

RSC

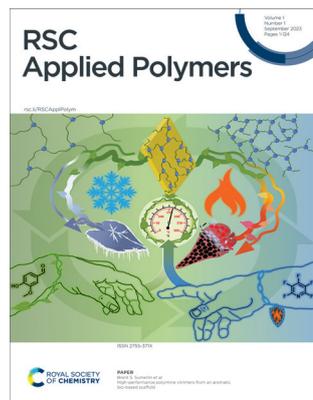
Applied Polymers

rsc.li/rscapplpolym

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

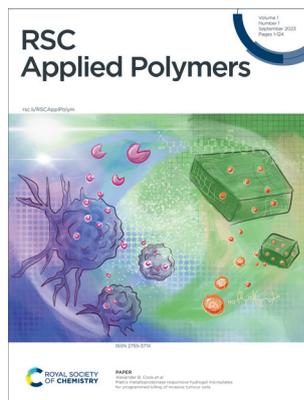
ISSN 2755-371X CODEN RAPSBD 1(1) 1-124 (2023)



Cover
See Brent S. Sumerlin et al.,
pp. 10–18.

Image reproduced by
permission of
Kevin A. Stewart from
RSC Appl. Polym., 2023, **1**, 10.

Image inspired by
Michelangelo's
'The Creation of Adam'.



Inside cover
See Alexander B. Cook et al.,
pp. 19–29.

Image reproduced by
permission of
Alexander B. Cook from
RSC Appl. Polym., 2023, **1**, 19.

EDITORIAL

8

Introducing *RSC Applied Polymers*

Emily Pentzer

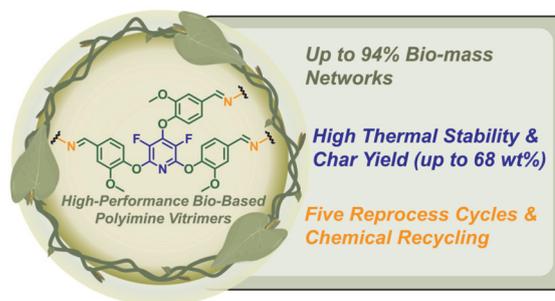


PAPERS

10

High-performance polyimine vitrimers from an aromatic bio-based scaffold

Kevin A. Stewart, Jacob J. Lessard, Alexander J. Cantor,
John F. Rynk, Laura S. Bailey and Brent S. Sumerlin*



Editorial Staff**Journals Launch Manager**

Kathryn Gempf

Assistant Editors (Journals Launch Team)

Patrick de Jongh and Hannah Fowler

Editorial Assistant (Journals Launch Team)

Ruth Colmer

Executive Editor

Jeremy Allen

Deputy Editor

Hannah Kerr

Editorial Production Manager

Christopher Goodall

Assistant Editors

Zita Zachariah, Serra Arslanlan Sengelen and Zifei Lu

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: RSCAppPolym@rsc.org

For pre-submission queries please contact

Jeremy Allen, Executive Editor.

E-mail: RSCAppPolym-rsc@rsc.org

RSC Applied Polymers (electronic: ISSN 2755-371X) is published 12 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF.

RSC Applied Polymers 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

RSC Applied Polymers

rsc.li/RSCAppPolym*RSC Applied Polymers* publishes the application of natural and synthetic polymers.**Editorial Board****Editors-in-Chief**

Emily Pentzer, Texas A&M University, USA

Associate Editors

Rachel Auzely, CERMAV-CNRS, France
Pengfei Cao, Beijing University of Chemical
Technology, China

Peter Wich, University of New South Wales,
Australia

Advisory BoardPlease see the RSC Applied Polymers journal webpage for full details of our advisory board: rsc.li/RSCAppPolym**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/RSCAppPolym

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

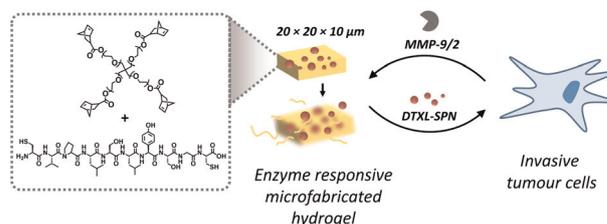


PAPERS

19

Matrix metalloproteinase responsive hydrogel microplates for programmed killing of invasive tumour cells

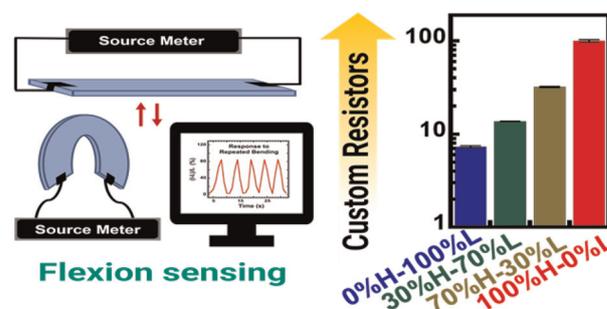
Alexander B. Cook,* Annalisa Palange, Michele Schlich, Elena Bellotti, Sayanti Brahmachari, Martina di Francesco and Paolo Decuzzi



30

Dynamic polymer nanocomposites towards strain sensors and customizable resistors

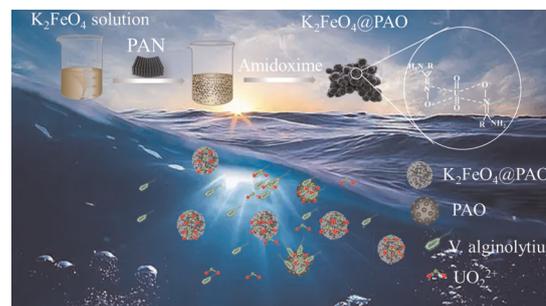
Obed J. Dodo, Ibrahim O. Raji, Ian J. Arny, Camryn P. Myers, Leilah Petit, Kumari Walpita, Derrick Dunn, Carl J. Thrasher and Dominik Konkolewicz*



46

Regulating the preparation of antibacterial poly(amidoxime) for efficient uranium extraction from seawater

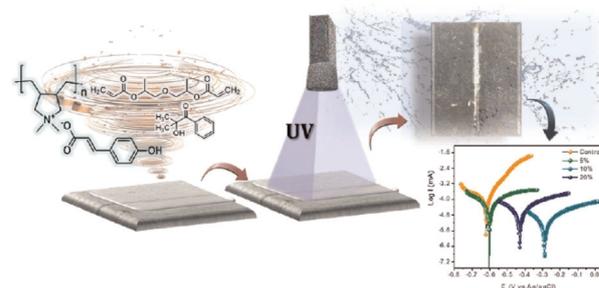
Xue Zhang and Dadong Shao*



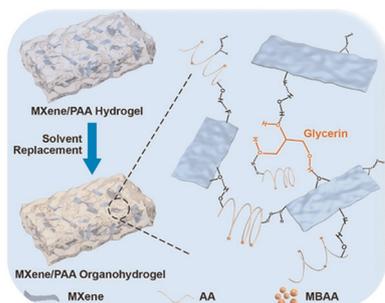
55

Poly(ionic liquid)s having coumarate counter-anions as corrosion inhibitors in acrylic UV coatings

Daniela Minudri, Anthony Somers, Nerea Casado, Maria Forsyth* and David Mecerreyes*



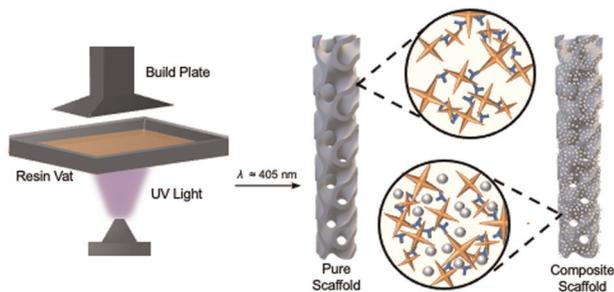
64



Multifunctional MXene/PAA organohydrogel as a flexible strain sensor for wearable human–machine interaction

Ning Ding, Yan Bai, Yuhui Feng, Xiang Zou, Yuzhe Chen, Shuaihang Bi, Shujuan Liu, Weiwei Zhao* and Qiang Zhao*

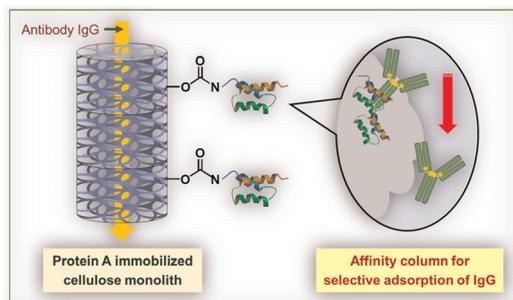
73



Influence of post-processing on the properties of 3D-printed poly(propylene fumarate) star polymer hydroxyapatite nanocomposites

Taylor R. Klein, Alina Kirillova, Ken Gall and Matthew L. Becker*

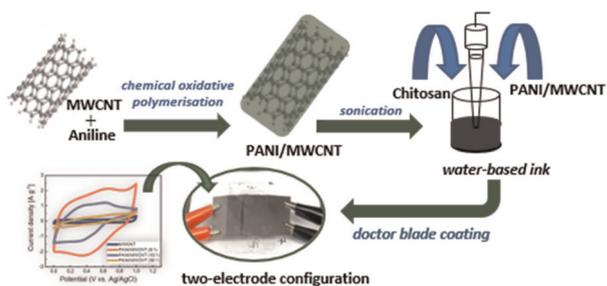
82



Functionalized cellulose monolith based affinity chromatography columns for efficient separation of protein molecules

Yusuke Hinamoto, Akihide Sugawara, Taka-Aki Asoh, Mahasweta Nandi* and Hiroshi Uyama*

97



Fabrication of PANI/MWCNT supercapacitors based on a chitosan binder and aqueous electrolyte for enhanced energy storage

Ezgi Inci Yesilyurt, Jürgen Pionteck, Frank Simon and Brigitte Voit*



111

Experimental and computational studies on the effects of C(2) methylation on the properties and gas separation performance of polyimide-ionene membranes

Grayson P. Dennis, Kathryn E. O'Harra, Xiaoyang Liu, Enrique M. Jackson, C. Heath Turner and Jason E. Bara*

