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(34) 3891-3992 (2023)



Cover See Amitav Sanyal *et al.*, pp. 3897–3905.



Image reproduced by permission of Amitav Sanyal from *Polym. Chem.*, 2023, **14**, 3897.

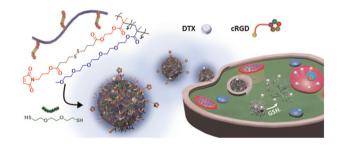
PAPERS

PAPER Amitav Sa Redoe-res

3897

Redox-responsive nanogels for drug-delivery: thiol-maleimide and thiol-disulfide exchange chemistry as orthogonal tools for fabrication and degradation

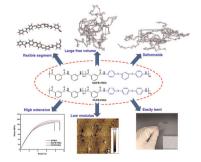
Ismail Altinbasak, Salli Kocak, Rana Sanyal and Amitav Sanyal*



3906

Preparation and structure-property relationship of flexible aramid films with enhanced strength by introducing asymmetric and symmetric aromatic ether bond structures

Zheng Zhang, Wenqin Hong, Xiaoyan Wang, Changhai Xu, Yang Jiang, Jinmei Du,* Dagang Miao and Guowei Xiao



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 Basita Javeed

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, UK CB4 OWF.

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 CB4 OWF, UK

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 be charged VAT.

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.

Rongrong Hu, South China University of

Jeremiah A Johnson, Massachusetts Institute of

Technology, China

Technology, USA

Editorial Board

Editor-in-Chief 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

Tanja Junkers, Monash University, Australia Dominik Konkolewicz Miami University USA Zhibo Li, Oingdao University of Science and

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. Germany Dagmar D'hooge, University of Ghent, Belgium Elizabeth Elacqua, Pennsylvania State University, USA Brett P Fors, Cornell University, USA Theoni Georgiou, Imperial College London, UK Didier Gigmes, Aix-Marseille Université, CNRS, France 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 Arabia

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 guality 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

Yanchun Han, Chinese Academy of Sciences,

China 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 Bordeaux, France

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

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

China Timothy Long, Arizona State University, USA Ian 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

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

Kyoko Nozaki, University of Tokyo, Japan

Rachel O'Reilly, University of Warwick, UK Makoto Ouchi, Kyoto University, Japan Derek Patton, University of Southern Mississippi, USA Theresa Reineke, University of Minnesota, USA Megan Robertson, University of Houston, USA Amitav Sanyal, Bogazici University, Turkey Felix Schacher, Friedrich-Schiller-University Jena, Germany Helmut Schlaad, University of Potsdam, Germany Ellen Sletten, University of California, Los Angeles, USA Martina Stenzel, University of New South Wales, Australia Molly Stevens, Imperial College London, UK Natalie Stingelin, Georgia Institute of Technology, USA Ben Zhong Tang, HKUST, Hong Kong, China Lei Tao, Tsinghua University, China Patrick Theato, KIT, Germany Maria Vamvakaki, 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, Germany 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 Hill. USA Xi Zhang, Tsinghua University, China

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

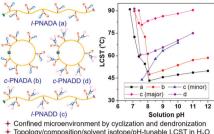
ROYAL SOCIETY OF CHEMISTRY

PAPERS

3916

Impact of cyclization and dendronization on multitunable thermoresponsive behaviors of polyacrylamide copolymers

Jiaman Hu, Lu Lian, Yong Lin, Ran Chen and Youliang Zhao*



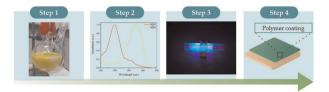
Topology/composition/solvent isotope/pH-tunable LCST in H_2O Dual LCST/UCST of b in D_2O , and dual LCSTs of c in H_2O/D_2O

Morphological transformation via thermo-induced self-assembly

3931

High potential of new dyeing photoinitiators for fast curing of (meth)acrylate compositions under low intensity UV-Vis light

Paulina Bednarczyk, Alicja Balcerak-Woźniak, Janina Kabatc-Borcz* and Zbigniew Czech



3950

Synthesis of original polymeric hydroperoxides as innovative oxidizing agents for self-cure dental materials

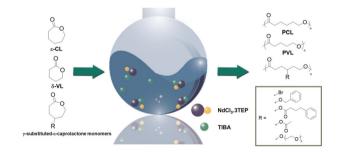
Paul Morandi, Yohann Catel, Jörg Angermann, Pascal Fässler, Jean-Jacques Robin and Sophie Monge*

Oxidizing agents in redox initiator systems OH 0 Odorless hydroperoxide-based telomers Dental composites

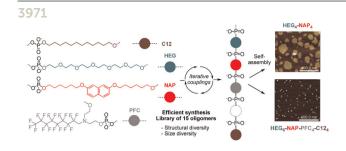
3962

A binary neodymium catalyst for the polymerization of lactones

Ruvanthi N. Kularatne, Somayeh Taslimy, Abhi Bhadran, John Michael O. Cue, Chandima Bulumulla, Erika L. Calubaguib, Ruwan Gunawardhana, Michael C. Biewer and Mihaela C. Stefan*



PAPERS



A single monomer difference can impact the nanostructure output of precision oligo(phosphodiesters)

Donatien de Rochambeau, Maciej Barłóg, Felix J. Rizzuto, Quentin Laurent, Xin Luo, Kai Lin Lau, Hassan S. Bazzi and Hanadi F. Sleiman*

3978



A fully biobased monomer A monomer with epoxide and ketone groups Undergo ring-opening and imine formation

A robust fully bio-based aromatic-aliphatic ketone epoxide monomer for high-performance epoxy resin containing an imine structural moiety

Ziting Cao, Yang You, Yunqi Li, Caijuan Huang, Yaozhu Tian, Shihao Zhao, Qin Chen* and Haibo Xie*

CORRECTION

3989

Correction: One pot synthesis of thiol-functional nanoparticles

Aaron Priester,* Jimmy Yeng, Krista Hilmas and Anthony J. Convertine*