# Nanoscale Horizons

The home for rapid reports of exceptional significance in nanoscience and nanotechnology

### rsc.li/nanoscale-horizons

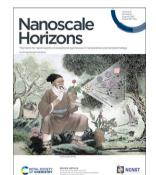
The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

### IN THIS ISSUE

ISSN 2055-6756 CODEN NHAOAW 8(8) 967-1124 (2023)



**Cover** See Ikuhiko Nakase, Shiho Tokonami, Takuya Iida *et al.*, pp. 1034–1042. Image reproduced by permission of Takuya Iida from *Nanoscale Horiz.*, 2023, **8**, 1034.



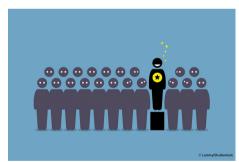


See Xing-Jie Liang, Qian Hua *et al.*, pp. 976–990. Image reproduced by permission of Ya-Li Zhang, Xing-Jie Liang and Qian Hua from *Nanoscale Horiz.*, 2023, **8**, 976.

### EDITORIAL

#### 975

Outstanding Reviewers for *Nanoscale Horizons* in 2022

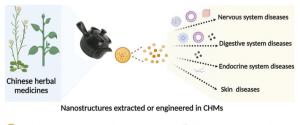


#### REVIEWS

### 976

# Nanostructures in Chinese herbal medicines (CHMs) for potential therapy

Ya-Li Zhang, Ya-Lei Wang, Ke Yan, Qi-Qi Deng, Fang-Zhou Li, Xing-Jie Liang\* and Qian Hua\*



#### **Editorial Staff**

Executive Editor Michaela Mühlberg

Managing Editor

Heather Montgomery Editorial Production Manager

Ionathon Watson Senior Publishing Editor

Alex Metherell

Development Editor Edward Gardner

#### Publishing Editors

Matthew Blow, Chris Dias, Rob Hinde, Ash Hyde, Evie Karkera, Tamara Kosikova, Carole Martin, Kirsty McRoberts, Cat Schofield, Ella White, Tom Williams

Editorial Assistant Elizabeth So

Assistant Editors Jie Gao, Yu Zhang

Publisher Sam Keltie

For queries about submitted papers, please contact Jonathon Watson, Editorial Production Manager in the first instance. E-mail: nanoscalehorizons@rsc.org

For pre-submission queries please contact Michaela Mühlberg, Executive Editor.

E-mail: nanoscalehorizons-rsc@rsc.org

Nanoscale Horizons (print: ISSN 2055-6756 electronic: ISSN 2055-6764) is published 12 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: £2727; \$4500. 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



# Nanoscale Horizons

#### rsc.li/nanoscale-horizons

Nanoscale Horizons is the home for urgent short reports of exceptionally high quality & innovative nanoscience & nanotechnology

Anna Fontcuberta i Morral, École

polytechnique fédérale de Lausanne,

Erlangen-Nürnberg, Germany Zhiyong Tang, National Center for Nanoscience and Technology, China

Jinlan Wang, Southeast University, China

Switzerland Dirk Guldi, Friedrich-Alexander-Universität



Published in collaboration with the National Centre for Nanoscience and Technology, Beijing, China

#### **Editorial Board**

Katharina Landfester, Max Planck Institute for Polymer Research, Germany Scientific Editors

Katsuhiko Ariga, National Institute for

Materials Science (NIMS), Japan Wenlong Cheng, Monash University, Australia Yves Dufrêne, Université Catholique de Louvain, Belgium

#### Advisory Board

Chunli Bai, Chinese Academy of Sciences, China

Uri Banin, Hebrew University of Jerusalem, Israel

Frank Caruso, University of Melbourne, Australia

Cinzia Casiraghi, The University of

Manchester, UK Paola Ceroni, University of Bologna, Italy Chunying Chen, National Center for Nanoscience and Technology, China Xiaodong Chen, Nanyang Technological University, Singapore

Serena Cussen, University of Sheffield, UK Harold Craighead, Cornell University, USA Qing Dai, National Center for Nanoscience and Technology, China

Shuai Dong, Southeast University, China Laura Fabris, Rutgers University, USA Andrea Ferrari, University of Cambridge, UK Raju Kumar Gupta, Indian Institute of

Technology Kanpur, India Nobuhiko Hosono, University of Tokyo, Japan

Xingyu Jiang, Southern University of Science and Technology, China Rongchao Jin, Carnegie Mellon University,

USA Dong Ha Kim, Ewha Womans University, South Korea

Jang-Kyo Kim, University of New South Wales,

Australia Kostas Kostarelos, University of Manchester, UK

#### Community Board

Arun Richard Chandrasekaran, The RNA Institute, University at Albany, SUNY, USA Yuanxing Fang, Fuzhou University, China Azhar Fakharuddin, Interuniversity Microelectronics Centre, Belgium Calum T. J. Ferguson, Max Planck Institute for Polymer Research, Germany Lucas Güniat, EPFL, Switzerland Marilena Hadjidemetriou, University of Manchester, UK Shumeng Hao, Georgia Institute of Technology, USA Jundie Hu, Suzhou University of Science and Technology, China

Information for Authors

#### Full details on how to submit material for publication in Nanoscale Horizons 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/nanoscale-horizons

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.

Yamuna Krishnan, University of Chicago, Tai Wei David Leong, National University of Singapore, Singapore Li Li, Northeastern University, USA Quan Li, Chinese University of Hong Kong, Hong Kong Hong Kong Xing Yi Ling, Nanyang Technological University, Singapore Jie Liu, Duke University, USA Xiaogang Liu, National University of Singapore, Singapore Renzhi Ma, National Institute for Materials Science, Japan Stefan Maier, Monash University, Australia Liberato Manna, Istituto Italiano di Tecnologia, Italy Chad Mirkin, Northwestern University, USA Paul Mulvaney, University of Melbourne, Australia Catherine Murphy, University of Illinois at Urbana-Champaign, USA Valeria Nicolosi, Trinity College Dublin, Ireland Dong Qin, Georgia Institute of Technology, USA Sandra Rosenthal, Vanderbilt University, USA Jungki Ryu, Ulsan National Institute of Science and Technology, Korea Michael Sailor, University of California, San Diego, USA

Ester Segal, Technion - Israel Institute of

Members

Miaofang Chi, Oak Ridge National Laboratory, USA Jin-Hong Park, Pohang University of Science and Technology, South Korea Miqin Zhang, University of Washington, USA

Technology, Israel Elena Shevchenko, Argonne National Laboratory, USA Hisanori Shinohara, Nagoya University, Japan Zuzanna Siwy, University of California, Irvine USA Sara Skrabalak, Indiana University, USA Francesco Stellacci, École polytechnique fédérale de Lausanne, Switzerland Ling-Dong Sun, Peking University, China Shouheng Sun, Brown University, USA Sarah Tolbert, University of California, Los Angeles, USA Jonathan Veinot, University of Alberta, , Canada Umesh Waghmare, Jawaharlal Nehru Centre for Advanced Scientific Research, India Jianfang Wang, Chinese University of Hong Kong, Hong Kong SAR Sharon Weiss, Vanderbilt University, USA Benjamin Wiley, Duke University, USA Wenzhuo Wu, Purdue University, USA Nobuhiro Yanai, Kyushu University, Japan Stefan Zauscher, Duke University, USA Xiao Cheng Zeng, University of Nebraska-China Manzhou Zhu, Anhui University, China

Lincoln, USA Hongjie Zhang, Changchun Institute of Applied Chemistry, China Hua Zhang, City University of Hong Kong,

Jin Zou, University of Queensland, Australia

Shuaidong Huo, Xiamen University, China Ignacio Insua, University of Santiago de Yanlong Wang, Dalian Institute of Chemical Physics, China Compostela, Spain Education and Research Mohali, Indi Jiangjiexing Wu, Tianjin University, China Tong Wu, Qingdao University, China Zhiyuan Liu, Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, Xiuqiang Xie, Hunan University, China Yikai Xu, Queen's University Belfast, UK Fei Zhang, Tianjin University , China Zishuai Zhang, The University of British Saeed Nazemidashtarjandi, The University of Texas at Austin, USA Pepita Pla-Vilanova, University of Lleida, Columbia, Canada Kai Zhu, Harbin Engineering University, China Satyajit Ratha, Indian Institute of Technology Xiaolu Zhuo, The Chinese University of Hong Bhubaneswar, India Pengzhan Sun, University of Manchester, UK Kong, China

> 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 Inclus, which we prove the period of the transformer of the transformer of 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

Paolo Samorì, Université de Strasbourg,

France

China

Spain

article is licensed under a Creative Commons Attribution 3.0 Unported Licence. Open Access Article. Published on 24 July 2023. Downloaded on 8/11/2025 1:14:15 AM. This

### REVIEWS

#### 991

Shape control with atomic precision: anisotropic nanoclusters of noble metals

Yingwei Li\* and Rongchao Jin\*



#### 1014

# Recent progress in construction methods and applications of perovskite photodetector arrays

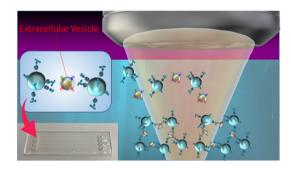
Hui Lu, Wenqiang Wu, Zeping He, Xun Han\* and Caofeng Pan\*

### COMMUNICATIONS

#### 1034

Ultrafast sensitivity-controlled and specific detection of extracellular vesicles using optical force with antibody-modified microparticles in a microflow system

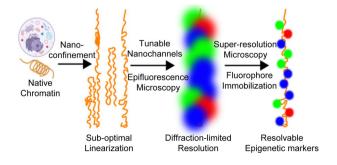
Kana Fujiwara, Yumiko Takagi, Mamoru Tamura, Mika Omura, Kenta Morimoto, Ikuhiko Nakase,\* Shiho Tokonami\* and Takuya Iida\*



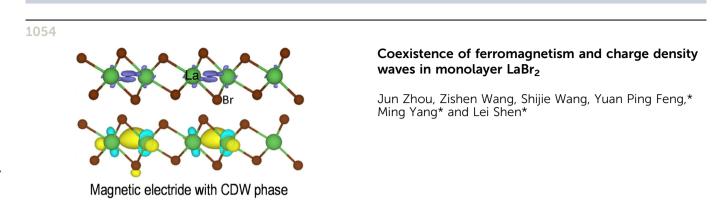
#### 1043

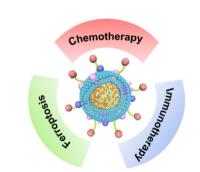
# Super-resolution imaging of linearized chromatin in tunable nanochannels

Ji-Hoon Lee, Joyce Han-Ching Chiu, Nicholas J. Ginga, Tasdiq Ahmed, M. D. Thouless, Yifan Liu\* and Shuichi Takayama\*



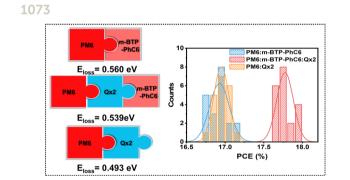
#### COMMUNICATIONS





Engineering magnetotactic bacteria MVs to synergize chemotherapy, ferroptosis and immunotherapy for augmented antitumor therapy

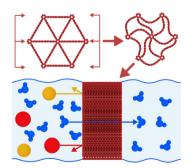
Gexuan Jiang, Zhichu Xiang\* and Qiaojun Fang\*



## Improving the efficiency of ternary organic solar cells by reducing energy loss

Mengni Wang, Yanan Shi, Ziqi Zhang, Yifan Shen, Min Lv, Yangjun Yan, Huiqion Zhou, Jianqi Zhang, Kun Lv, Yajie Zhang,\* Hailin Peng and Zhixiang Wei\*

1082



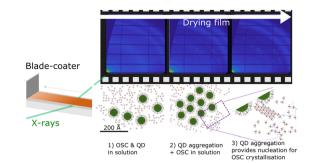
#### Graphene foam membranes with tunable pore size for next-generation reverse osmosis water desalination

Duc Tam Ho, Thi Phuong Nga Nguyen, Arun Jangir and Udo Schwingenschlögl\*

### 1090

Insights into the kinetics and self-assembly order of small-molecule organic semiconductor/quantum dot blends during blade coating

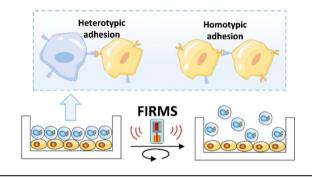
Daniel T. W. Toolan,\* Michael P. Weir, Shuangqing Wang, Simon A. Dowland, Zhilong Zhang, James Xiao, Jonathan Rawle, Neil Greenham, Richard H. Friend, Akshay Rao, Richard A. L. Jones and Anthony J. Ryan



#### 1098

Homotypic and heterotypic adhesion of cancer cells revealed by force-induced remnant magnetization spectroscopy

Jinxiu Zhan, Di Zhang, Feng Feng, Min Xu and Li Yao\*



### 1106

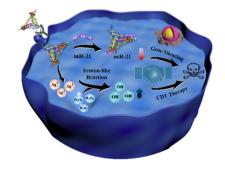
Multifunctional DNA nanoprobe for tumor-targeted synergistic therapy by integrating chemodynamic therapy with gene silencing

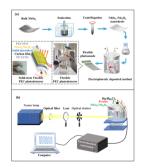
Qiaorong Tang, Qianqian Li, Lu Shi, Wei Liu, Baoxin Li and Yan Jin\*

#### 1113

Two dimensional NbSe<sub>2</sub>/Nb<sub>2</sub>O<sub>5</sub> metal-semiconductor heterostructure-based photoelectrochemical photodetector with fast response and high flexibility

Xiang Xu,\* Chunhui Lu, Ying Wang, Xing Bai, Zenghui Liu, Ying Zhang and Dengxin Hua





#### CORRECTION

#### 1122

# Correction: Multiplexed molecular imaging with surface enhanced resonance Raman scattering nanoprobes reveals immunotherapy response in mice *via* multichannel image segmentation

Chrysafis Andreou,\* Konstantinos Plakas, Naxhije Berisha, Mathieu Gigoux, Lauren E. Rosch, Rustin Mirsafavi, Anton Oseledchyk, Suchetan Pal, Dmitriy Zamarin, Taha Merghoub, Michael R. Detty and Moritz F. Kircher