Polymer Chemistry

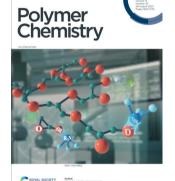
The home for the most innovative and exciting polymer chemistry, with an emphasis on polymer synthesis and applications thereof

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(32) 3641-3776 (2023)



Cover

See Bibiao Jiang, Sridhar Komarneni et al., pp. 3679-3685.

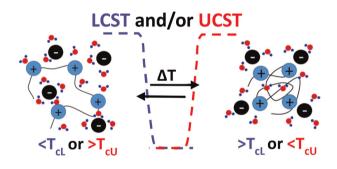
Image reproduced by permission of Bibiao Jiang from Polym. Chem., 2023, **14**, 3679.

REVIEW

3647

Thermoresponsive polycations

Vikram Baddam and Heikki Tenhu*



PAPERS

3679

Ring-opening mechanism of epoxides with alcohol and tertiary amines

Yongzhuang Du, Xiaoqiang Xue, Qimin Jiang, Wenyan Huang, Hongjun Yang, Li Jiang, Bibiao Jiang* and Sridhar Komarneni*

For Epoxides:

$$R_{jN} + Q_{jN} \longrightarrow R_{jN} - CH_{2} - CH_{$$

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, 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

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

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 Priyadarsi De, Indian Institute of Science Education Jacques Lalevée, Institut de Science des Matériaux 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

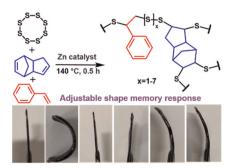


PAPERS

3686

Sulfur-rich polymers with heating/UV lightresponsive shape memory and temperaturemodulated self-healing

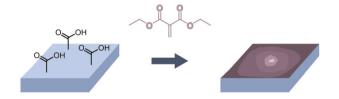
Zhao Yang, Peivao Yan, Xiaohu Li, Congcong Miao, Shanshan (Diana) Cai, Weigang Ji, Mengyuan Song, Liam J. Dodd, Xiaofeng Wu,* Tom Hasell* and Pengfei Song*



3695

Anionic polymerization and transport of diethyl methylidene malonate on polyolefin copolymer surfaces

Kelsi M. S. Rehmann, John Klier and Jessica D. Schiffman*

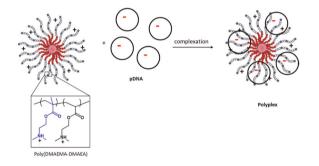


- Initiator concentration impacts monomer transport rate
- · Grafting from substrates with minimal surface treatment

3707

Cationic star copolymers obtained by the arm first approach for gene transfection

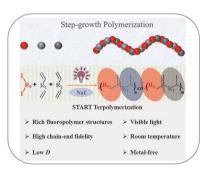
Fannie Burgevin, Alexia Hapeshi, Ji-Inn Song, Marta Omedes-Pujol, Annette Christie, Christopher Lindsay and Sébastien Perrier*



3718

Visible-light mediated synthesis of main-chaintype semifluorinated alternating terpolymers by NaI catalyzed START polymerization

Chaojie Li, Jiannan Cheng, Yi Zhang, Qing Yu, Zhiru Yuan, Weiwei He,* Xiaoguang Bao, Lifen Zhang* and Zhenping Cheng*

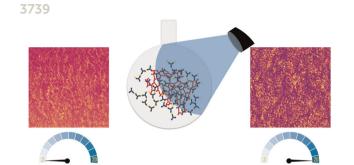


PAPERS

3729

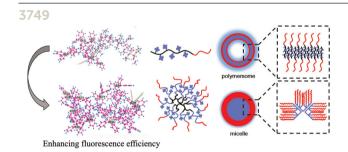
γ-Thiobutyrolactone – ethylene carbonate decarboxylative copolymerization, an original pathway to prepare aliphatic oxidizable $poly(\gamma$ -thioether ester)

Emma Mongkhoun, Philippe Guégan and Nicolas Illy*



CuAAC-methacrylate interpenetrating polymer network (IPN) properties modulated by visible-light photoinitiation

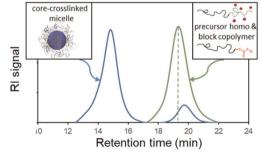
Mukund Kabra and Christopher J. Kloxin*



Investigating AIE behaviors of amphiphilic AIEgenbased polymers through self-assembly architectures and hydrophobic core arrangements

Liang Wang, Ghada E. Khedr, Lei Luo, Shiling Zhang, Zhiying Li, Shanmeng Lin, Jinyan Luo, Qi Xing* and Jin Geng*





Synthesis of redox-responsive core-shell nanoparticles: insights into core-crosslinking efficiency

Yannik Olszowy, Janick Wesselmann, Shenja Fabienne Over, Florian Pätzold and Ralf Weberskirch*