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(21) 4575-4822 (2023)



Cover

See Shiyao Fu and Xin Yang, pp. 4584-4599. Image reproduced by permission of Xin Yang from J. Mater. Chem. B, 2023, 11, 4584.



Inside cover

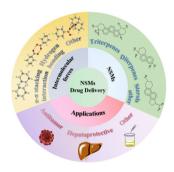
See Ming-You Shie et al., pp. 4666-4676. Image reproduced by permission of Ming-You Shie from J. Mater. Chem. B, 2023, 11, 4666.

REVIEWS

4584

Recent advances in natural small molecules as drug delivery systems

Shiyao Fu and Xin Yang*



4600

Recent advances in type I organic photosensitizers for efficient photodynamic therapy for overcoming tumor hypoxia

Bingli Lu, Lingyun Wang,* Hao Tang and Derong Cao



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

Journal of Materials Chemistry B (electronic: ISSN 2050-7518)

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

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,

Yoshiko Miura, Kyushu University, Japan Marc in het Panhuis, University of

Wollongong, Australia Jessica Winter, The Ohio State University,

Member

Claus Feldmann, Karlsruhe Institute of Technology, Germany

Advisory Board

D. Benoit, University of Rochester, USA W. Chan, University of Notifester, USA W. Chan, University of Toronto, Canada K. Chatterjee, Indian Institute of Science,

H. Cölfen, University of Konstanz, Germany T. Da Ros, Trieste University, Italy

T. Davis, Monash University, Australia T. Desai, University of California, San

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 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 A. Pannier, University of Nebraska, USA I. 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, 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,

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 as run rapets, communated ones, nevews, running as 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

4619

Natural polyphenol tannin-immobilized composites: rational design and versatile applications

Xiaoyu Guan, Bingyuan Zhang, Zegun Wang, Qingxin Han,* Meng An,* Motoki Ueda* and Yoshihiro Ito*

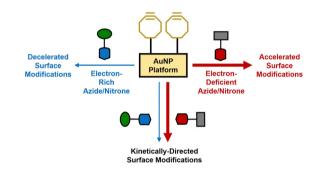


COMMUNICATION

4661

Towards the design of self-sorting nanomaterials through kinetically directed chemoselective control over interfacial surface chemistry

Praveen N. Gunawardene, Max Weissman, Jack E. Bowman, Pierangelo Gobbo* and Mark S. Workentin*

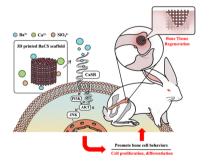


PAPERS

4666

Additive manufacturing of barium-doped calcium silicate/poly-ε-caprolactone scaffolds to activate CaSR and AKT signalling and osteogenic differentiation of mesenchymal stem cells

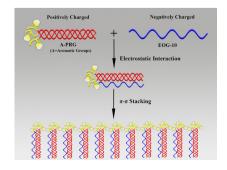
Yung-Cheng Chiu, Yen-Hong Lin, Yi-Wen Chen, Ting-You Kuo and Ming-You Shie*



4677

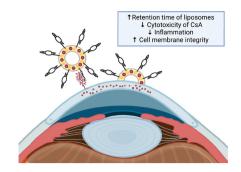
Peptide-triggered self-assembly of collagen mimetic peptides into nanospheres by electrostatic interaction and π - π stacking

Xiuxia Sun, Siqi Quan, Bo Wang, Qi Wang, Wenhua Li and Jianxi Xiao*



PAPERS

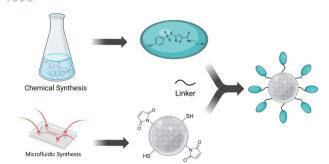
4684



Mucin-targeting-aptamer functionalized liposomes for delivery of cyclosporin A for dry eye diseases

Ka-Ying Wong, Yibo Liu, Liping Zhou, Man-Sau Wong and Juewen Liu*

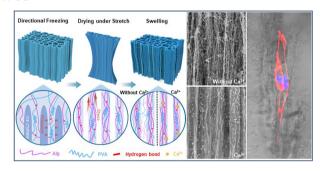
4695



Development of a synthesis strategy for sulfamethoxazole derivatives and their coupling with hydrogel microparticles

Veronika Riedl, Matthias Portius, Lara Heiser, Philipp Riedl, Torsten Jakob, Rosa Gehring, Thorsten Berg and Tilo Pompe*

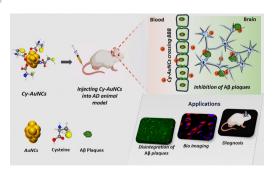
4703



Hierarchical hydrogel scaffolds with a clustered and oriented structure

Jian Cheng, Jiangtao Xue, Yuan Yang, Dengjie Yu, Zhuo Liu* and Zhou Li*

4715



Bifunctional cysteine gold nanoclusters for β-amyloid fibril inhibition and fluorescence imaging: a distinctive approach to manage Alzheimer's disease

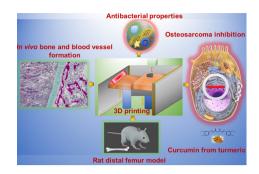
A. N. Resmi, C. R. Rekha, M. E. Dhushyandhun, Sarathkumar Elangovan, Sachin J. Shenoy, Kamalesh K. Gulia and Ramapurath S. Jayasree*

PAPERS

4725

In vivo and In vitro properties evaluation of curcumin loaded MgO doped 3D printed **TCP scaffolds**

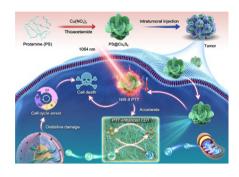
Arjak Bhattacharjee, Yongdeok Jo and Susmita Bose*



4740

Flower-like Cu₉S₈ nanocatalysts with highly active sites for synergistic NIR-II photothermal therapy and chemodynamic therapy

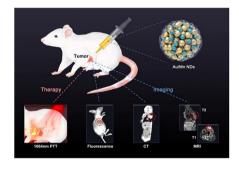
Quan Zou, Haiyan Pan, Xuening Zhang* and Cai Zhang*



4752

Au/Mn nanodot platform for in vivo CT/MRI/FI multimodal bioimaging and photothermal therapy against tongue cancer

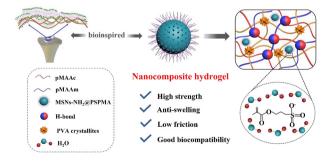
Zhe Yang, Yueqi Zhao, Yang Li, Lei Song, Yangliu Lin, Kaimeng Liu, Yujia Zhang, Andrei V. Zvyagin, Linan Fang,* Yuanging Sun,* Bai Yang and Quan Lin*



4763

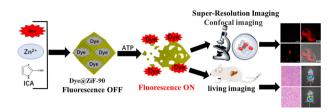
Cartilage-bioinspired, tough and lubricated hydrogel based on nanocomposite enhancement effect

Fen Xiao, Pengshuo Zheng, Jianxin Tang, Xin Huang, Wenji Kang, Guiyin Zhou* and Kehui Sun



PAPERS

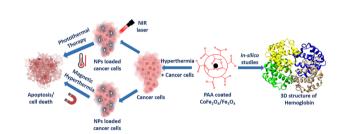
4776



ATP-triggered highly sensitive probes for super-resolution mitochondrial imaging and low-dose bioimaging

Taihe Han, Jinlong Zhang, Shuai Mu, Huihui Li, Shuangtong Wu, Xiaoyan Liu and Haixia Zhang*

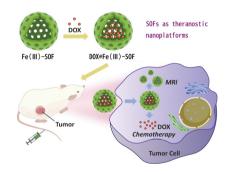
4785



Comparative analysis of cobalt ferrite and iron oxide nanoparticles using bimodal hyperthermia, along with physical and in silico interaction with human hemoglobin

Kritika, Megha Pant, Monika Yadav, Anita Kamra Verma, Ajit K. Mahapatro and Indrajit Roy*

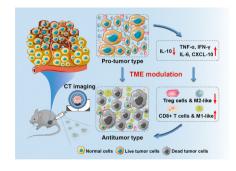
4799



An iron(III) complex-based supramolecular organic framework (SOF) as a theranostic platform via magnetic resonance imaging-guided chemotherapy

Pengpeng Hu, Hong Mo,* Saijie Song,* Jing Wu, Jihui Li and Jian Shen*

4808



Diselenide-crosslinked nanogels laden with gold nanoparticles and methotrexate for immunomodulation-enhanced chemotherapy and computed tomography imaging of tumors

Bingyang Jia, Yue Gao, Zhijun Ouyang, Siyan Shen, Mingwu Shen and Xiangyang Shi*

CORRECTIONS

4819

Correction: Blood brain barrier permeable gold nanocluster for targeted brain imaging and therapy: an in vitro and in vivo study

L. V. Nair, R. V. Nair, S. J. Shenoy, A. Thekkuveettil and R. S. Jayasree*

4820

Correction: LHRH conjugated gold nanoparticles assisted efficient ovarian cancer targeting evaluated via spectral photon-counting CT imaging: a proof-of-concept research

Dhiraj Kumar,* Mahdieh Moghiseh, Kenny Chitcholtan, Isha Mutreja, Chiara Lowe, Ajeet Kaushik, Anthony Butler, Peter Sykes, Nigel Anderson and Aamir Raja