### **Polymer Chemistry**

The home for the most innovative and exciting polymer chemistry, with an emphasis on polymer synthesis and applications thereof

#### rsc.li/polymers

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 1759-9962 CODEN PCOHC2 14(17) 1993-2136 (2023)



## **Cover**See Richard Hoogenboom *et al.*, pp. 2034–2044.

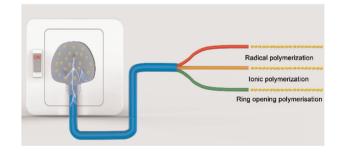
Image reproduced by permission of Richard Hoogenboom from *Polym. Chem.*, 2023, **14**, 2034.

#### **REVIEW**

#### 2000

Recent progress and applications enabled *via* electrochemically triggered and controlled chain-growth polymerizations

Boyu Zhao and Paul Wilson\*

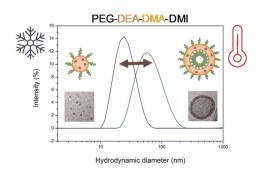


#### **COMMUNICATIONS**

#### 2022

Responsive tertiary amine methacrylate block copolymers: uncovering temperature-induced shape-shifting behaviour

Zahn Stanvliet, Yiyi Deng, Dietmar Appelhans, Silvia Moreno, Susanne Boye, Jens Gaitzsch\* and Albena Lederer\*



#### **Editorial Staff**

Executive Editor

Maria Southall

Deputy Editor

Laura Ghandhi

Editorial Production Manager

Cara Sutton

Assistant Editors

Sean Browner, Molly Colgate, Paul Scott, Alison Winder

**Editorial Assistant** 

Publishing Assistant Allison Holloway

Publisher

Sam Keltie

For queries about submitted papers, please contact Cara Sutton, Editorial Production Manager in the first instance. E-mail: polymers@rsc.org

For pre-submission queries please contact Maria Southall. Executive Editor. E-mail: polymers-rsc@rsc.org

Polymer Chemistry (electronic: ISSN 1759-9962) is published 48 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge,

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

Tel +44 (0)1223 432398; E-mail: orders@rsc.org

2023 Annual (electronic) subscription price: £2935; \$5014. Customers in Canada will be subject to a surcharge to cover GST. Customers in the EU subscribing to the electronic version only will

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,

Advertisement sales

Telephone: +44 (0) 207 4378 6556.

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

## Polymer Chemistry

#### rsc.li/polymers

The home for the most innovative and exciting polymer chemistry, with an emphasis on polymer synthesis and applications thereof.

#### **Editorial Board**

Christopher Barner-Kowollik, Oueensland University of Technology, Australia

Associate Editors

Athina Anastasaki, ETH Zurich, Switzerland Filip Du Prez, Ghent University, Belgium Holger Frey, Johannes Gutenberg University Mainz, Germany

Rongrong Hu, South China University of Technology, China Jeremiah A Johnson, Massachusetts Institute of Technology, USA

Tanja Junkers, Monash University, Australia

Dominik Konkolewicz Miami University USA Zhibo Li, Oinadao University of Science and

Technology, China Zi-Chen Li, Peking University, China Emily Pentzer, Texas A&M University, USA Sébastien Perrier, University of Warwick, UK

#### **Advisory Board**

Steven Armes, University of Sheffield, UK Remzi Becer, University of Warwick, UK Matthew Becker, Duke University, USA Erik Berda, University of New Hampshire, USA Kerstin Blank, Max Planck Institute of Colloids and Interfaces, Germany

Eva Blasco, Heidelberg University, Germany James Blinco, Queensland University of Technology, Australia

Chris Bowman, University of Colorado, USA Cyrille Boyer, University of New South Wales, Australia

Neil Cameron, Monash University, Australia Luis Campos, Columbia University, USA Changle Chen, University of Science and Technology of China, China

Mao Chen, Fudan University, China Xuesi Chen, Chinese Academy of Sciences, China Yoshiki Chujo, Kyoto University, Japan Franck D'Agosto, CPE Lyon, France

Priyadarsi De, Indian Institute of Science Education Jacques Lalevée, Institut de Science des Matériaux and Research Kolkata, India

Guillaume Delaittre, University of Wuppertal, Dagmar D'hooge, University of Ghent, Belgium

Elizabeth Elacqua, Pennsylvania State University,

Brett P Fors, Cornell University, USA Theoni Georgiou, Imperial College London, UK Didier Gigmes, Aix-Marseille Université, CNRS,

Atsushi Goto, Nanyang Technological University, Singapore

Sophie Guillaume, Institut des Sciences Chimiques de Rennes, France Dave Haddleton, University of Warwick, UK

Nikos Hadjichristidis, King Abdullah University of Science and Technology, Saudi Yanchun Han, Chinese Academy of Sciences,

Eva Marie Harth, University of Houston, USA Simon Harrisson, CNRS - University of Toulouse, France

Laura Hartmann, Heinrich Heine University Düsseldorf, Germany

Fiona Hatton, Loughborough University, UK Andrew B. Holmes, University of Melbourne, Australia

Richard Hoogenboom, University of Ghent, Belgium

Steve Howdle, University of Nottingham, UK Feihe Huang, Zheijiang University, China Toyoji Kakuchi, Changchun University of Science and Technology, China

Julia Kalow, Northwestern University, USA Masami Kamigaito, Nagoya University, Japan Justin Kennemur, Florida State University, USA Christopher Kloxin, University of Delware, USA de Mulhouse, France

Katharina Landfester, Max Planck Institute for Polymer Research, Germany Muriel Lansalot, Université Lyon, France Sébastien Lecommandoux, ENSCPB, University of

Rachel Letteri, University of Virginia, USA Guey-Sheng Liou, National Taiwan University,

Guoliang Liu, Virginia Tech, USA Shiyong Liu, University of Science & Technology,

Timothy Long, Arizona State University, USA lan Manners, University of Victoria, Canada John Matson, Virginia Tech, USA Markus Muellner, University of Sydney, Australia

Ravin Narain, University of Alberta, Canada Julien Nicolas, University Paris-Sud, France

Kyoko Nozaki, University of Tokyo, Japan Rachel O'Reilly, University of Warwick, UK Makoto Ouchi, Kyoto University, Japan Derek Patton, University of Southern Mississippi,

Theresa Reineke, University of Minnesota, USA Megan Robertson, University of Houston, USA Amitav Sanyal, Bogazici University, Turkey Felix Schacher, Friedrich-Schiller-University Jena,

Helmut Schlaad, University of Potsdam, Germany Ellen Sletten, University of California, Los Angeles,

Martina Stenzel, University of New South Wales, Australia

Molly Stevens, Imperial College London, UK Natalie Stingelin, Georgia Institute of Technology,

Ben Zhong Tang, HKUST, Hong Kong, China Lei Tao, Tsinghua University, China Patrick Theato, KIT, Germany Maria Vamyakaki, FORTH-IESL, Greece

Jan van Hest, Eindhoven University of Technology The Netherlands Kelly Velonia, University of Crete, Greece

María J. Vicent, CIPF, Spain Brigitte Voit, Leibniz Institute of Polymer Design,

Marcus Weck, NYU, USA

Charlotte Williams, University of Oxford, UK Frederik Wurm, Max-Planck-Institut für Polymerforschung, Germany Yusuf Yagci, Istanbul Technical University, Turkey Naoko Yoshie, University of Tokyo, Japan Wei You, University of North Carolina at Chapel

Xi Zhang, Tsinghua University, China

#### Information for Authors

Full details on how to submit material for publication in Polymer Chemistry 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/ polymers Submissions: The journal welcomes submissions of manuscripts for publication as Full Papers, Communications, Perspectives and Reviews. Full Papers and Communications should describe original work of high quality and impact.

Colour figures are reproduced free of charge. Additional details are available from the Editorial Office or http://www.rsc.org/authors

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



#### **COMMUNICATIONS**

#### 2027

Naphthalene engineering of chemically recyclable polyesters with enhanced thermal and mechanical properties

Xue-Mei Wang, Hao-Yi Huang, Yi-Min Tu, Zhongzheng Cai\* and Jian-Bo Zhu\*

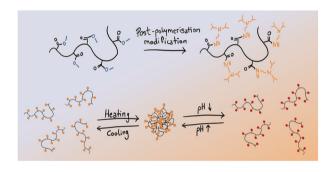


#### **PAPERS**

#### 2034

Amidation of methyl ester-functionalised poly(2-oxazoline)s as a powerful tool to create dual pH- and temperature-responsive polymers as potential drug delivery systems

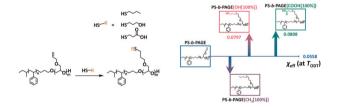
Meike N. Leiske, Ronak Singha, Somdeb Jana, Bruno G. De Geest and Richard Hoogenboom\*



#### 2045

Control of microphase-separated structures by tuning the functional groups and the degree of modification for a single block copolymer

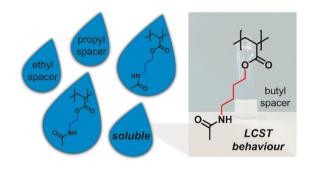
Zhengdan Lin, Yuta Nabae and Teruaki Hayakawa\*



#### 2054

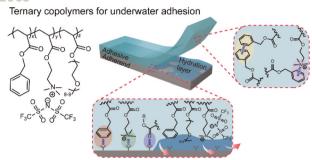
The effect of side chain spacer length on the thermoresponsive behaviour of poly(methylamide acrylate)s

Alexander Rajakanthan, Paul Wilson\* and Kristian Kempe\*



#### **PAPERS**

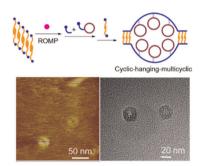
#### 2063



## Catechol-free ternary random copolymers for strong and repeatable underwater adhesion

Wenlian Qiu, Yi Huang, He Zhu, Qi Zhang\* and Shiping Zhu\*

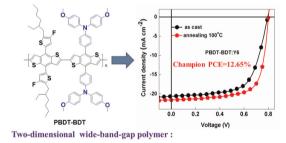
2072



Cyclic—hanging-multicyclic polymer synthesized by ladderphane-mediated blocking-cyclization technique for the direct visualization of cyclic macromolecular topology

Cuihong Ma, Ying Quan, Xiaojuan Liao, Ruyi Sun\* and Meiran Xie\*

#### 2080

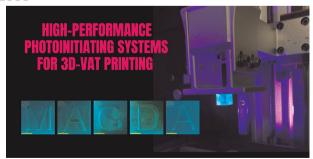


✓ D-D polymeric backbone ✓ Conjugated side-chains ✓ Deep HOMO Level

# Triphenylamine side chain enabled polybenzodithiophene wide-bandgap donors for efficient organic solar cells

Yun Zhang, Liying Fu, Xingyu Zhao, Ye Lu, Hao Feng, Xianglin Meng, Chunbo Liu, Enwei Zhu,\* Chunhong Ma\* and Guangbo Che\*

2088



# Novel multi-material photo-curable resins containing high-performance photoinitiating systems and nano additives dedicated to 3D-VAT printing

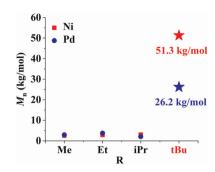
Magdalena Jankowska, Anna Chachaj-Brekiesz, Klaudia Trembecka-Wójciga, Anna Jarzębska, Monika Topa-Skwarczyńska, Maciej Pilch and Joanna Ortyl\*

#### **PAPERS**

#### 2107

Unexpected o-aryl tBu group effect on suppression of chain transfer in pyridine-imine Ni(II) and Pd(II) catalyzed ethylene (co)polymerization

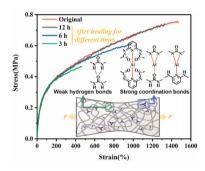
Zhengpeng Yan, Wenping Zou and Shengyu Dai\*



#### 2117

Multiple hierarchical dynamic interactions enabled a robust, stretchable and room temperature self-healing elastomer

Jianfeng Fan, Xinqin Zhou and Yukun Chen\*



#### 2126

Narrowing down chain length effects on the antibacterial action of guanylated oligomers

Dries Wyers, Thanavit Jirapanjawat, John F. Quinn, Michael R. Whittaker, Chris Greening and Tanja Junkers\*

