

Journal of Materials Chemistry B

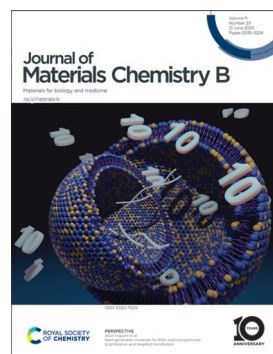
Materials for biology and medicine

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.

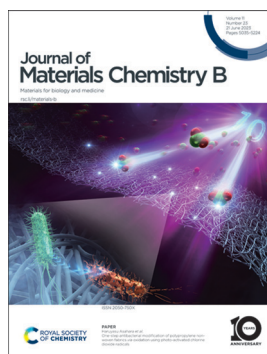
IN THIS ISSUE

ISSN 2050-750X CODEN JMCBDV 11(23) 5035–5224 (2023)



Cover

See Akon Higuchi *et al.*, pp. 5083–5093.
Image reproduced by permission of Akon Higuchi from *J. Mater. Chem. B*, 2023, 11, 5083.



Inside cover

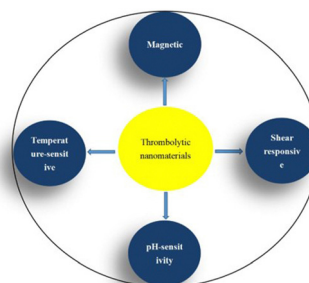
See Haruyasu Asahara *et al.*, pp. 5101–5107.
Image reproduced by permission of Haruyasu Asahara from *J. Mater. Chem. B*, 2023, 11, 5101.

REVIEWS

5043

Application of nanotechnology in thrombus therapy

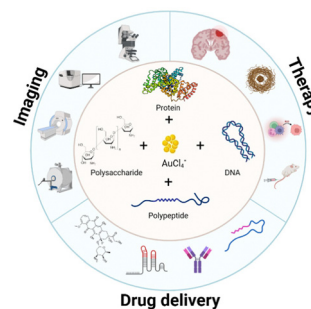
Kaili Liao, Quanli Wu, Yiran Li, Chengfeng Wu, Yu Zhou and Qingfu Zeng*



5051

Biomolecule-protected gold nanoclusters: synthesis and biomedical applications

Dongzhao Hao, Xuelin Zhang, Rongxin Su, Yuefei Wang* and Wei Qi*



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

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
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, 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
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. 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. 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

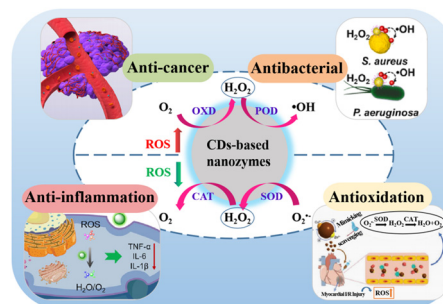


REVIEWS

5071

Design of carbon dots as nanozymes to mediate redox biological processes

Qian He and Liyun Zhang*

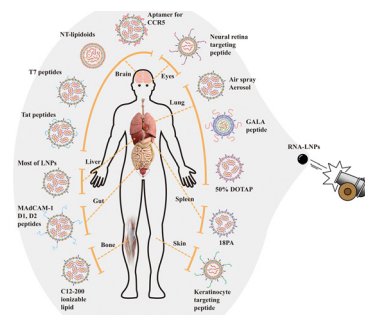


PERSPECTIVE

5083

Next-generation materials for RNA–lipid nanoparticles: lyophilization and targeted transfection

Ting Wang, Tzu-Cheng Sung, Tao Yu, Hui-Yu Lin, Yen-Hung Chen, Zhe-Wei Zhu, Jian Gong, Jiandong Pan and Akon Higuchi*

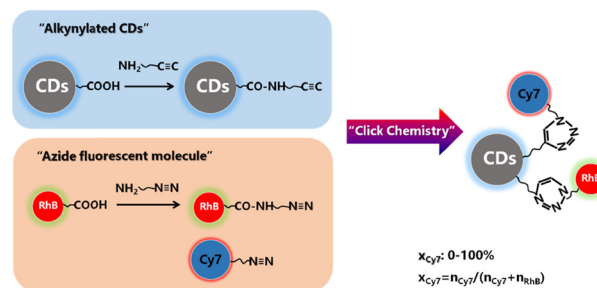


COMMUNICATION

5094

Quantitative and biosafe modification of bifunctional groups onto carbon dots by click chemistry

Qian He, Zewen Wu, Jingxuan Li, Ruijiao Li, Liyun Zhang* and Yaodong Liu*

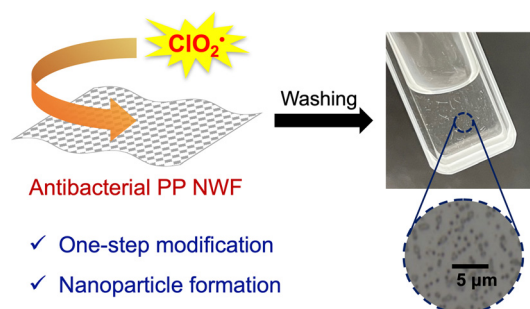


PAPERS

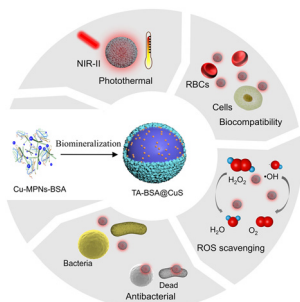
5101

One-step antibacterial modification of polypropylene non-woven fabrics via oxidation using photo-activated chlorine dioxide radicals

Keita Yamamoto, Haruyasu Asahara,* Kazuo Harada, Yuki Itabashi, Kei Ohkubo and Tsuyoshi Inoue



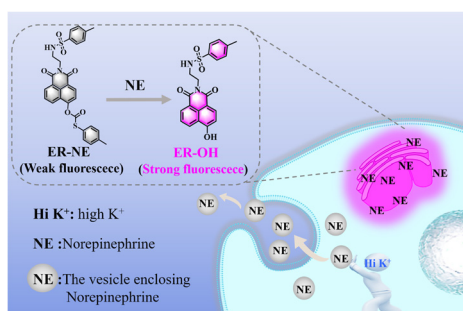
5108



Polyphenol-assisted albumin-based biomineralization nanocarriers with NIR-II-targeted photothermal performance towards broad-spectrum radical scavenging

Yaqi Zhao, Jiahao Wang, Shengqiu Chen, Zhiwei Wei, Yi Xie* and Changsheng Zhao*

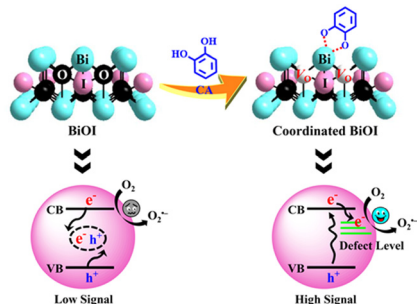
5117



Real-time monitoring norepinephrine exocytosis by high K^+ via an endoplasmic reticulum-targeting fluorescent probe

Lizhen Xu, Dan Tan, Jiangyan Wang, Jiangfeng Li and Weiyang Lin*

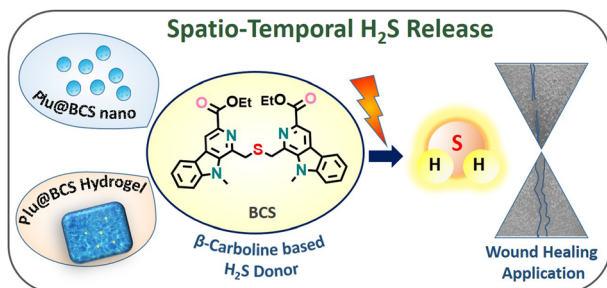
5123



Catechol exerts an *in situ* surface oxygen vacancy effect on BiOI: an innovative signal transduction mode for cathodic photoelectrochemistry

Hong Wang, Mengmeng Gu, Menghua Yan, Xiuming Wu, Yuming Dong and Guang-Li Wang*

5131



Spatiotemporal photo-release of hydrogen sulphide from β -carboline-derived nanoparticles for therapeutic applications

Antara Sikder, Rakesh Mengji, Saugat Mondal, Avijit Jana* and N. D. Pradeep Singh*

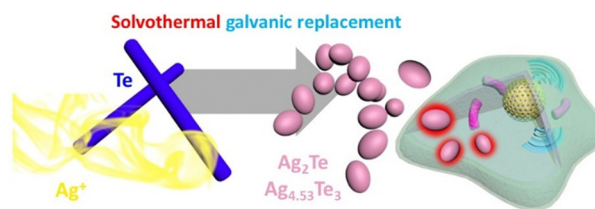


PAPERS

5142

Rod-to-sphere elemental reconstruction of biocompatible Ag_2Te – $\text{Ag}_{4.53}\text{Te}_3$ nanoparticles for triple negative breast cancer photo-nano-therapy

Hojung Ahn, Seounghun Kang, Kyungtae Kang, Do Nam Lee,* Dal-Hee Min* and Hongje Jang*



5151

A multifunctional polymeric coating with self-adsorbed, antifouling and *in situ* remineralization properties for caries management

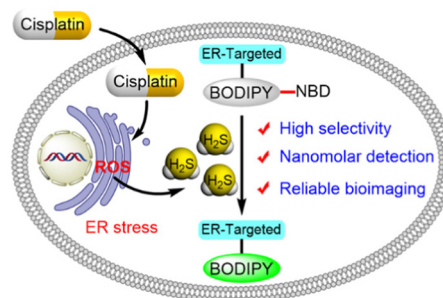
Wenlin Chu, Haiqin Tang, Zhiyun Dong, Ailin Hou, Rongmin Qiu, Xinyuan Xu, Jiaojiao Yang, Libang He,* Jun Luo and Jianshu Li*



5163

A highly selective and sensitive endoplasmic reticulum-targeted probe reveals HOCl- and cisplatin-induced H_2S biogenesis in live cells

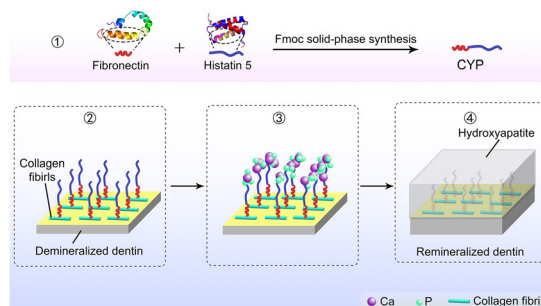
Haishun Ye, Shanshan Liu, Ziyi Chen, Longhuai Cheng* and Long Yi*



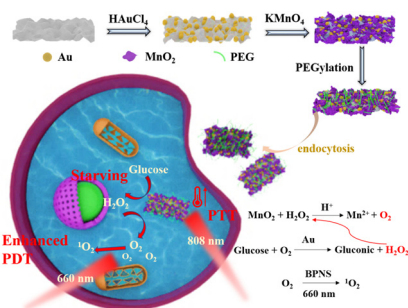
5170

An engineered dual-functional peptide with high affinity to demineralized dentin enhanced remineralization efficacy *in vitro* and *in vivo*

Meng Li, Yuanyuan Tu, Wanchun Zhu, Menglin Fan, Zilin Zhou, Zhaohan Yu, Shunhua Wang, Yingming Yang, Jiyao Li and Kunneng Liang*



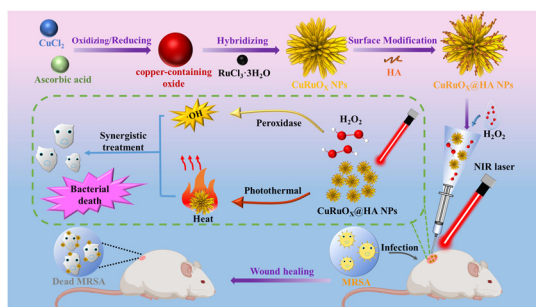
5185



A dual-nanozyme-loaded black phosphorus multifunctional therapeutic platform for combined photothermal/photodynamic/starvation cancer therapy

Wenxiang Du, Weijian Chen, Jing Wang, Hongjie Zhang, Lei Song,* Yuan Hu* and Xiaopeng Ma*

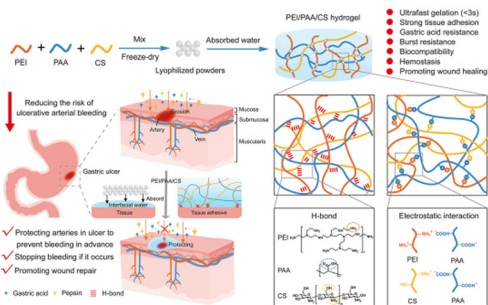
5195



Reactive oxygen species-mediated CuRuO_x@HA hybrid nanozymes for multidrug-resistant bacterial infections with synergistic photothermal therapy

Jiaqi Guo, Xinyi Zhang, Yonglan Yang, Xufeng Zhu, Xu Chen, Gang Ye* and Jie Liu*

5207



A chitosan-optimized polyethyleneimine/polyacrylic acid multifunctional hydrogel for reducing the risk of ulcerative arterial bleeding

Panxianzhi Ni, Sheng Ye, Shuting Xiong, Meng Zhong, Jing Shan,* Tun Yuan,* Jie Liang, Yujiang Fan and Xingdong Zhang

