

Nanoscale Horizons

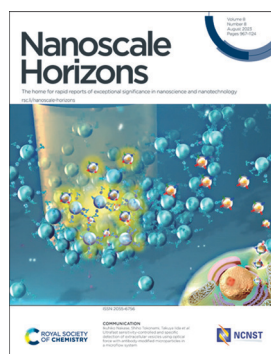
The home for rapid reports of exceptional significance in nanoscience and nanotechnology

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.



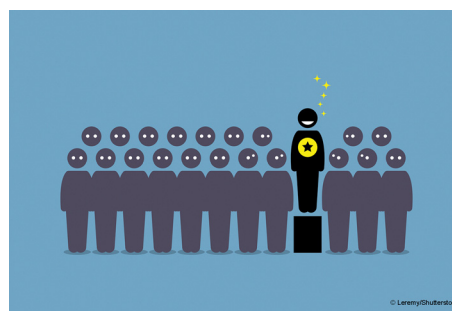
Inside cover

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

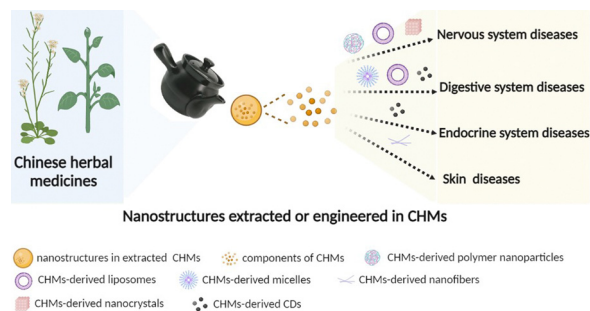


REVIEWS

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

Jonathon 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 0WE.

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 0WE, 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



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

Editorial Board

Chair

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 Dufr ne, Universit  Catholique de Louvain, Belgium

Anna Fontcuberta i Morral,  cole polytechnique f d rale de Lausanne, Switzerland
Dirk Guldi, Friedrich-Alexander-Universit t Erlangen-N rnberg, Germany
Zhiyong Tang, National Center for Nanoscience and Technology, China
Jinlan Wang, Southeast University, China

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

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

Yamuna Krishnan, University of Chicago, USA
Tai Wei David Leong, National University of Singapore, Singapore
Li Li, Northeastern University, USA
Quan Li, Chinese University of 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
Paolo Samori, Universit  de Strasbourg, France
Ester Segal, Technion - Israel Institute of

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,  cole polytechnique f d rale 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-Lincoln, USA
Hongjie Zhang, Changchun Institute of Applied Chemistry, China
Hua Zhang, City University of Hong Kong, China
Manzhou Zhu, Anhui University, China
Jin Zou, University of Queensland, Australia

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 G niat, EPFL, Switzerland
Marilena Hadjijdemetriou, University of Manchester, UK
Shumeng Hao, Georgia Institute of Technology, USA
Jundie Hu, Suzhou University of Science and Technology, China

Shuaidong Huo, Xiamen University, China
Ignacio Insua, University of Santiago de Compostela, Spain
Education and Research Mohali, Indi
Zhiyuan Liu, Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, China
Saeed Nazemidashtarjandi, The University of Texas at Austin, USA
Pepta Pla-Vilanova, University of Lleida, Spain
Satyajit Ratha, Indian Institute of Technology Bhubaneswar, India
Pengzhan Sun, University of Manchester, UK

Yanlong Wang, Dalian Institute of Chemical Physics, China
Jiangjiexing Wu, Tianjin University, China
Tong Wu, Qingdao University, China
Xiuqiang Xie, Hunan University, China
Yikai Xu, Queen's University Belfast, UK
Fei Zhang, Tianjin University, China
Zishuai Zhang, The University of British Columbia, Canada
Kai Zhu, Harbin Engineering University, China
Xiaolu Zhuo, The Chinese University of Hong Kong, 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.

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

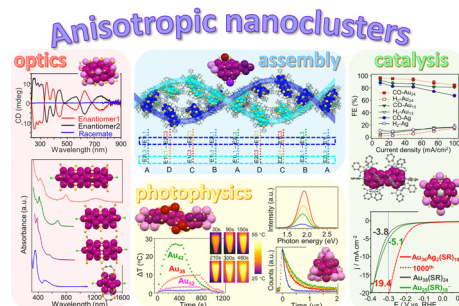


REVIEWS

991

Shape control with atomic precision: anisotropic nanoclusters of noble metals

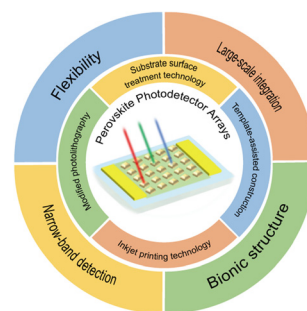
Yingwei Li* and Rongchao Jin*



1014

Recent progress in construction methods and applications of perovskite photodetector arrays

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

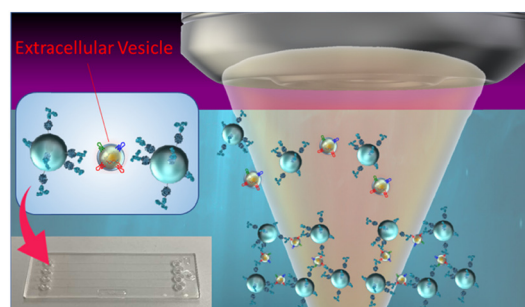


COMMUNICATIONS

1034

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

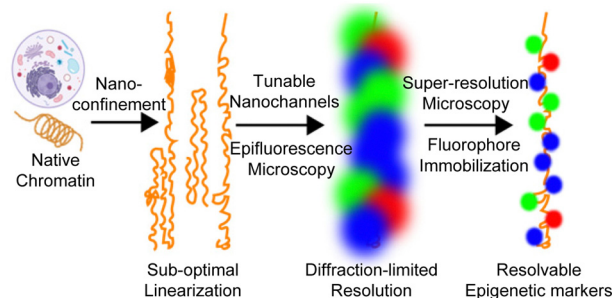
Kana Fujiwara, Yumiko Takagi, Mamoru Tamura, Mika Omura, Kenta Morimoto, Ikuhiko Nakase,* Shiho Tokonami* and Takuya Iida*



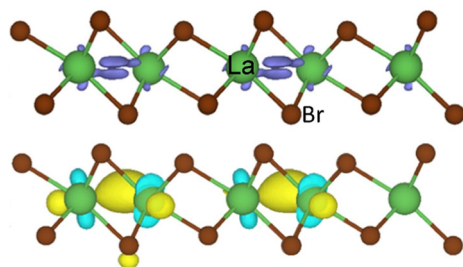
1043

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*



1054

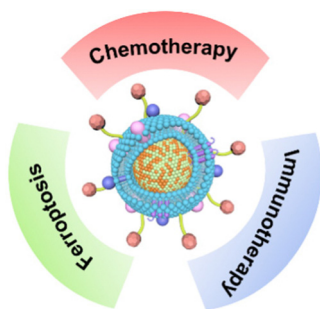


Magnetic electride with CDW phase

Coexistence of ferromagnetism and charge density waves in monolayer LaBr_2

Jun Zhou, Zishen Wang, Shijie Wang, Yuan Ping Feng,*
Ming Yang* and Lei Shen*

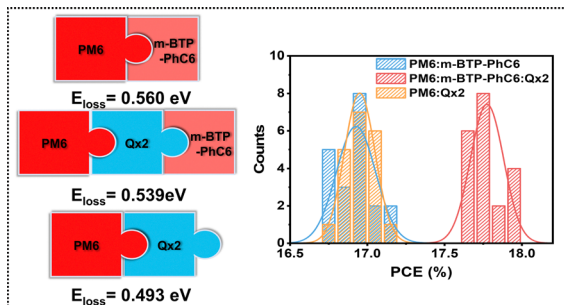
1062



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

Gexuan Jiang, Zhichu Xiang* and Qiaojun Fang*

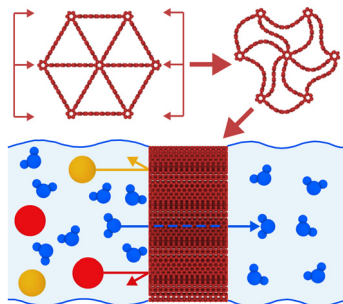
1073



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

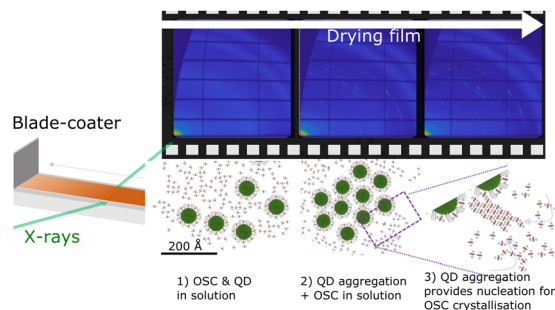
Duc Tam Ho, Thi Phuong Nga Nguyen, Arun Jangir and
Udo Schwingschlögl*



1090

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

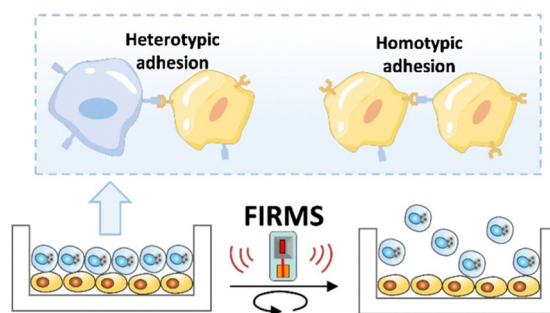
Daniel T. W. Toolan,* Michael P. Weir, Shuangqing Wang, Simon A. Dowland, Zhilong Zhang, James Xiao, Jonathan Rawle, Neil Greenham, Richard H. Friend, Akshay Rao, Richard A. L. Jones and Anthony J. Ryan



1098

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

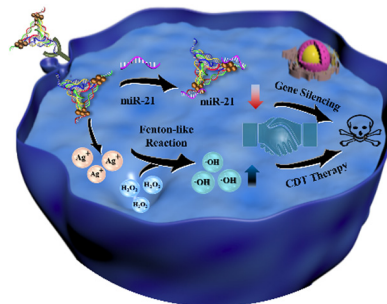
Jinxiu Zhan, Di Zhang, Feng Feng, Min Xu and Li Yao*



1106

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

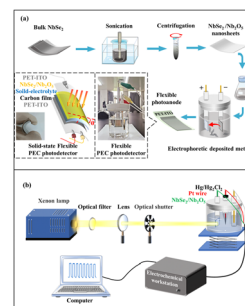
Qiaorong Tang, Qianqian Li, Lu Shi, Wei Liu, Baoxin Li and Yan Jin*



1113

Two dimensional NbSe₂/Nb₂O₅ 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 nanoprobe 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

