

Materials Advances

An open access journal publishing across the breadth of materials science

rsc.li/materials-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 2633-5409 CODEN MAADC9 4(7) 1615-1786 (2023)



Cover

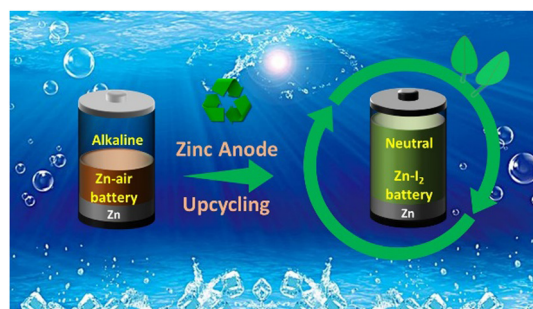
See Shinichi Komaba
et al., pp. 1637–1647.
Image reproduced
by permission of
Ryoichi Tatara
from *Mater. Adv.*,
2023, 4, 1637.

COMMUNICATIONS

1623

High-performance anodes for aqueous Zn–iodine batteries from spent Zn–air batteries

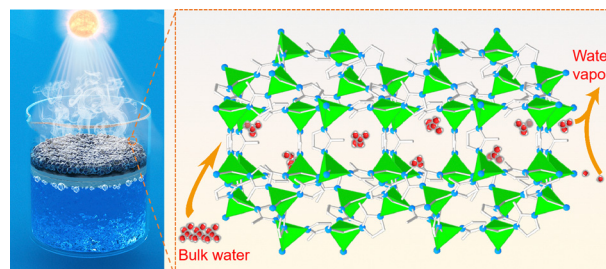
Xiaofeng Shan, Yanqing Fu,* Dongdong Zhang, Pan Li, Weiyou Yang and Qiliang Wei*



1628

Composite membranes based on self-crosslinking polyelectrolyte-wrapped ZIF-8/CNT nanoparticles for solar steam evaporation

Yingying Zhu, Hongyu Lan, Panpan He, Xiangwei Zhu, Jiang Gong, Zhiyue Dong* and Minghua Zeng*



Editorial Staff

Executive Editor

Jeremy Allen

Deputy Editor

Hannah Kerr

Editorial Production Manager

Christopher Goodall

Assistant Editors

Zita Zachariah and Serra Arslanlan Sengelen

Editorial Assistant

Rosie Hague

Publishing Assistant

Allison Holloway

Publisher

Neil Hammond

For queries about submitted papers, please contact Christopher Goodall, Editorial Production Manager in the first instance. E-mail: materialsadvances@rsc.org

For pre-submission queries please contact Jeremy Allen, Executive Editor.

E-mail: materialsadvances-rsc@rsc.org

Materials Advances (electronic: ISSN 2633-5409) is published 24 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF.

Materials Advances is a Gold Open Access journal and all articles are free to read. Please email 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 0WF, UK Tel +44 (0)1223 432398; E-mail: 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

For marketing opportunities relating to this journal, contact marketing@rsc.org

Materials Advances

rsc.li/materials-advances

Materials Advances publishes experimental and theoretical work across the breadth of materials science.

Editorial Board

Editors-in-Chief

Anders Hagfeldt, EPFL, Switzerland
Jeroen Cornelissen, University of Twente, The Netherlands
Natalie Stingelin, Georgia Institute of Technology, USA

Associate Editors

A. S. Achalkumar, Indian Institute of Technology, India
Veronica Augustyn, North Carolina State University, USA
Viola Birss, University of Calgary, Canada
Jiang Chang, Shanghai Institute of Ceramics, China
Elizabeth Cosgriff-Hernandez, University of Texas at Austin, USA
Rachel Crespo-Otero, Queen Mary University of London, UK
Gemma-Louise Davies, University College London, UK
Goutam De, S N Bose National Centre for Basic Sciences, India
Renaud Demadrille, Interdisciplinary Research Institute of Grenoble, France
Antonio Facchetti, Northwestern University and Flexterra Corporation, USA
Ghim Wei Ho, National University of Singapore, Singapore
Luis Hueso, CIC nanoGUNE, Spain

Yun Jeong Hwang, Korea Institute of Science and Technology, South Korea
Unyong Jeong, POSTECH, South Korea
Ji Jian, Zhejiang University, China
Oana Jurchescu, Wake Forest University, USA
Kisuk Kang, Seoul National University, South Korea
Subrata Kundu, Central Electrochemical Research Institute (CECRI), India
Dan Li, Jinan University, China
Mingzhu Li, Chinese Academy of Sciences, China
Shaolin Liu, Harbin Institute of Technology, China
David Lou, Nanyang Technological University, Singapore
Yi-Chun Lu, The Chinese University of Hong Kong, Hong Kong
Martyn McLachlan, Imperial College London, UK
Yoshiko Miura, Kyushu University, Japan
Kasper Moth-Poulsen, Chalmers University of Technology, Sweden
Ana Flavia Nogueira, University of Campinas, Brazil
Marc in het Panhuis, University of Wollongong, Australia
Shizhang Qiao, University of Adelaide, Australia

Xiaogang Qu, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, China
Erin Ratcliff, University of Arizona, USA
Neil Robertson, University of Edinburgh, UK
Federico Rosei, University of Trieste, Italy
Jennifer Rupp, Massachusetts Institute of Technology, USA
Miriam Unterlass, Vienna University of Technology, Austria
Yana Vaynzof, Technical University of Dresden, Germany
Jessica Winter, Ohio State University, USA
Miriam Wong, Nanyang Technological University, Singapore
Li-Zhu Wu, Technical Institute of Physics and Chemistry, China
Zhiguo Xia, South China University of Technology, China
Yusuke Yamauchi, University of Queensland, Australia
Yadong Yin, University of California, Riverside, USA
Xiaowei Zhan, Peking University, China
Haoli Zhang, Lanzhou University, China
Ni Zhao, Chinese University of Hong Kong, Hong Kong
Zhen Zhou, Nankai University, China

Advisory Board

Please see the Materials Advances journal webpage for full details of our advisory board: rsc.li/materials-advances

Information for Authors

Full details on how to submit material for publication in Materials 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/materials-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

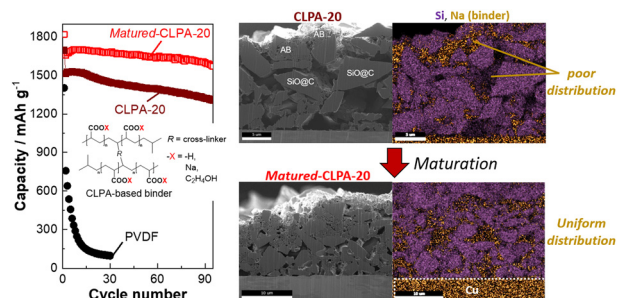


PAPERS

1637

High-performance SiO electrodes for lithium-ion batteries: merged effects of a new polyacrylate binder and an electrode-maturation process

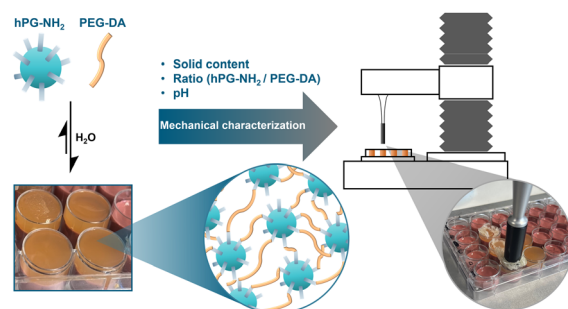
Shogo Yamazaki, Ryoichi Tatara, Hironori Mizuta, Kei Kawano, Satoshi Yasuno and Shinichi Komaba*



1648

Synthesis and characterization of a Schiff base crosslinked hydrogel based on hyperbranched polyglycerol

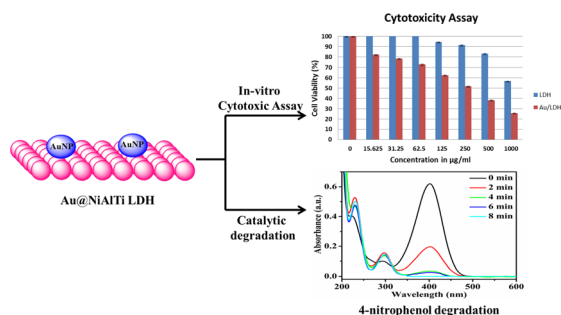
Kyriakos Karakyriazis, Vanessa Lührs, Sebastian Stößlein, Ingo Grunwald and Andreas Hartwig*



1656

Exploring the catalytic degradation of 4-nitrophenol and *in vitro* cytotoxicity of gold nanoparticle-doped NiAlTi LDH

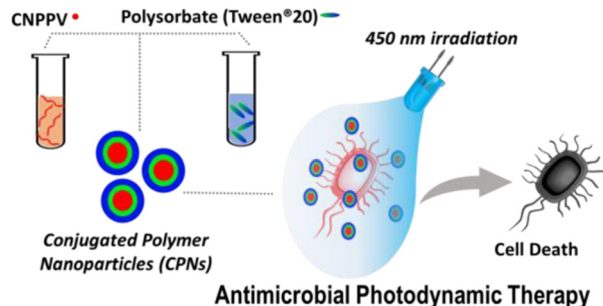
Garima Rathee, Heerak Chugh, Sahil Kohli, Rajesh K. Gaur and Ramesh Chandra*



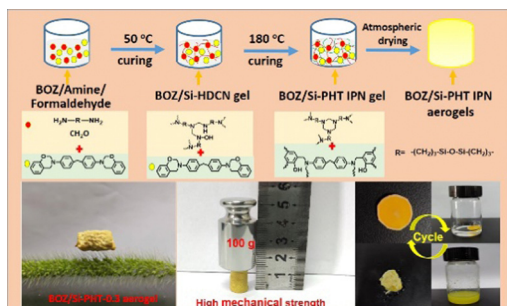
1664

Conjugated polymer nanoparticles with tunable antibacterial photodynamic capability

Anderson R. L. Caires,* Thalita H. N. Lima and Thais F. Abelha*



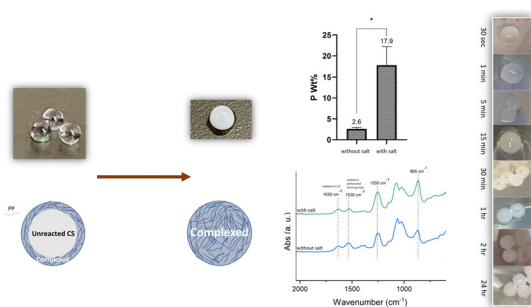
1671



High mechanically enhanced and degradable polybenzoxazine/polyhexahydrotriazine IPN aerogels by atmospheric drying

Yi Xu,* Xinyue Sun, Keqi Zhu, Shumin Xu, Changhui Liu, Shenghua Xiong and Chao Li*

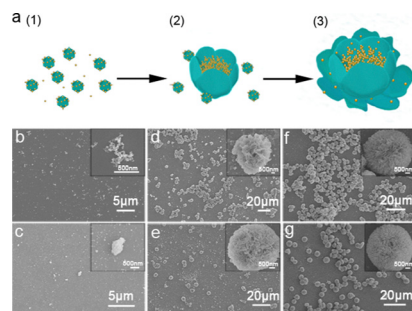
1678



Macro bead formation based on polyelectrolyte complexation between long-chain polyphosphates and chitosan

Sajjad Fanaee and Mark Joseph Filiaggi*

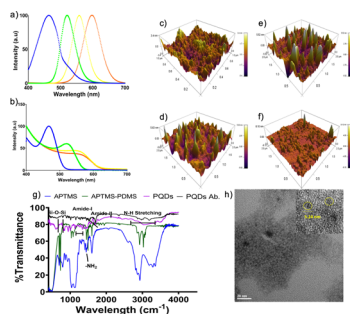
1687



Luminescent protein-rare earth fluoride nanoflowers

Wenyu Wei, Manman He, Jianrui Ma, Yirui Fan, Peng Liu* and Jianxi Xiao*

1694



Exploiting the UV excited size-dependent emission of PDMS-coated CdTe quantum dots for *in vitro* simultaneous multicolor imaging of HepG2 cellular organelles

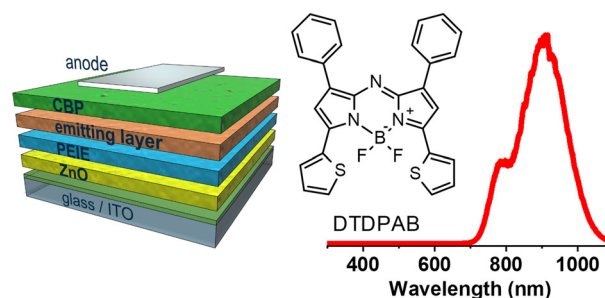
Sulaxna Pandey and Dhananjay Bodas*



1702

AZABODIPY aggregates as a promising electroluminescent material for sustainable NIR OLED applications

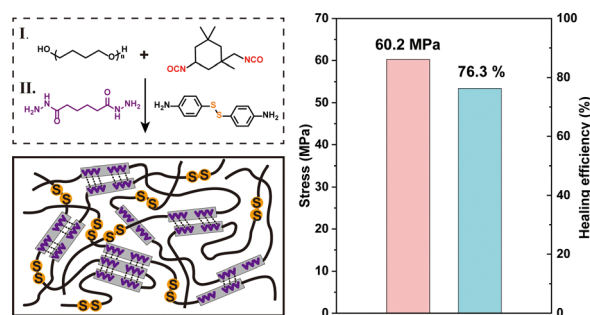
Wojciech Mróz,* Benedetta Maria Squeo, Barbara Vercelli, Chiara Botta and Mariacecilia Pasini



1711

Tough polyurethane elastomers with high strength and rapid healing ability

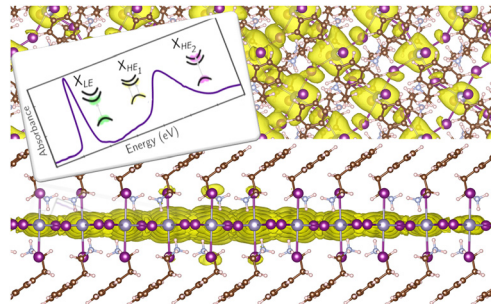
Chenghui Qiao, Xiurui Jian, Zhengguo Gao, Qingfu Ban,* Xintao Zhang, Huimin Wang and Yaochen Zheng*



1720

Plurality of excitons in Ruddlesden–Popper metal halides and the role of the B-site metal cation

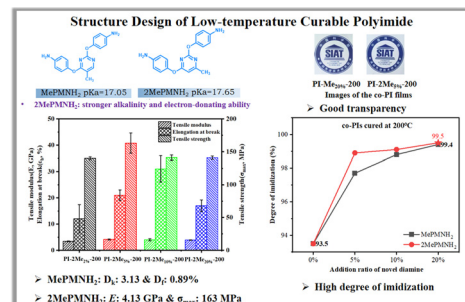
Giulia Folpini, Maurizia Palummo,* Daniele Cortecchia, Luca Moretti, Giulio Cerullo, Annamaria Petrozza, Giacomo Giorgi* and Ajay Ram Srimath Kandada*



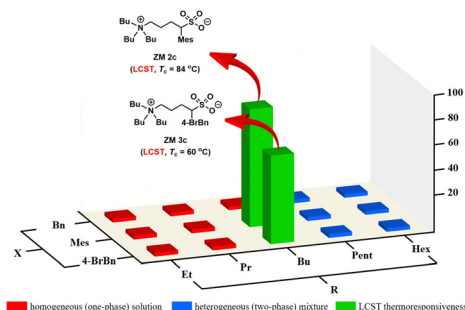
1731

High-performance low temperature curable copolyimides *via* multidimensional modulation in alkaline environment and electronic effects of monomers

Xialei Lv, Shan Huang, Zimeng He, Jinhui Li,* Siyao Qiu, Tao Wang, Yun Bai, Yao Zhang, Guoping Zhang* and Rong Sun



1740

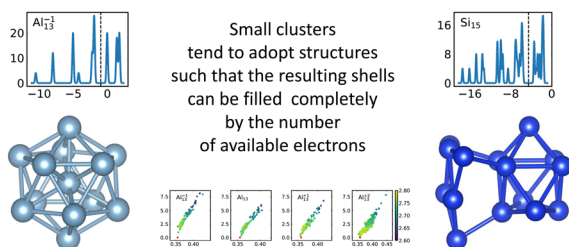


Exploiting α -benzylated 1,4-butanedisulfonates to expedite the discovery of small-molecule, LCST-type sulfobetaine zwitterionic materials

Yen-Ho Chu,* Pin-Hsuan Chen and Hsin-Heng Huang

1746

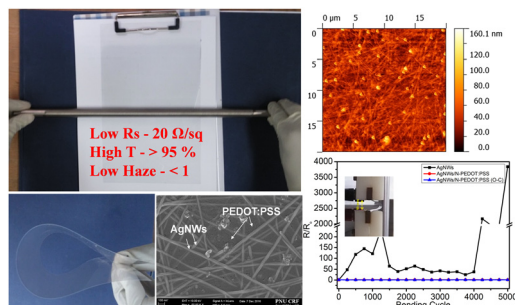
Optimally matched cluster



Principles of isomer stability in small clusters

Giuseppe Fisicaro,* Bastian Schaefer, Jonas A. Finkler and Stefan Goedecker

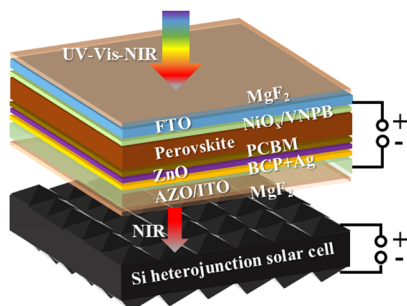
1769



One-step fabrication of highly stable, durable, adhesion enhanced, flexible, transparent conducting films based on silver nanowires and neutralized PEDOT:PSS

Subramani Devaraju, Aruna Kumar Mohanty, Du-hyun Won and Hyun-jong Paik*

1777



Designed multi-layer buffer for high-performance semitransparent wide-bandgap perovskite solar cells

Junjie Lou, Jiangshan Feng,* Yang Cao, Yucheng Liu, Yong Qin* and Shengzhong (Frank) Liu*

