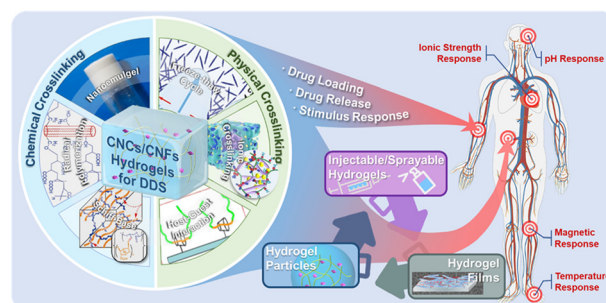


REVIEWS

7004

Nanocellulose-based hydrogels for drug delivery

Yusen Ai, Zhongxin Lin, Wenqi Zhao,* Mei Cui, Wei Qi, Renliang Huang and Rongxin Su*



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

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

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, 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, NCNST, 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
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

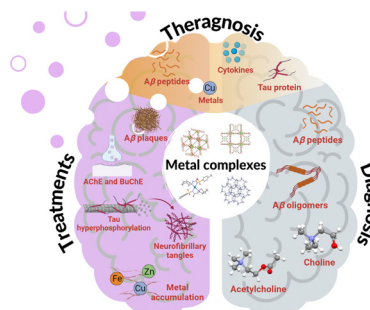


REVIEWS

7024

Therapy and diagnosis of Alzheimer's disease: from discrete metal complexes to metal–organic frameworks

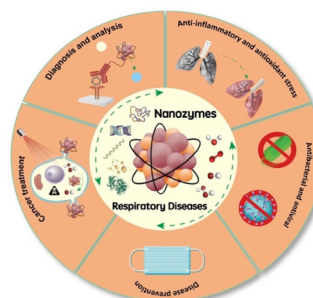
Amalia García-García, Sara Rojas* and Antonio Rodríguez-Diéguez*



7041

Advances and perspectives of nanozymes in respiratory diseases

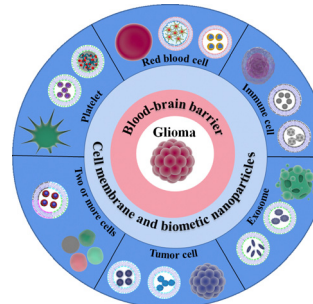
Shao-Bin He, Li-Yong Shi, Qiong-Hua Zheng, Yin Zhang, Wei Chen* and Yi-Ming Zeng*



7055

Application of cell membrane-functionalized biomimetic nanoparticles in the treatment of glioma

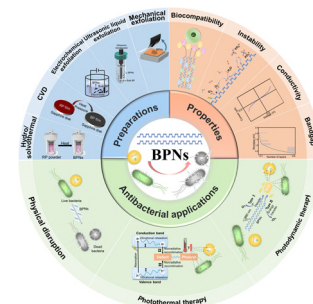
Guangchuan Zhang, Minghao Yao, Shanshan Ma, Kun Zhang, Yujue Wang, Zhimin Wang, Jiaheng Liang, Shan Dai, Ruimei Jin* and Fangxia Guan*



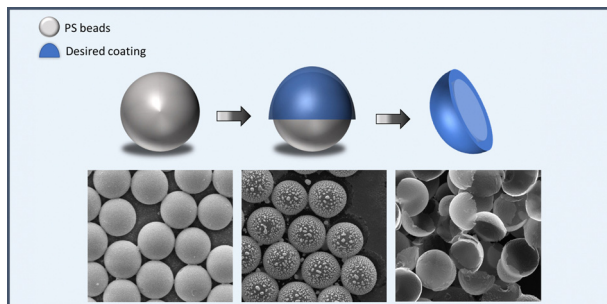
7069

Antibacterial black phosphorus nanosheets for biomedical applications

Yuanyuan Xu, Siyuan Chen, Yuxin Zhang, Can Wu, Lei Li, Xuefeng Hu, Jieyu Zhang* and Yunbing Wang



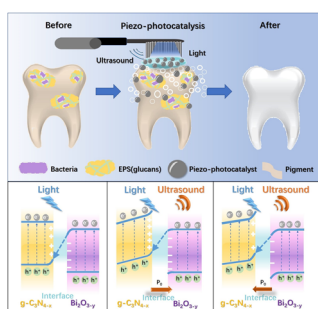
7094



Controlled synthesis of multifunctional dome-shaped micro- and nano-structures via a robust physical route for biological applications

Ganit Indech,* Lidor Geri, Chen Mordechai, Yarden Ben Moshe, Yitzhak Mastai, Orit Shefi and Amos Sharoni

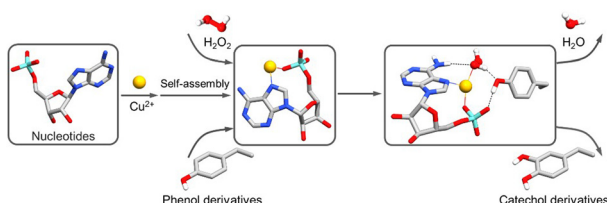
7103



Bifunctional defect mediated direct Z-scheme $g\text{-C}_3\text{N}_{4-x}/\text{Bi}_2\text{O}_{3-y}$ heterostructures with enhanced piezo-photocatalytic properties for efficient tooth whitening and biofilm eradication

Jiaxin He, Shaoyu Cui, Yanfeng Hou, Shujuan Liu,* Zijian Zhang, Mengjiao Zhao, Liangcan He,* Ranxu Wang and Shaoqin Liu*

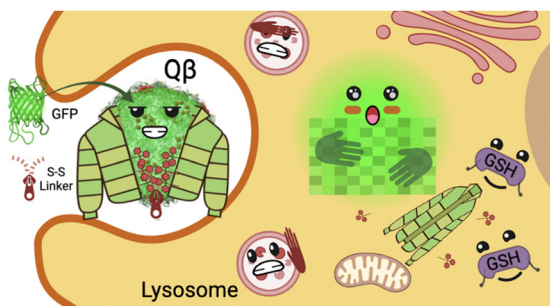
7117



A nucleotide-copper(II) complex possessing a monooxygenase-like catalytic function

Haifeng Wu, Shichao Xu, Peidong Du, Yuanxi Liu, Hui Li,* Haijun Yang, Ting Wang and Zhen-Gang Wang*

7126



Intracellular delivery of virus-like particles using a sheddable linker

Laurel M. Hagge, Arezoo Shahrivarkevishahi, Noora M. Al-Kharji, Zhuo Chen, Olivia R. Brohlin, Ikeda Trashi, Alisia Tumac, Fabian C. Herbert, Abhinay Varma Adlooru, Hamilton Lee, Hamid Reza Firouzi, Samuel A. Cornelius, Nicole J. De Nisco and Jeremiah J. Gassensmith*

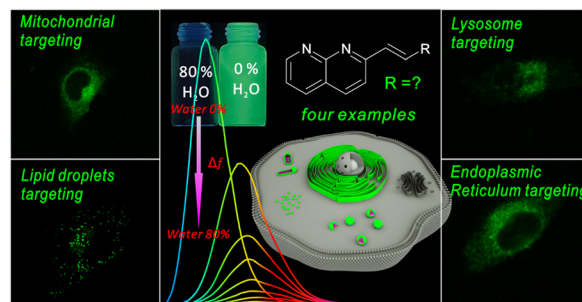


PAPERS

7134

Multiple organelle-targeted 1,8-naphthyridine derivatives for detecting the polarity of organelles

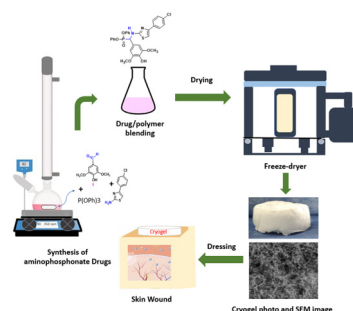
Hao-Chi Hao, Gang Zhang, Ru Sun,* Yu-Jie Xu and Jian-Feng Ge*



7144

Self-crosslinked polyvinyl alcohol/cellulose nanofibril cryogels loaded with synthesized aminophosphonates as antimicrobial wound dressings

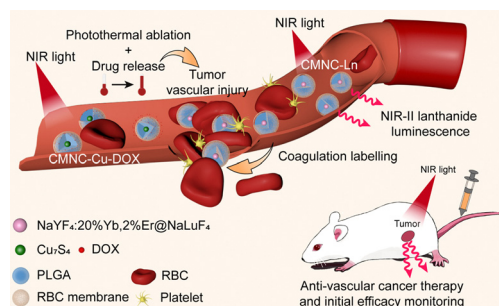
Dalia A. Elsherbiny, Abdelrahman M. Abdelgawad,* Bahaa A. Hemdan, Ahmed S. Montaser, Ibrahim El-Tantawy El-Sayed, Stefan Jockenhoevel and Samaneh Ghazanfari*



7160

An erythrocyte membrane-modified biomimetic synergistic nanosystem for cancer anti-vascular therapy and initial efficacy monitoring

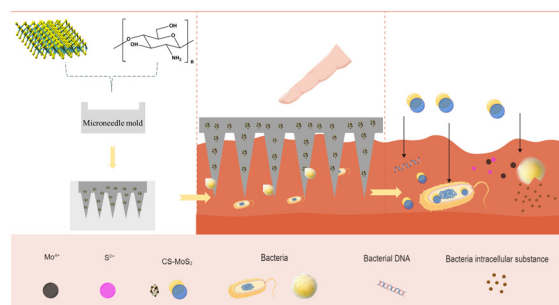
Jieying Zhang, Fang Li, Lili Su, Qian Hu, Jianfeng Li* and Xingjun Zhu*



7169

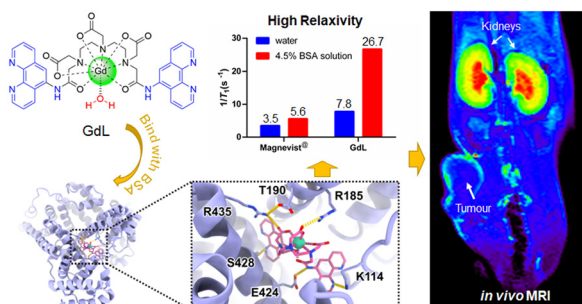
Investigation of the antibacterial properties of hyaluronic acid microneedles based on chitosan and MoS₂

Wenzhen Du, Xiaodan Li, Manyue Zhang, Guixia Ling* and Peng Zhang*



PAPERS

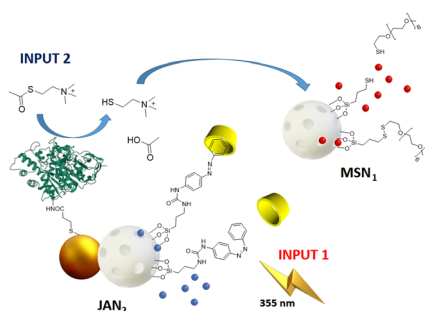
7182



A novel Gd³⁺ DTPA-bisamide complex with high relaxivity as an MRI contrast agent

Jiaxi Ru, Weiyuan Xu, Manchang Kou, Hu Dong, Xiaoliang Tang,* Yu Chen, Lingling Kang, Lixiong Dai* and Chao Liang*

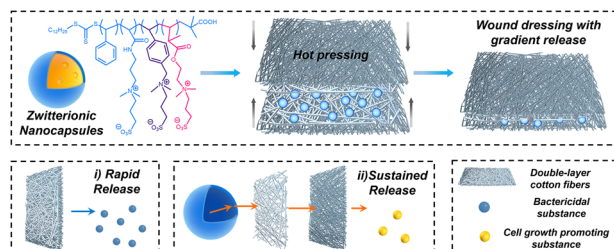
7190



An intercommunicated nanosystem for dual delivery

Beatriz Mayol, Ana Rodríguez, Anabel Villalonga, Carlos Anillo, Diana Vilela, Alfredo Sánchez, Paloma Martínez-Ruiz and Reynaldo Villalonga*

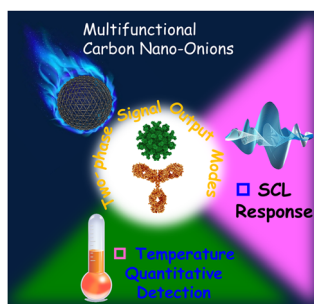
7197



Zwitterionic nanocapsule-based wound dressing with the function of gradient release of multi-drugs for efficient wound healing

Jiahui Zhou, Kaishun Xia,* Yuting Li, Shihua Mao, Yucong Gu, Mengjie Si, Shuaibing Wang, Guangyan Du,* Yisheng Xu, Dong Zhang, Si Yu Zheng* and Jintao Yang*

7209



Two-phase dual-signal-readout immunosensing platform based on multifunctional carbon nano-onions for ovarian cancer biomarker detection

Yitian Huang, Shupe Zhang, Yanjie Chen, Lihong Gao,* Hong Dai* and Yanyu Lin

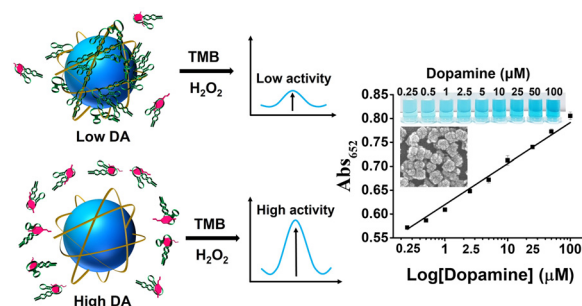


PAPERS

7217

Apta-sensor for selective determination of dopamine using chitosan-stabilized Prussian blue nanoparticles

Han Been Lee, Seong Eun Son and Gi Hun Seong*



7228

Glycopolymer-based multifunctional antibacterial hydrogel dressings for accelerating cutaneous wound healing

Qiuli Cheng, Zhihao Wang, Shumin Hu, Yi-Yang Peng, Rui Zhu, Leitao Zhang, Junbo Li* and Ravin Narain*

