Open Access Article. Published on 21 June 2023. Downloaded on 10/31/2025 3:01:18 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

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(24) 5225–5620 (2023)

EDITORIAL

5236

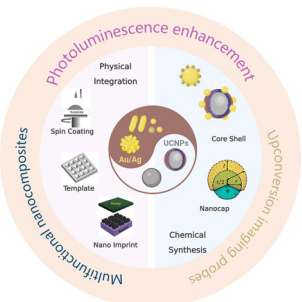
Introducing the tenth anniversary issues of *Journal of Materials Chemistry A*, *B* and *C*

REVIEWS

5238

Surface plasmon resonance of Au/Ag metals for the photoluminescence enhancement of lanthanide ion Ln^{3+} doped upconversion nanoparticles in bioimaging

Hao Peng, Shunxiang Li, Jie Xing, Fang Yang* and Aiguo Wu*



Open Access Article. Published on 21 June 2023. Downloaded on 10/31/2025 3:01:18 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

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**

ROYAL SOCIETY OF CHEMISTRY

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 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
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. 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

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

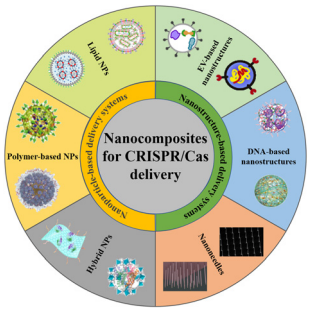
Open Access Article. Published on 21 June 2023. Downloaded on 10/31/2025 3:01:18 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

REVIEWS

5251

Recent advances in nanocomposite-based delivery systems for targeted CRISPR/Cas delivery and therapeutic genetic manipulation

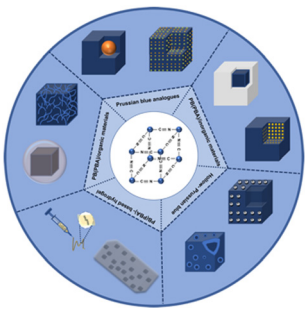
Muhammad Waseem Ghani, Ambreen Iqbal, Hammad Ghani, Sidra Bibi, Zixun Wang* and Renjun Pei*



5272

Progress in the preparation of Prussian blue-based nanomaterials for biomedical applications

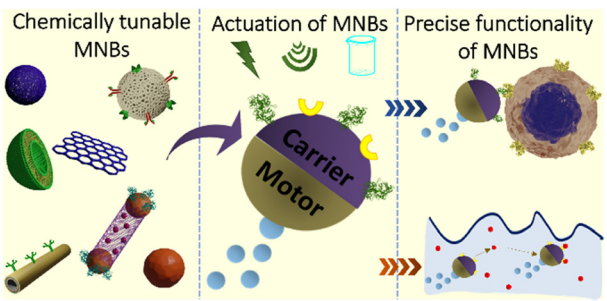
Kun Lu, Xiao-Yang Zhu, Yan Li* and Ning Gu*



5301

Chemical tunability of advanced materials used in the fabrication of micro/nanobots

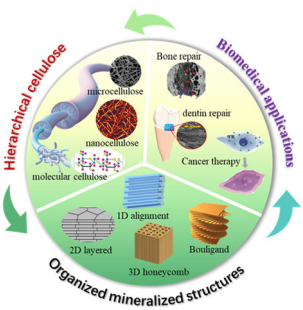
Saloni Andhari, Ganesh Khutale, Rituja Gupta, Yuvraj Patil and Jayant Khandare*



5321

Organized mineralized cellulose nanostructures for biomedical applications

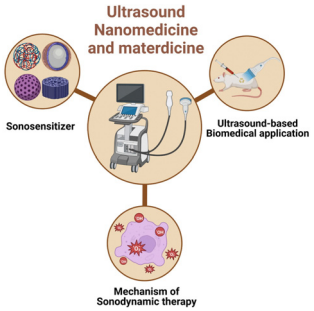
Yanhuizhi Feng, Helmut Cölfen* and Rui Xiong*



Open Access Article. Published on 21 June 2023. Downloaded on 10/31/2025 3:01:18 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

REVIEWS

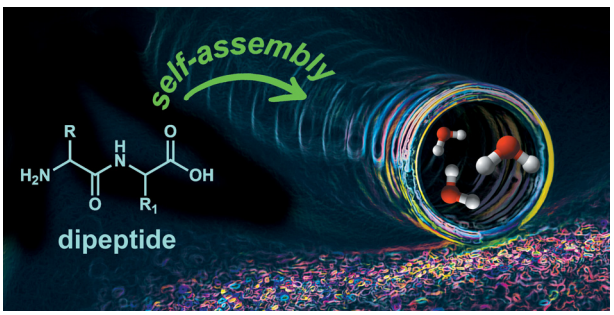
5350



Ultrasound nanomedicine and materdicine

Zeyu Wang, Xue Wang, Meiqi Chang,* Jia Guo* and Yu Chen*

5378

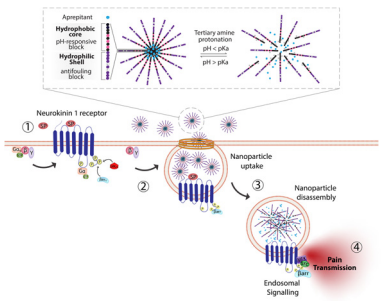


Nanotubes and water-channels from self-assembling dipeptides

Ottavia Bellotto, Paola D'Andrea and Silvia Marchesan*

PERSPECTIVE

5390

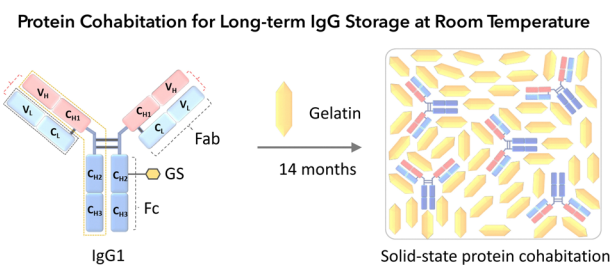


Targeting endosomal receptors, a new direction for polymers in nanomedicine

Paulina D. Ramirez-Garcia,* Nicholas A. Veldhuis, Nigel W. Bunnett and Thomas P. Davis*

COMMUNICATION

5400



Protein cohabitation: long-term immunoglobulin G storage at room temperature

Pankaj Bharmoria,* Saik Ann Ooi, Andrea Cellini, Daniel Tietze, Michal Maj, Kasper Moth-Poulsen* and Alesia A. Tietze*

This journal is © The Royal Society of Chemistry 2023

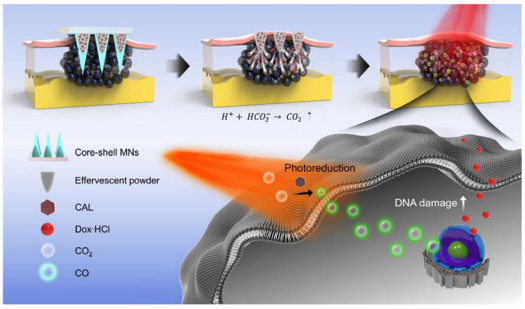
Open Access Article. Published on 21 June 2023. Downloaded on 10/31/2025 3:01:18 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

5406

A photocatalytic carbon monoxide-generating effervescent microneedle patch for improved transdermal chemotherapy

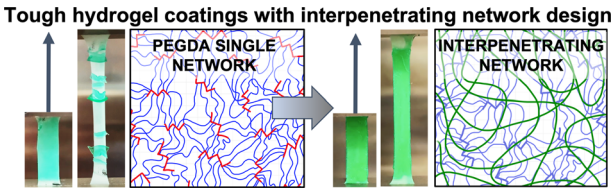
Junzhe Fu, Weijiang Yu, Xuedan Qian, Youxiang Wang* and Jian Ji*



5416

Interpenetrating network design of bioactive hydrogel coatings with enhanced damage resistance

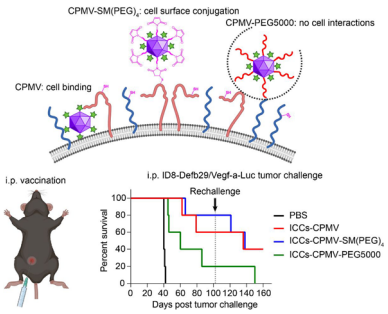
Megan Wancura, Abbey Nkansah, Malgorzata Chwatko, Andrew Robinson, Ashauntee Fairley and Elizabeth Cosgriff-Hernandez*



5429

A co-formulated vaccine of irradiated cancer cells and cowpea mosaic virus improves ovarian cancer rejection

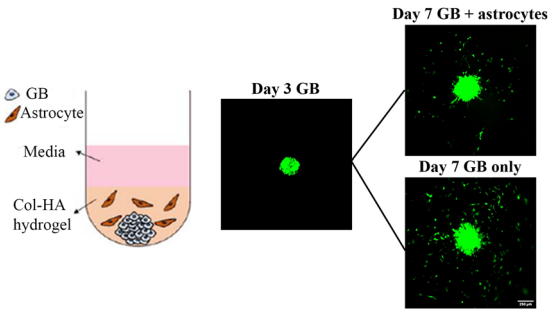
Zhongchao Zhao, Oscar A. Ortega-Rivera, Young Hun Chung, Andrea Simms and Nicole F. Steinmetz*



5442

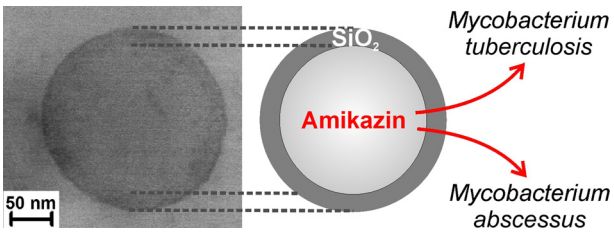
Evaluating glioblastoma tumour sphere growth and migration in interaction with astrocytes using 3D collagen-hyaluronic acid hydrogels

Yixiao Cui, Paul Lee, Jesse J. Reardon, Anna Wang, Skylar Lynch, Jose J. Otero, Gina Sizemore and Jessica O. Winter*



Open Access Article. Published on 21 June 2023. Downloaded on 10/31/2025 3:01:18 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

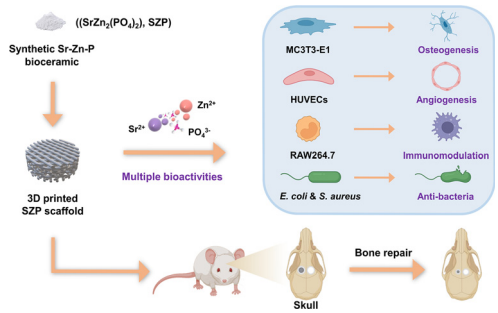
5460



Amikacin@SiO_2 core@shell nanocarriers to treat pulmonal bacterial infections

Mark Rutschmann, Natalja Redinger, Ulrich E. Schaible* and Claus Feldmann*

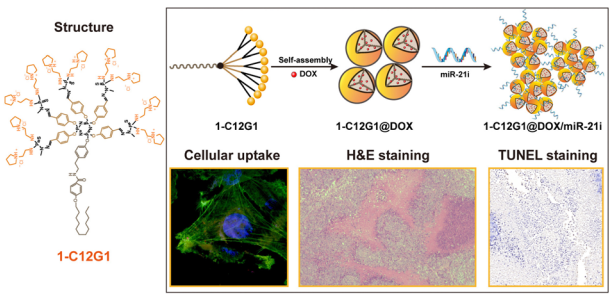
5469



3D printed strontium–zinc-phosphate bioceramic scaffolds with multiple biological functions for bone tissue regeneration

Li Deng, Lingwei Huang, Hao Pan, Qi Zhang, Yumei Que, Chen Fan, Jiang Chang,* Siyu Ni* and Chen Yang*

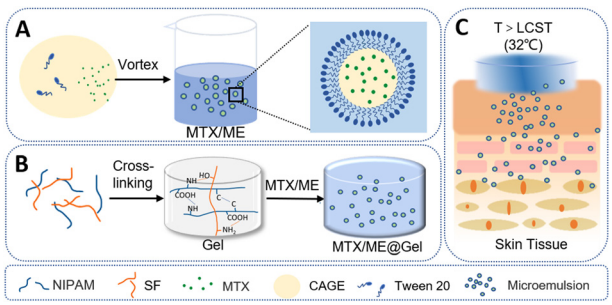
5483



Amphiphilic phosphorous dendron micelles co-deliver microRNA inhibitor and doxorubicin for augmented triple negative breast cancer therapy

Liang Chen, Mengsi Zhan, Jin Li, Liu Cao, Huxiao Sun, Régis Laurent, Serge Mignani, Anne-Marie Caminade,* Jean-Pierre Majoral* and Xiangyang Shi*

5494



A thermo-responsive hydrogel loaded with an ionic liquid microemulsion for transdermal delivery of methotrexate

Yang Shu, Rong Xue, Yiru Gao, Wenxin Zhang and Jianhua Wang*

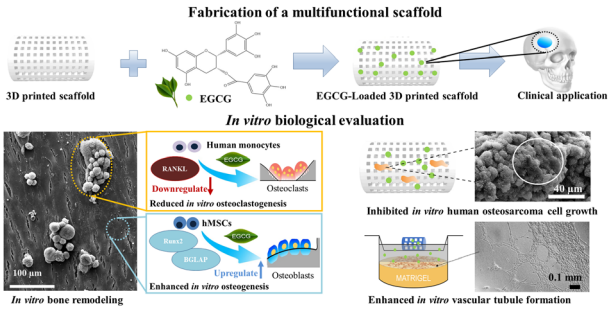
This journal is © The Royal Society of Chemistry 2023

Open Access Article. Published on 21 June 2023. Downloaded on 10/31/2025 3:01:18 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

5503

In vitro biological evaluation of epigallocatechin gallate (EGCG) release from three-dimensional printed (3DP) calcium phosphate bone scaffolds

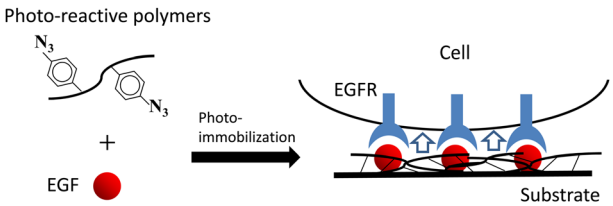
Yongdeok Jo, Naboneeta Sarkar and Susmita Bose*



5514

Photo-reactive polymers for the immobilisation of epidermal growth factors

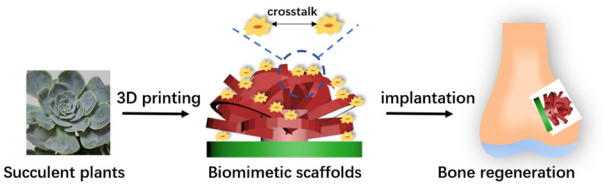
Liang-Chun Wu, Seiichi Tada, Takashi Isoshima, Takeshi Serizawa and Yoshihiro Ito*



5523

3D-Printing of succulent plant-like scaffolds with beneficial cell microenvironments for bone regeneration

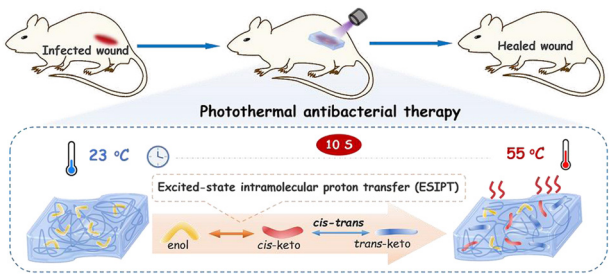
Yufeng Wang, Zikang Wang, Xiaopeng Yu, Meng Zhang, Xin Wang, Yanling Zhou, Qingqiang Yao* and Chengtie Wu*



5537

Promoting photothermal antibacterial activity through an excited-state intramolecular proton transfer process

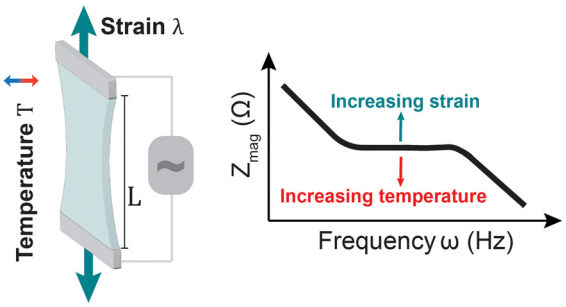
Wanni Yao, Tian Deng, Arui Huang, Yufeng Zhang,* Qianqian Li* and Zhen Li*



Open Access Article. Published on 21 June 2023. Downloaded on 10/31/2025 3:01:18 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

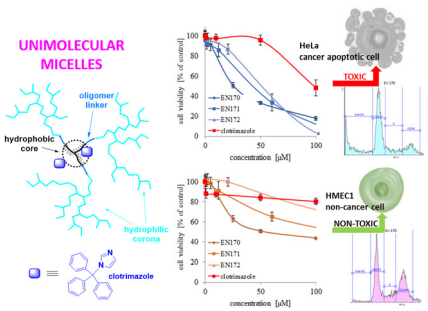
5544



Poisson–Nernst–Planck framework for modelling ionic strain and temperature sensors

Gaurav Balakrishnan, Jiwoo Song, Aditya S. Khair and Christopher J. Bettinger*

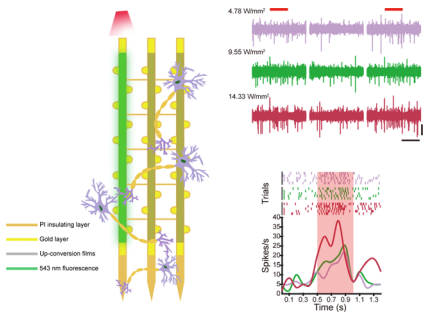
5552



Cross-linkable star-hyperbranched unimolecular micelles for the enhancement of the anticancer activity of clotrimazole

Mateusz Gosecki, Piotr Ziemczonek, Monika Gosecka,* Malgorzata Urbaniak, Ewelina Wielgus, Monika Marcinkowska, Anna Janaszewska* and Barbara Klajnert-Maculewicz

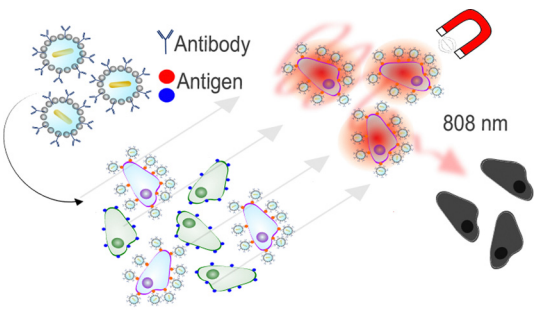
5565



Electrodeposited $NaYF_4$:Yb^{3+}, Er^{3+} up-conversion films for flexible neural device construction and near-infrared optogenetics

Xuran Zhang, Jianfei Ding, Liang Zou, Huihui Tian, Ying Fang* and Jinfen Wang*

5574



Hybrid core–shell nanoparticles for cell-specific magnetic separation and photothermal heating

Cristina de la Encarnación, Felix Jungwirth, David Vila-Liarte, Carlos Renero-Lecuna, Safiyye Kavak, Iñaki Orue, Claire Wilhelm, Sara Bals, Malou Henriksen-Lacey, Dorleta Jimenez de Aberasturi* and Luis M. Liz-Marzán*

This journal is © The Royal Society of Chemistry 2023

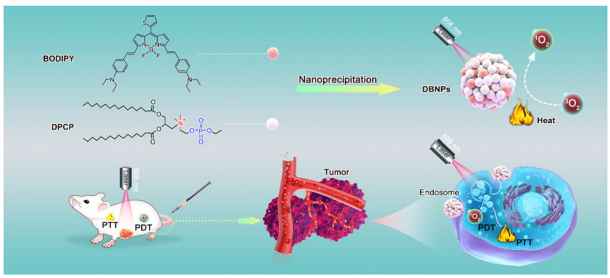
Open Access Article. Published on 21 June 2023. Downloaded on 10/31/2025 3:01:18 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

5586

Choline phosphate lipid-hitchhiked near-infrared BODIPY nanoparticles for enhanced phototheranostics

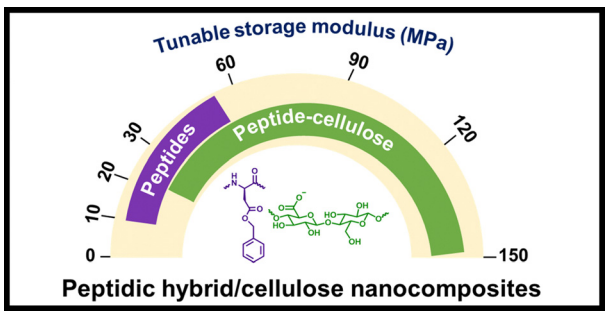
Huafeng Geng, Wenhai Lin, Junbao Liu,* Qing Pei* and Zhigang Xie*



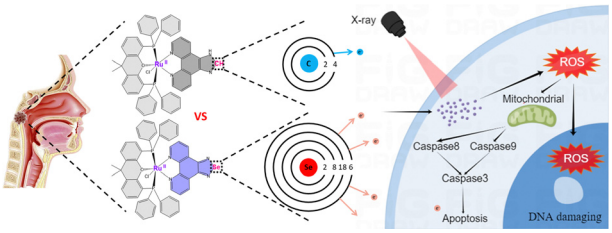
5594

Leveraging peptide–cellulose interactions to tailor the hierarchy and mechanics of peptide–polymer hybrids

Daseul Jang, Laura E. Beckett, Jong Keum and LaShanda T.J. Korley*



5607

X-ray sensitive selenium-containing Ru complexes sensitize nasopharyngeal carcinoma cells for radio/chemotherapy

Changhe Shi, Zhongwen Yuan, Ting Liu, Leung Chan, Tianfeng Chen* and Jianfu Zhao*