# Applied Polymer

EDITOR-IN-CHIEF Stefan Spiegel

DEPUTY EDITOR Hilary J. Crichton

ASSOCIATE EDITORS

Emily Hu Jenny Mahoney Mara Staffilani Xin Su

### EDITORIAL BOARD

**Rigoberto Advincula** University of Houston Houston, TX, USA

Ann-Christine Albertsson KTH Royal Institute of Technology Stockholm, Sweden

**David Benko** The Goodyear Tire & Rubber Co. Akron, OH, USA

Anil Bhowmick Indian Institute of Technology Kharagpur, India

**Bryan Boudouris** Purdue University West Lafayette, IN, USA

Neal Chung National University of Singapore Singapore

Robert E. Cohen Massachusetts Institute of Technology Cambridge, MA, USA

**Isabel C. Escobar** University of Toledo Toledo, OH, USA

Antonio Facchetti Northwestern University Evanston, IL, USA

**Lionel Flandin** Université de Savoie Le Bourget-du-lac, France

Andrzej Galeski Polish Academy of Sciences Sienkiewicza, Poland

Julie M. Goddard University of Massachusetts Amherst, MA, USA ASSISTANT MANAGING EDITORS Jenna Pope Jessica Bradley

PRODUCTION EDITOR Melissa Ekis

FOUNDING EDITOR Herman F. Mark

CONSULTING EDITOR Eric Baer

**Sophie M. Guillaume** Université de Rennes Rennes, France

**Atsushi Hotta** Keio University Yokohama, Japan

**Yanbin Huang** Tsinghua University Beijing, China

**Avraam I. Isayev** The University of Akron Akron, OH, USA

J. Karger-Kocsis University of Technology and Economics Budapest, Hungary

Sangamesh Kumbar University of Connecticut Health Center Farmington, CT, USA

**J. M. Lagaron** Novel Materials and Nanotechnology, IATA-CSIC Valencia, Spain

**Daeyeon Lee** University of Pennsylvania Philadelphia, PA, USA

**Alan J. Lesser** University of Massachusetts Amherst, MA, USA

**Yongfang Li** Chinese Academy of Sciences Beijing, China

Michael Malkoch KTH Royal Institute of Technology Stockholm, Sweden EXECUTIVE EDITORS Subramanian lyer Eastman Chemical Company Advanced Polymer Engineer 100 Lincoln Street Kingsport, TN 37660, USA

Brian Knapp PROMERUS LLC 9921 Brecksville Road Brecksville, OH 44141, USA

Jimmy W. Mays

Knoxville, TN, USA

Michael A. R. Meier

Karlsruhe, Germany

University of Guelph

Guelph, Ontario, Canada

Manjusri Misra

Koon-Gee Neoh

Roisin M. Owens

Gardanne, France

Roberto Pantani

Salerno, Italv

Cheolmin Park

Ho Bum Park

POSTECH

Yonsei University

Seoul, South Korea

Hanyang University

Seoul, South Korea

Moon Jeong Park

Donald R. Paul

Austin, TX, USA

Austin, TX, USA

Luana Persano

Italy

Pohang, South Korea

University of Texas

Nicholas A. Peppas

University of Texas at Austin

National Research Council

Robert K. Prud'homme

Princeton University

Princeton, NJ, USA

David A. Putnam

Cornell University

Ithaca, NY, USA

University of Salerno

Singapore

University of Tennessee

Karlsruhe Institute of Technology

National University of Singapore

Ecole des Mines de St. Etienne

## Sergei Nazarenko The University of Southern

Mississippi, School of Polymers and High Performance Materials 118 College Drive MB #10076 Hattiesburg, MS 39406-0001, USA

Mark A. Schubert Sherwin-Williams Company Breen Technology Center 601 Canal Road Cleveland, OH 44113 USA

**Bluma G. Soares** Universidade Federal do Rio de Janeiro Rio de Janeiro, Brazil

**S. C. Tjong** City University of Hong Kong Kowloon, Hong Kong

Jadranka Travas-Sejdic University of Aukland Aukland, New Zealand

Christopher Tucker The Dow Chemical Company Midland, MI, USA

**Bart Van der Bruggen** KU Leuven Leuven, Belgium

**Yu-Zhong Wang** Sichuan University Chengdu, China

**Christoph Weder** University of Freiburg Freiburg, Germany

Robert A. Weiss University of Connecticut Storrs, CT, USA

**Andrew K. Whittaker** University of Queensland Brisbane, Australia

Paula Wood-Adams Concordia University Montreal, QC, Canada

Kenneth J. Wynne Virginia Commonwealth University Richmond, VA, USA

**Lina Zhang** Wuhan University Wuhan, China

**Liqun Zhang** Beijing University of Chemical Technology, Beijing, China The JOURNAL OF APPLIED POLYMER SCIENCE (Print ISSN: 0021-8995; Online: 1097-4628) is published semi-monthly, by Wiley Subscription Services, Inc., a Wiley Company, 111 River St., Hoboken, NJ 07030-5774.

Periodical Postage Paid at Hoboken, NJ and additional offices.

**Postmaster:** Send all address changes to The JOURNAL OF APPLIED POLYMER SCIENCE, John Wiley & Sons Inc., C/O The Sheridan Press, PO Box 465, Hanover, PA 17331.

**Copyright and Copying:** Copyright © 2016 Wiley Periodicals, Inc., a Wiley Company. All rights reserved. No part of this publication may be reproduced, stored or transmitted in any form or by any means without the prior permission in writing from the copyright holder. Authorization to copy items for internal and personal use is granted by the copyright holder for libraries and other users registered with their local Reproduction Rights Organisation (RRO), e.g. Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923, USA (www.copyright.com), provided the appropriate fee is paid directly to the RRO. This consent does not extend to other kinds of copying such as copying for general distribution, for advertising or promotional purposes, for creating new collective works or for resale. Special requests should be addressed to: permissions@wiley.com

Information for Subscribers: The Journal of Applied Polymer Science is published in 48 issues per year. Institutional subscription prices for 2016 are: Print & Online: US\$38,297 (US), US\$38,938 (Rest of the World), €25,124 (Europe), £19,866 (UK). Prices are exclusive of tax. Asia-Pacific GST, Canadian GST/HST and European VAT will be applied at the appropriate rates. For more information on current tax rates, please go to www.wileyonlinelibrary.com/ tax-vat. The price includes online access to the current and all online back files to January 1st 2012, where available. For other pricing options, including access information and terms and conditions, please visit www.wileyonlinelibrary.com/access

For submission instructions, subscription and all other information visit: wileyonlinelibrary.com/journal/APP

**Delivery Terms and Legal Title:** Where the subscription price includes print issues and delivery is to the recipient's address, delivery terms are Delivered at Place (DAP); the recipient is responsible for paying any import duty or taxes. Title to all issues transfers FOB our shipping point, freight prepaid. We will endeavour to fulfil claims for missing or damaged copies within six months of publication, within our reasonable discretion and subject to availability.

Journal Customer Services: For ordering information, claims and any enquiry concerning your journal subscription please go to www.wileycustomerhelp.com/ask or contact your nearest office. Americas: Email: cs-journals@wiley.com; Tel: +1 781 388 8598 or +1 800 835 6770 (toll free in the USA & Canada).

Europe, Middle East and Africa: Email: cs-journals@wiley.com; Tel: +44 (0) 1865 778315.

Asia Pacific: Email: cs-journals@wiley.com; Tel: +65 6511 8000.

Japan: For Japanese speaking support, Email: cs-japan@wiley.com; Tel: +65 6511 8010 or Tel (toll-free): 005 316 50 480.

Visit our Online Customer Help available in 7 languages at www.wileycustomerhelp.com/ask

Production Editor: Melissa Ekis (email: APP@wiley.com)

View this journal online at wileyonlinelibrary.com/journal/APP The JOURNAL OF APPLIED POLYMER SCIENCE accepts articles for Open Access publication. Please visit http://olabout.wiley.com/ WileyCDA/Section/id-406241.html for further information about OnlineOpen.

Back issues: Single issues from current and recent volumes are available at the current single issue price from cs-journals@wiley. com. Earlier issues may be obtained from Periodicals Service Company, 351 Fairview Avenue — Ste 300, Hudson, NY 12534, USA. Tel: +1 518 822-9300, Fax: +1 518 822-9305, E-mail: psc@periodicals.com

Advertising/Sales: Inquiries concerning advertising should be forwarded to the Advertising Sales Manager, c/o John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030; (201) 748-8832. Advertising Sales, European Contact: Jackie Sibley, c/o John Wiley & Sons, Ltd., The Atrium, Southern Gate, Chichester, West Sussex P019 8SQ, England. Tel: 44 1243 770 351; Fax: 44 1243 770 432; e-mail: adsales@wiley.co.uk.

**Disclaimer:** The Publisher and Editors cannot be held responsible for errors or any consequences arising from the use of information contained in this journal; the views and opinions expressed do not necessarily reflect those of the Publisher and Editors, neither does the publication of advertisements constitute any endorsement by the Publisher and Editors of the products advertised.

**Other Correspondence:** Address all other correspondence to: JOURNAL OF APPLIED POLYMER SCIENCE, Publisher, c/o John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030.

Wiley's Corporate Citizenship initiative seeks to address the environmental, social, economic, and ethical challenges faced in our business and which are important to our diverse stakeholder groups. Since launching the initiative, we have focused on sharing our content with those in need, enhancing community philanthropy, reducing our carbon impact, creating global guidelines and best practices for paper use, establishing a vendor code of ethics, and engaging our colleagues and other stakeholders in our efforts. Follow our progress at www.wiley.com/go/citizenship.

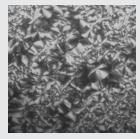
Abstracting and Indexing Services: The Journal is indexed by Chemical Abstracts, Chemical Titles, Chemistry Citation Index, Compendex, Current Contents/Engineering, Computing, and Technology, Current Contents/Physical, Chemical and Earth Sciences, INSPEC, ISI Alerting Services (includes Research Alert), Materials Science Citation Index, Polymer Blends, Alloys & Interpenetrating Polymer Networks Abstracts, Reaction Citation Index, Science Citation Index, SciSearch (also known as Science Citation Index-Expanded), Urethane Abstracts, World Surface Coatings Abstracts, and World Textiles.

Wiley's Corporate Citizenship initiative seeks to address the environmental, social, economic, and ethical challenges faced in our business and which are important to our diverse stakeholder groups. Since launching the initiative, we have focused on sharing our content with those in need, enhancing community philanthropy, reducing our carbon impact, creating global guidelines and best practices for paper use, establishing a vendor code of ethics, and engaging our colleagues and other stakeholders in our efforts. Follow our progress at www.wiley.com/go/citizenship

Printed in Singapore by Markono Print Media Pte Ltd.

## Applied Polymer

Bingyao Deng and co-workers prepared biodegradable organic-inorganic polymer hybrids based on  $poly(\epsilon$ -caprolactone) and polyhedral oligomeric silsesquioxane via open-ring polymerization. Both segments crystallized into two well-separated phases. Hybrids with high polyhedral oligomeric silsesquioxane content formed snowflake-shaped crystals, while those with low polyhedral oligomeric silsesquioxane content formed classic spherulites. (DOI: 10.1002/app.44113)



Volume 133, Number 48 was mailed the week of September 19, 2016.

### ARTICLES

- **44113** Poly(ε-caprolactone)/polyhedral oligomeric silsesquioxane hybrids: Crystallization behavior and thermal degradation S. XIA, Q. LIU, Y. SHEN, P. YAO AND B. DENG *Published online 23 August 2016*
- 44193 Preparation of biphenyl-bridged, crosslinked polyalkoxysilanes: Determination of oil/organic solvent absorption features

S. KIZIL AND H. B. SONMEZ Published online 19 August 2016

44195 Cracking energy density calculation of hyperelastic constitutive model and its application in rubber fatigue life estimations Y. PENG, G. LIU, Y. QUAN AND Q. ZENG

Published online 17 August 2016

- **44214** Layer thickness impact on the capacity of poly(urethaneimide) for sorbing toxic gases I. KOLEV, G. ALEXIEVA, V. STRASHILOV, I. B. YOUSSEF, F. SARRY AND H. ALEM *Published online 26 August 2016*
- 44233 Application of the dry-spinning method to produce poly(ε-caprolactone) fibers containing bovine serum albumin laden gelatin nanoparticles

B. AZIMI, P. NOURPANAH, M. RABIEE, S. ARBAB, M. G. CASCONE, A. BALDASSARE AND L. LAZZERI *Published online 17 August 2016* 

- **44236** Morphology modulation of gas-foamed, micrometric, hollow polystyrene particles V. CONTALDI, L. IMPERATO, S. ORSI, E. DI MAIO, P. A. NETTI AND S. IANNACE *Published online 19 August 2016*
- 44237 Application of polymeric high-internal-phase-emulsion-coated stationary-phase columns in open-tubular capillary electrochromatography
  S. CHOUDHURY, D. CONNOLLY AND B. WHITE
  Published online 19 August 2016
- **44241** Bleached extruder chemi-mechanical pulp fiber-PLA composites: Comparison of mechanical, thermal, and rheological properties with those of wood flour-PLA bio-composites Z. YANG, X. FENG, Y. BI, Z. ZHOU, J. YUE AND M. XU Published online 22 August 2016

- Poly[6-(2,6-bis(1'-methylbenzimidazolyl)pyridin-4-yloxy)hexyl acrylate] (PBIP) and its terbium (III) complex (PBIP-Tb<sup>3+</sup>):
  Homopolymerization, optical, and magnetic performance
  D. LIU, W. SUN, R. REN, Y. WANG AND Z. SHEN
  Published online 22 August 2016
- 44259 Controlling micro- and nanofibrillar morphology of polymer blends in low-speed melt spinning process. Part III: Fibrillation mechanism of PLA/PVA blends along the spinline N. H. A. TRAN, H. BRÜNIG, M. A. DER LANDWEHR AND G. HEINRICH Published online 26 August 2016
- **44269** In situ AFM study of near-surface crystallization in PET and PEN K. SHINOTSUKA AND H. ASSENDER Published online 22 August 2016
- 44270 Effects of polymerization conditions on particle size distribution in styrene-graphite suspension polymerization process

C. ZHANG, X. LI, S. CHEN AND R. YANG *Published online 22 August 2016* 

44272 Effect of an alkalized-modified halloysite on PLA crystallization, morphology, mechanical, and thermal properties of PLA/halloysite nanocomposites J. GUO, J. QIAO AND X. ZHANG

Published online 19 August 2016

- 44273 Rheology of polyacrylonitrile-based precursor polymers produced from controlled (RAFT) and conventional polymerization: Its role in solution spinning J. KAUR, K. MILLINGTON AND J.Y. CAI *Published online 19 August 2016*
- 44277 Preparation of epoxy-ended hyperbranched polymers with precisely controllable degree of branching by thiol-ene Michael addition

D. ZHANG, Y. WANG, Z. XU, J. CHENG, S. CHEN, J. ZHANG AND M. MIAO Published online 24 August 2016

- **44327** Utilization of tall oil to enhance natural fibers for composite applications and production of a bioplastic M. GEORGE, P. G. MUSSONE AND D. C. BRESSLER *Published online 19 August 2016*
- **44330** Synthesis of Fe<sub>3</sub>O<sub>4</sub>@SiO<sub>2</sub>@MPS@P4VP nanoparticles for nitrate removal from aqueous solutions F. JAVAHERI AND S. HASSANAJILI *Published online 22 August 2016*
- 44333 BaTiO<sub>3</sub> incorporation effect on the dielectric properties of polymer from aqueous emulsion: An enhanced dispersion technique

A. ZYANE, A. BELFKIRA, F. BROUILLETTE, P. MARCHET AND R. LUCAS *Published online 24 August 2016* 

- Photocatalytic properties of PMMA-TiO<sub>2</sub> class I and class II hybrid nanofibers obtained by electrospinning F. OHLMAIER-DELGADILLO, M. M. CASTILLO-ORTEGA, R. RAMÍREZ-BON, L. ARMENTA-VILLEGAS, D. E. RODRÍGUEZ-FÉLIX, H. SANTACRUZ- ORTEGA, T. DEL CASTILLO-CASTRO AND I. SANTOS-SAUCEDA Published online 24 August 2016
- 44335 Facile fabrication of double-walled polymeric hollow spheres with independent temperature and pH dual-responsiveness for synergetic drug delivery N. CHENG, Y. WANG AND F. WU Published online 26 August 2016
- **44339** Re-elucidation of the acid-catalyzed urea-formaldehyde reactions: A theoretical and <sup>13</sup>C-NMR study T. LI, J. LIANG, M. CAO, X. GUO, X. XIE AND G. DU *Published online 26 August 2016*

- **44340** Effects of butyl acrylate modified polypropylene on structural and thermal properties of foamed polypropylene L. SU, W. ZHANG, R. XIA, J. MIAO, B. YANG, J. QIAN, F. RUAN AND Z. ZHENG *Published online 26 August 2016*
- 44343 Effect of block composition on the morphology, hydration, and transport properties of sulfonated PS-b-PEGPEM-b-PS

M. PÉREZ-PÉREZ AND D. SULEIMAN Published online 29 August 2016

- 44344 Influence of rubber content on mechanical, thermal, and morphological behavior of natural rubber toughened poly(lactic acid)-multiwalled carbon nanotube nanocomposites
  M. S. Z. M. DESA, A. HASSAN, A. ARSAD, R. ARJMANDI AND N. N. B. MOHAMMAD
  Published online 30 August 2016
- **44345 ESOA modified unsaturated polyester hybrid networks: A new perspective** S. PANDA, P. MOHANTY, D. BEHERA AND T. K. BASTIA *Published online 7 September 2016*

## CORRIGENDUM

44337 Corrigendum: α-Thiophene end-capped styrene copolymer containing fullerene pendant moieties: Synthesis, characterization, and gas sensing properties
 E. ŞENNIK, B. ŞENNIK, O. ALEV, N. KILINÇ, F. YILMAZ AND Z. Z. ÖZTÜRK
 Published online 19 August 2016