

Journal of Materials Chemistry B

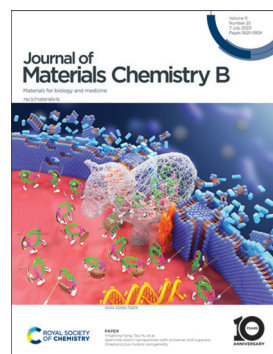
Materials for biology and medicine

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.

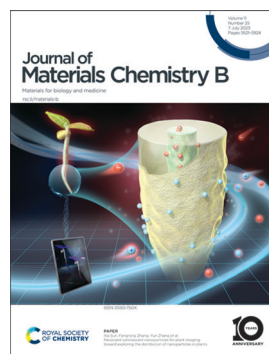
IN THIS ISSUE

ISSN 2050-750X CODEN JMCBDV 11(25) 5621–5924 (2023)



Cover

See Yingming Yang, Tao Hu *et al.*, pp. 5752–5766. Image reproduced by permission of Tao Hu from *J. Mater. Chem. B*, 2023, **11**, 5752.



Inside cover

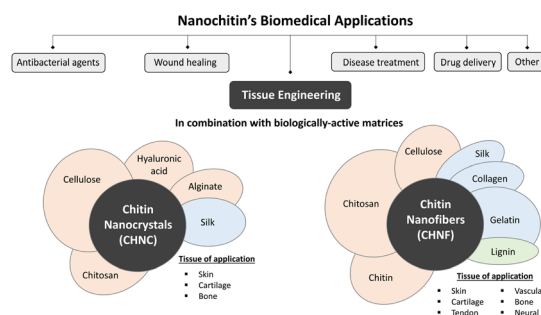
See Xia Sun, Fangrong Zhang, Yun Zhang *et al.*, pp. 5767–5776. Image reproduced by permission of Yun Zhang from *J. Mater. Chem. B*, 2023, **11**, 5767.

REVIEWS

5630

The role of nanochitin in biologically-active matrices for tissue engineering—where do we stand?

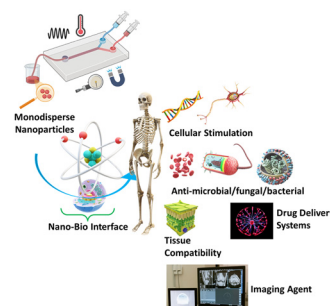
Sheila Olza, Asier M. Salaberria, Ana Alonso-Varona, Ayan Samanta and Susana C. M. Fernandes*



5650

Active microfluidic reactor-assisted controlled synthesis of nanoparticles and related potential biomedical applications

Vivek Kamat*, Preyojon Dey, Dhananjay Bodas*, Ajeet Kaushik, Alicia Boymelgreen and Shekhar Bhansali



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, Saudi 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

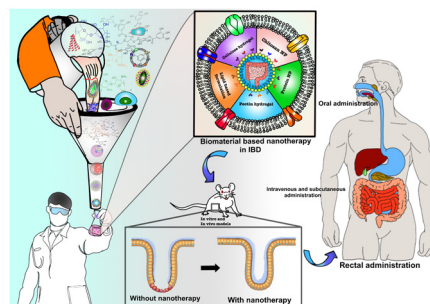


REVIEWS

5668

Biomaterial-based strategies for immunomodulation in IBD: current and future scenarios

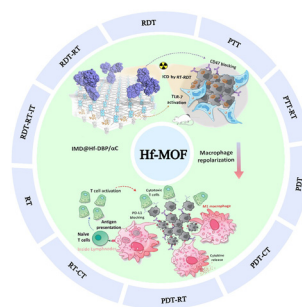
Chandrashekhkar Jori, Anis Ahmad Chaudhary, Summya Rashid, Mohamed A. M. Ali, Abdullah S. Alawam, Faouzi Haouala and Rehan Khan*



5693

Current and promising applications of Hf(IV)-based MOFs in clinical cancer therapy

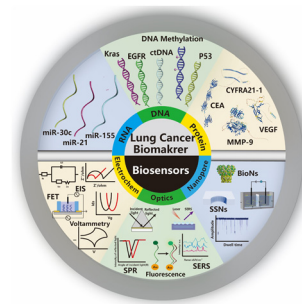
Xuelin Chen, Minmin Li, Mingzi Lin, Chengyu Lu, Abhinav Kumar,* Ying Pan,* Jianqiang Liu* and Yanqiong Peng*



5715

Recent progress of biosensors for the detection of lung cancer markers

Shanchuan Chen, Minghan Li, Ting Weng, Deqiang Wang and Jia Geng*

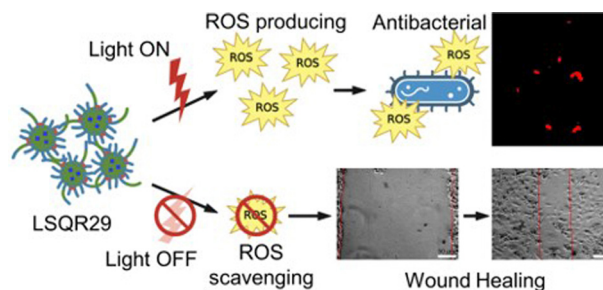


COMMUNICATION

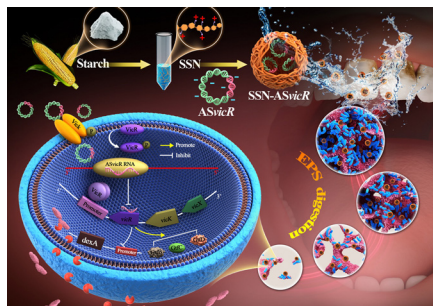
5748

Synergistic antibacterial action of lignin-squaraine hybrid photodynamic therapy: advancing towards effective treatment of antibiotic-resistant bacteria

Ferdinandus, Chaemin Joo, Dan Kai and Chi-Lik Ken Lee*



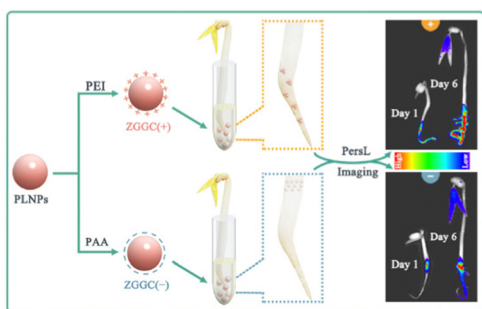
5752



Spermine-starch nanoparticles with antisense *vicR* suppress *Streptococcus mutans* cariogenicity

Lei Lei, Yue Zhang, Yichen Xu, Yuting Tian, Jialiang Zhao, Yong Xiang, Huiyu Yang, Yingming Yang* and Tao Hu*

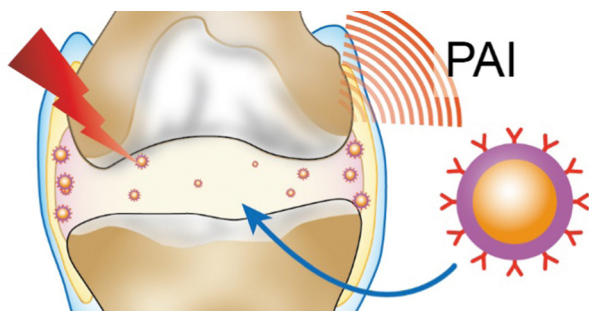
5767



Persistent luminescent nanoparticles for plant imaging: toward exploring the distribution of nanoparticles in plants

Kexin Yu, Xia Sun,* Ruoping Wang, Peng Lin, Liang Song, Junpeng Shi, Fangrong Zhang* and Yun Zhang*

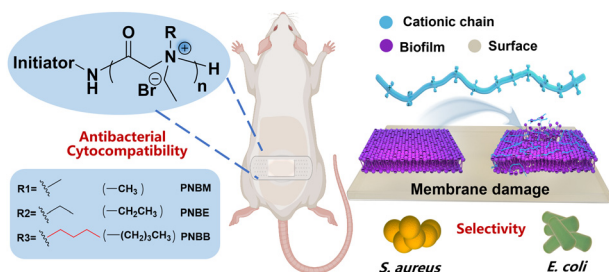
5777



Early diagnosis and treatment of osteoarthritis with a Au@PDA-WL NP nano-probe by photoacoustic imaging

Jingjing Shen, Wenwen Shi, Guan Liu, Wei Zhuang, Kang Wang, Yi Wang, Kangquan Shou, Weibing Wu,* Xiaowen Liu, Quli Fan* and Lei Zhang*

5786



Biocompatible cationic polypeptoids with antibacterial selectivity depending on hydrophobic carbon chain length

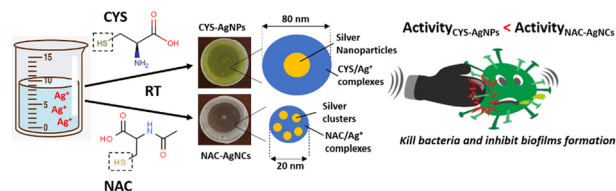
Xiran Shen, Yu Rao, Di Liu, Jinghong Wang, Xiaomeng Niu, Yichen Wang, Wentao Chen, Fan Liu,* Li Guo* and Hong Chen



5794

L-Cysteine and N-acetyl-L-cysteine-mediated synthesis of nanosilver-based sols and hydrogels with antibacterial and antibiofilm properties

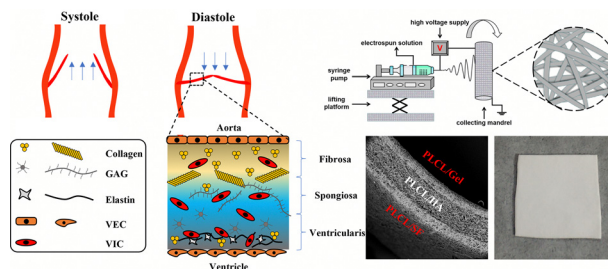
Dmitry V. Vishnevetskii,* Dmitry V. Averkin, Alexey A. Efimov, Anna A. Lizunova, Olga V. Shamova, Elizaveta V. Vladimirova, Maria S. Sukhareva and Arif R. Mekhtiev



5805

Biomimetic polymeric transcatheter heart valve leaflets with low calcification and good regenerative ability

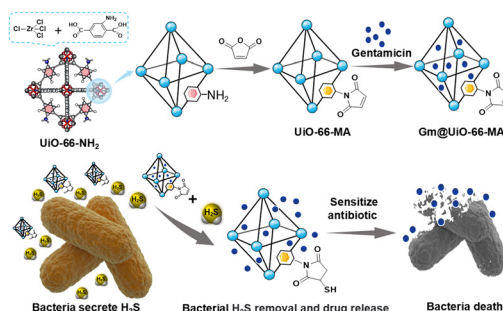
Xiaoxiao Wang, Honghui Jiang, Wenjie Zhang, Yuanyuan Kong, Deling Kong,* Jing Liu* and Zhihong Wang*



5817

H₂S-removing UiO-66 MOFs for sensitized antibacterial therapy

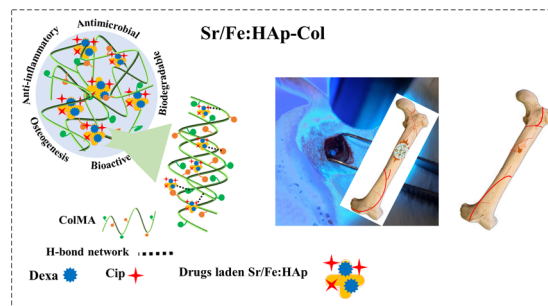
Shaohu Huo, Qianhui Xie, Min Zhang, Zitong Jiang, Ling Fu, Wenhong Li, Chenrong Bian, Kaile Wu, Yulin Zhu,* Xuan Nie* and Shenggang Ding*



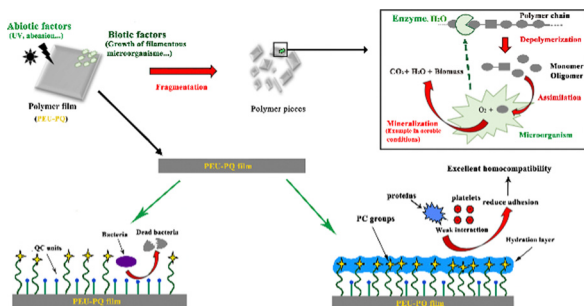
5830

An osteogenic, antibacterial, and anti-inflammatory nanocomposite hydrogel platform to accelerate bone reconstruction

Ismat Ullah, Zahid Hussain, Salim Ullah, Qurat ul ain Zahra, Yajie Zhang, Shah Mehmood, Xingzhu Liu, Edward Kamya, Muhammad Waseem Ghani, Mojtaba Mansoorianfar, Zhili Wang, Zixun Wang and Renjun Pei*



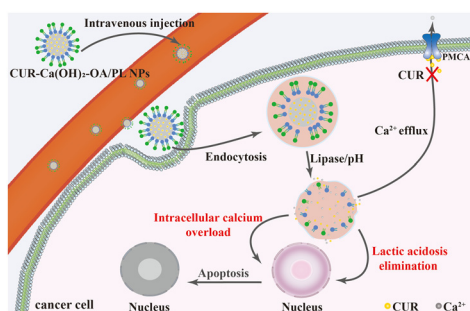
5846



Enhanced hemocompatibility and antibacterial activity of biodegradable poly(ester-urethane) modified with quercetin and phosphorylcholine for durable blood-contacting applications

Tiantian Hao, Guangliang Niu, Hao Zhang, Yuzheng Zhu, Chunxia Zhang, Fanzhao Kong, Jing Xu and Zhaosheng Hou*

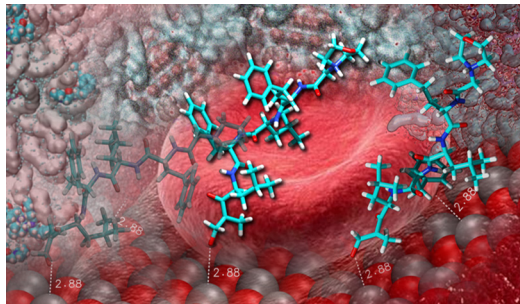
5856



A calcium hydroxide/oleic acid/phospholipid nanoparticle induced cancer cell apoptosis by the combination of intracellular calcium overload and lactic acidosis elimination

Fei Zhou, Yang Yang, Yuying Liu, Haotian Deng, Jianhua Rong and Jianhao Zhao*

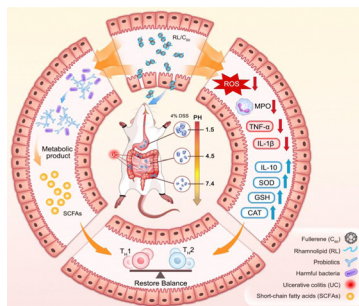
5870



Stability and potential degradation of the α,β' -epoxyketone pharmacophore on ZnO nanocarriers: insights from reactive molecular dynamics and density functional theory calculations

Cheherazade Trouki, Susanna Monti and Giovanni Barcaro*

5882



Ulcerative colitis alleviation of colon-specific delivered rhamnolipid/fullerene nanocomposites via dual modulation in oxidative stress and intestinal microbiome

Yuxuan Xia, Liu Hong,* Jiayao Zheng, Ziyi Lu, Qiong Zhang, Siyu Chen, Zhi Pang, Lei Li, Shumiao Qiao, Qiang Wang, Yonghua Zhou* and Cheng Yang

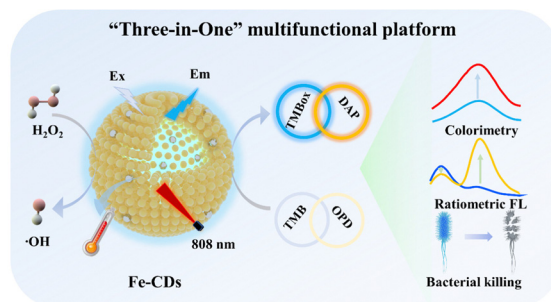


PAPERS

5898

"Three-in-one" platform based on Fe-CDs nanozyme for dual-mode/dual-target detection and NIR-assisted bacterial killing

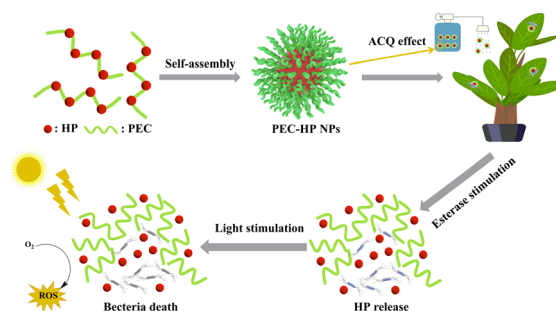
Mei Yang, Jun Yao, Borui Su, Nini Xin, Ting Zhou, Mingze Zeng, Chengheng Wu, Dan Wei, Jing Sun and Hongsong Fan*



5910

A pectin-based photoactivated bactericide nanosystem for achieving an improved utilization rate, photostability and targeted delivery of hematoporphyrin

Yun Li, Zhi Cai,* Yihua Yin,* Ying Yi, Weiquan Cai, Shengxiang Tao, Mengting Du, Jingli Zhang, Ruyu Cao, Yijing Luo and Wenjin Xu



CORRECTION

5922

Correction: Tumor-targeting, enzyme-activated nanoparticles for simultaneous cancer diagnosis and photodynamic therapy

Huaxia Shi, Wucheng Sun, Changbing Liu, Guiying Gu, Bo Ma, Weili Si, Nina Fu, Qi Zhang,* Wei Huang* and Xiaochen Dong*

