

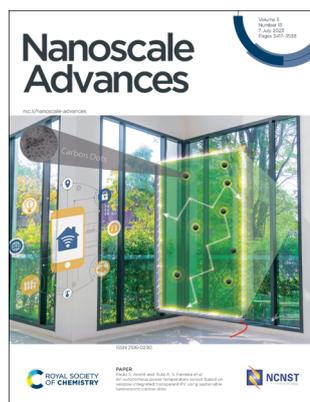
# Nanoscale Advances

An open access journal publishing across the breadth of nanoscience and nanotechnology  
[rsc.li/nanoscale-advances](https://rsc.li/nanoscale-advances)

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 2516-0230 CODEN NAADAI 5(13) 3417–3538 (2023)



**Cover**  
See Paulo S. André and Rute A. S. Ferreira *et al.*, pp. 3428–3438. Image reproduced by permission of Dr Rute Ferreira from *Nanoscale Adv.*, 2023, 5, 3428.



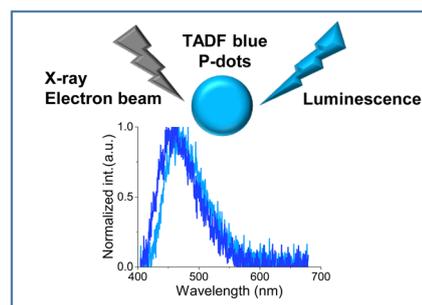
**Inside cover**  
See Guillem Pratx, Mamoru Fujitsuka, Yasuko Osakada *et al.*, pp. 3424–3427. Image reproduced by permission of Dr Yasuko Osakada from *Nanoscale Adv.*, 2023, 5, 3424.

## COMMUNICATION

3424

### Radioluminescence from polymer dots based on thermally activated delayed fluorescence

Daiki Asanuma, Hieu Thi Minh Nguyen, Zuoyue Liu, Sachiko Tojo, Hajime Shigemitsu, Minoru Yamaji, Kiyohiko Kawai, Tadashi Mori, Toshiyuki Kida, Guillem Pratx,\* Mamoru Fujitsuka\* and Yasuko Osakada\*

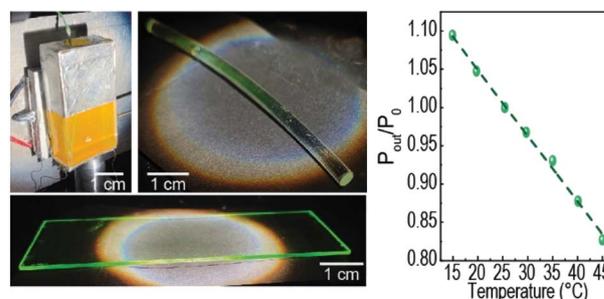


## PAPERS

3428

### An autonomous power temperature sensor based on window-integrated transparent PV using sustainable luminescent carbon dots

Sandra F. H. Correia,\* Lianshe Fu, Lilia M. S. Dias, Rui F. P. Pereira, V. de Zea Bermudez, Paulo S. André and Rute A. S. Ferreira\*



## Editorial Staff

### Executive Editor

Jeremy Allen

### Deputy Editor

Hannah Kerr

### Editorial Assistant

Rosie Hague

### Editorial Production Manager

Christopher Goodall

### Assistant Editors

Zita Zachariah and Serra Arslanlan Sengelen

### Publisher

Neil Hammond

For queries about submitted papers, please contact Christopher Goodall, Editorial Production Manager in the first instance. E-mail: [nanoscaleadvances@rsc.org](mailto:nanoscaleadvances@rsc.org)

For pre-submission queries please contact Jeremy Allen, Executive Editor. E-mail: [nanoscaleadvances-rsc@rsc.org](mailto:nanoscaleadvances-rsc@rsc.org)

Nanoscale Advances (electronic: ISSN 2516-0230) is published 24 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WE.

Nanoscale Advances is a Gold Open Access journal and all articles are free to read. Please email [orders@rsc.org](mailto:orders@rsc.org) to register your interest or contact 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](mailto:orders@rsc.org)

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](mailto:advertising@rsc.org)

For marketing opportunities relating to this journal, contact [marketing@rsc.org](mailto:marketing@rsc.org)

# Nanoscale Advances

[rsc.li/nanoscale-advances](http://rsc.li/nanoscale-advances)

*Nanoscale Advances* publishes experimental and theoretical work across the breadth of nanoscience and nanotechnology.



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

## Editorial Board

### Editors-in-chief

Chunli Bai, National Centre for Nanoscience and Nanotechnology, China

Dirk Guldi, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

### Associate Editors

Cinzia Casiraghi, University of Manchester, UK  
Gianurelio (Giovanni) Cuniberti, TU Dresden, Germany

Qing Dai, National Center for Nanoscience and Technology of China, China

Yves Dufrene, Université Catholique de Louvain, Belgium

Andrea Ferrari, University of Cambridge, UK  
Dong Ha Kim, Ewha Womens University, Korea

Christian Klinke, University of Rostock, Germany

Quan Li, The Chinese University of Hong Kong, Hong Kong

Zhiqun Lu, National University of Singapore, Singapore

Xing Yi Ling, Nanyang Technological University, Singapore

Xiaogang Liu, National University of Singapore, Singapore

Renzhi Ma, National Institute for Materials Science, Japan

Janet Macdonald, Vanderbilt University, USA  
Teresa Pellegrino, Istituto Italiano di Tecnologia, Italy

Elena Shevchenko, Argonne National Laboratory, USA

Jonathan Veinot, University of Alberta, Canada  
Umesh Waghmare, JNCASR, India

Jinlan Wang, Southeast University, China  
Manzhou Zhu, Anhui University, China

Jin Zou, University of Queensland, Australia

## Advisory Board

Suryasarathi Bose, Indian Institute of Science Bangalore, India

Stephanie Brock, Wayne State University, USA

Raffaella Buonsanti, EPFL, Switzerland

Chunying Chen, National Centre for Nanoscience and Technology of China, China

Jingyi Chen, University of Arkansas, USA

Xiaodong Chen, Nanyang Technological University, Singapore

Wenlong Cheng, Monash University, Australia

Serena Cussen, University of Sheffield, UK

Mita Dasog, Dalhousie University, Canada

Kristen Fichthorn, Penn State University, USA

Christy Haynes, University of Minnesota, USA

Guohua Jia, Curtin University, Australia

Xingyu Jiang, Southern University of Science and Technology, China

Rongchao Jin, Carnegie Mellon University, USA

Song Jin, University of Wisconsin, USA

Jesse Jokerst, University of California San Diego, USA

Kourosh Kalantar-zadeh, The University of Sydney, Australia

Katharina Landfester, Max Planck Institute for Polymer Research, Germany

Dattatray Late, CSIR - National Chemical Laboratory, India

Pooi See Lee, Nanyang Technological University, Singapore

Changming Li, Southwest University, China

Jie Liu, Duke University, USA

Laura Na Liu, Max Planck Institute for Intelligent Systems, Germany

Liberato Manna, Istituto Italiano di Tecnologia, Italy

Anna Fontcuberta i Morral, EPFL, Switzerland

Catherine Murphy, University of Illinois at Urbana-Champaign, USA

Kostya Ostrikov, Queensland University of Technology, Australia

So-Jung Park, Ewha Womens University, Korea

Lakshmi Polavarapu, University of Vigo, Spain

Thalappil Pradeep, Indian Institute of Technology Madras, India

Narayan Pradhan, Indian Association for the Cultivation of Science, India

Dong Qin, Georgia Tech University, USA

Michael Sailor, University of California, San Diego, USA

Hyeon Suk Shin, Ulsan National Institute of Science and Technology, South Korea

Zhigang Shuai, Tsinghua University, China

Sara Skrabalak, Indiana University, USA

Francesco Stellacci, EPFL, Switzerland

Hong-Bo Sun, Jilin University, China

Shouheng Sun, Brown University, USA

Xiaoming Sun, Beijing University of Chemical Technology, China

Dmitri Talapin, University of Chicago, USA

Zhiyong Tang, National Center for

NanoScience and Technology, China

Mauricio Terrones, The Pennsylvania State University, USA

Sarah Tolbert, University of California, Los Angeles, USA

Ventsislav Valev, University of Bath, UK

Miriam Vitiello, CNR Nanotec, Italy

Jianfang Wang, Chinese University of Hong Kong, Hong Kong SAR

Benjamin Wiley, Duke University, USA

Xiaoqun Wu, University of Science and Technology of China, China

Yujie Xiong, University of Science and Technology of China, China

Hongxing Xu, Wuhan University, China

Lin Xu, Nanjing Normal University, China

Ya Yang, Beijing Institute of Nanoenergy and Nanosystems, Chinese Academy of Sciences, China

Jinhua Ye, National Institute for Materials Science, Japan

Xiao Cheng Zeng, University of Nebraska-Lincoln, USA

Gang Zhang, Institute of High Performance Computing, Singapore

Hua Zhang, City University of Hong Kong, China

Miqin Zhang, University of Washington, USA

## Information for Authors

Full details on how to submit material for publication in Nanoscale Advances 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-advances](http://rsc.li/nanoscale-advances)

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.

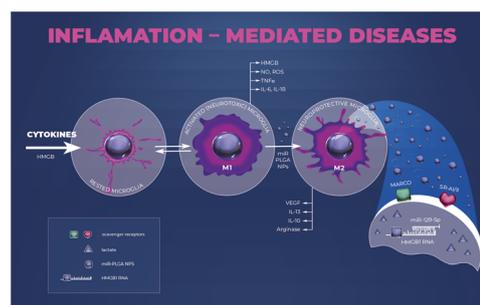
Registered charity number: 207890



3439

### Optimization and characterization of miRNA-129-5p-encapsulated poly (lactic-co-glycolic acid) nanoparticles to reprogram activated microglia

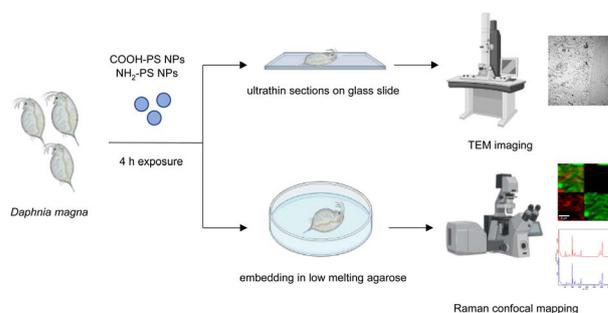
Irina Kalashnikova, Heather Cambell, Daniel Kolpek and Jonghyuck Park\*



3453

### Label-free detection of polystyrene nanoparticles in *Daphnia magna* using Raman confocal mapping

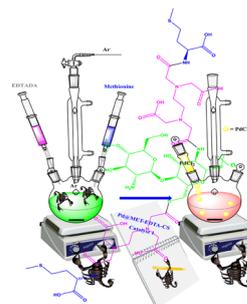
Jasreen Kaur, Egle Kelpsiene, Govind Gupta, Illia Dobryden, Tommy Cedervall and Bengt Fadeel\*



3463

### Supramolecular Pd@methioine-EDTA-chitosan nanocomposite: an effective and recyclable bio-based and eco-friendly catalyst for the green Heck cross-coupling reaction under mild conditions

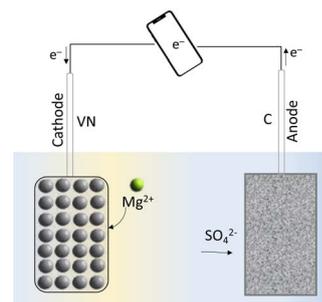
Mohammad Dohendou, Mohammad G. Dekamin\* and Danial Namaki



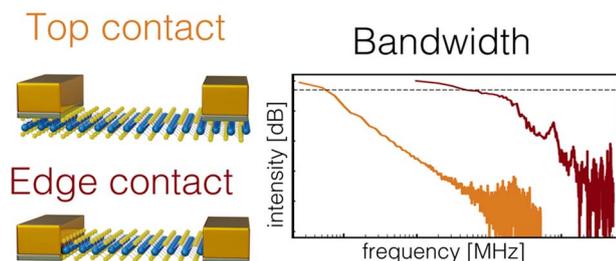
3485

### Superior cyclability of high surface area vanadium nitride in salt electrolytes

James Kasten, Cheng-Che Hsiao, Denis Johnson and Abdoulaye Djire\*



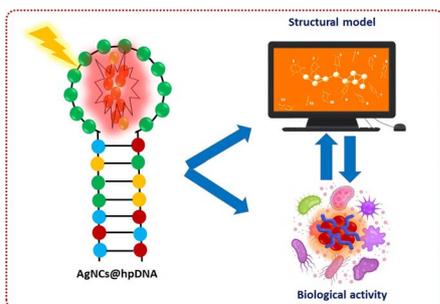
3494



### Edge contacts accelerate the response of MoS<sub>2</sub> photodetectors

Fabian Strauß, Christine Schedel and Marcus Scheele\*

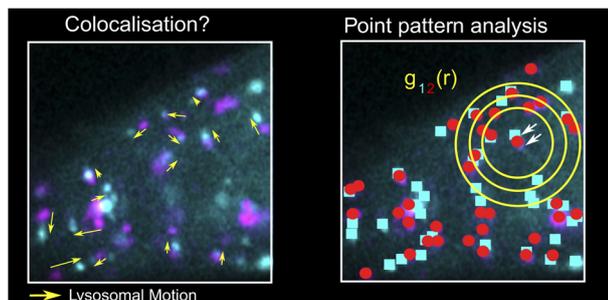
3500



### Optical, structural, and biological properties of silver nanoclusters formed within the loop of a C-12 hairpin sequence

Akhilesh Kumar Gupta, Nolan Marshall, Liam Yourston, Lewis Rolband, Damian Beasock, Leyla Danai, Elizabeth Skelly, Kirill A. Afonin and Alexey V. Krasnoslobodtsev\*

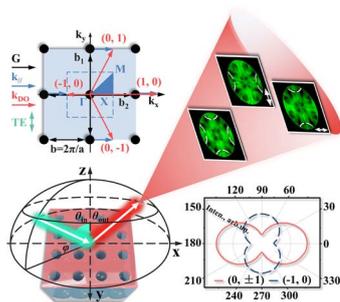
3512



### Identification of nanoparticles as vesicular cargo *via* Airy scanning fluorescence microscopy and spatial statistics

Christian Wimmenauer and Thomas Heinzel\*

3521



### Direction- and polarization-tunable spontaneous emission beneficial from diffraction orders of a square R6G-nanopore array

Shijia He, Yi Wang,\* Tianyu Wang, Dongda Wu, Junqiao La, Jiang Hu, Jiamin Xiao and Wenxin Wang\*



3527

## A tube-like Pd@coordination polymer with enhanced solar light harvesting for boosting photocatalytic H<sub>2</sub> production in a wide pH range and seawater

Jieling Li, Shihao Sun, Ningshuang Gao, Hua Li, Kun Liang,\* Jun Hai, Suisui He, Xijiao Mu\* and Baodui Wang\*

