

Nanoscale Horizons

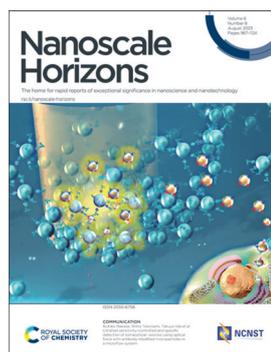
The home for rapid reports of exceptional significance in nanoscience and nanotechnology

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.



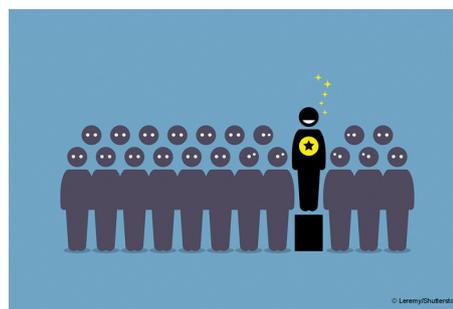
Inside cover

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

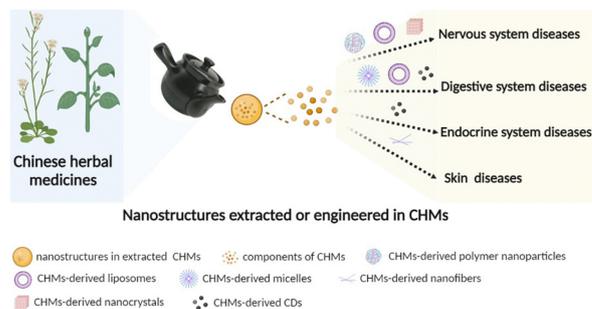


REVIEWS

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 Dufre 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 n at, 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

Pepita 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

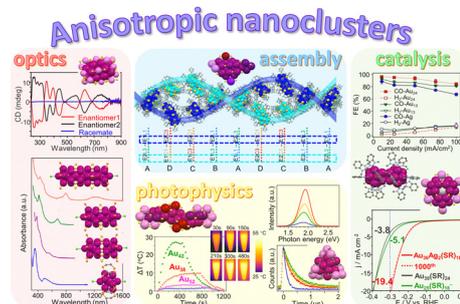


REVIEWS

991

Shape control with atomic precision: anisotropic nanoclusters of noble metals

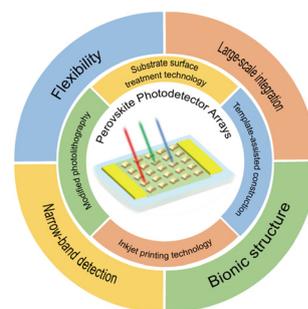
Yingwei Li* and Rongchao Jin*



1014

Recent progress in construction methods and applications of perovskite photodetector arrays

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

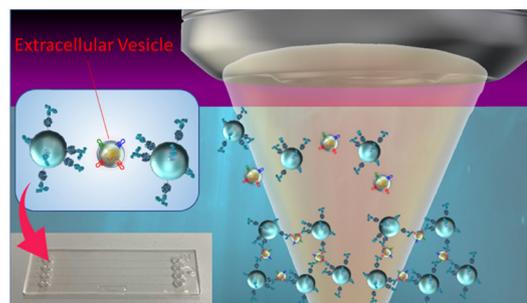


COMMUNICATIONS

1034

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

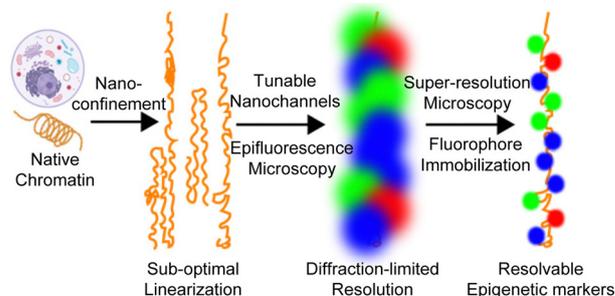
Kana Fujiwara, Yumiko Takagi, Mamoru Tamura, Mika Omura, Kenta Morimoto, Ikuhiko Nakase,* Shiho Tokonami* and Takuya Iida*



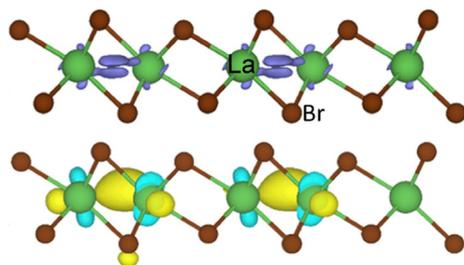
1043

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

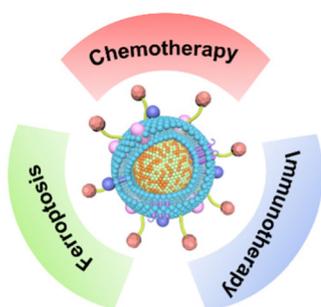


Magnetic electride with CDW phase

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*

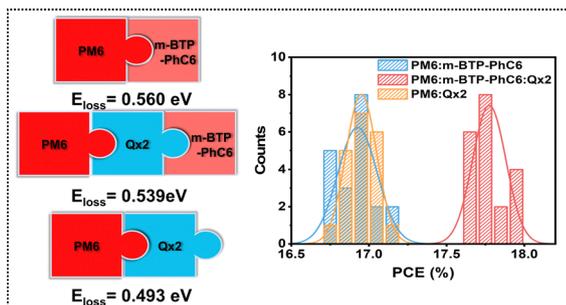
1062



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

Gexuan Jiang, Zhichu Xiang* and Qiaojun Fang*

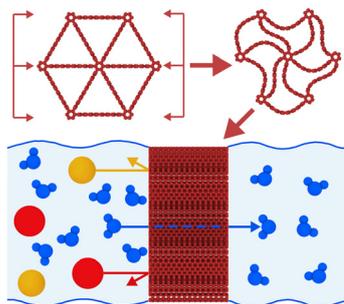
1073



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

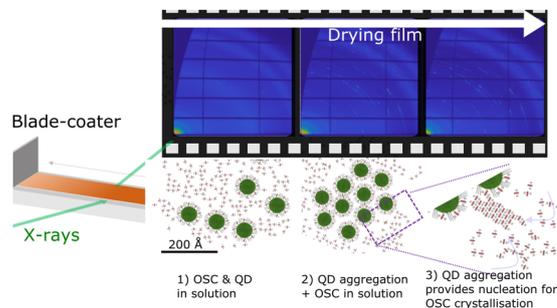
Duc Tam Ho, Thi Phuong Nga Nguyen, Arun Jangir and Udo Schwingschlögl*



1090

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

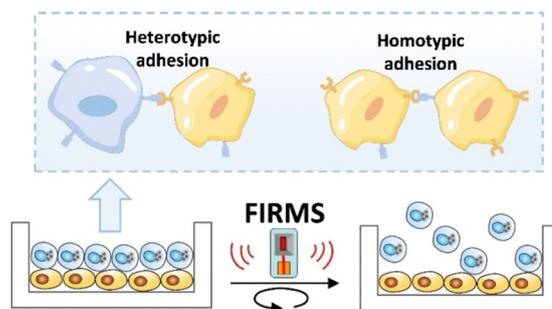
Daniel T. W. Toolan,* Michael P. Weir, Shuangqing Wang, Simon A. Dowland, Zhilong Zhang, James Xiao, Jonathan Rawle, Neil Greenham, Richard H. Friend, Akshay Rao, Richard A. L. Jones and Anthony J. Ryan



1098

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

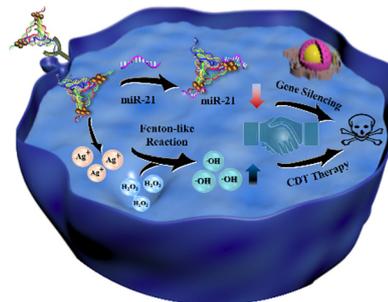
Jinxiu Zhan, Di Zhang, Feng Feng, Min Xu and Li Yao*



1106

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

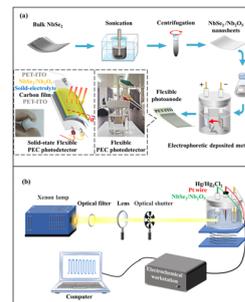
Qiaorong Tang, Qianqian Li, Lu Shi, Wei Liu, Baoxin Li and Yan Jin*



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 Oseledchik, Suchetan Pal, Dmitriy Zamarin, Taha Merghoub, Michael R. Detty and Moritz F. Kircher

