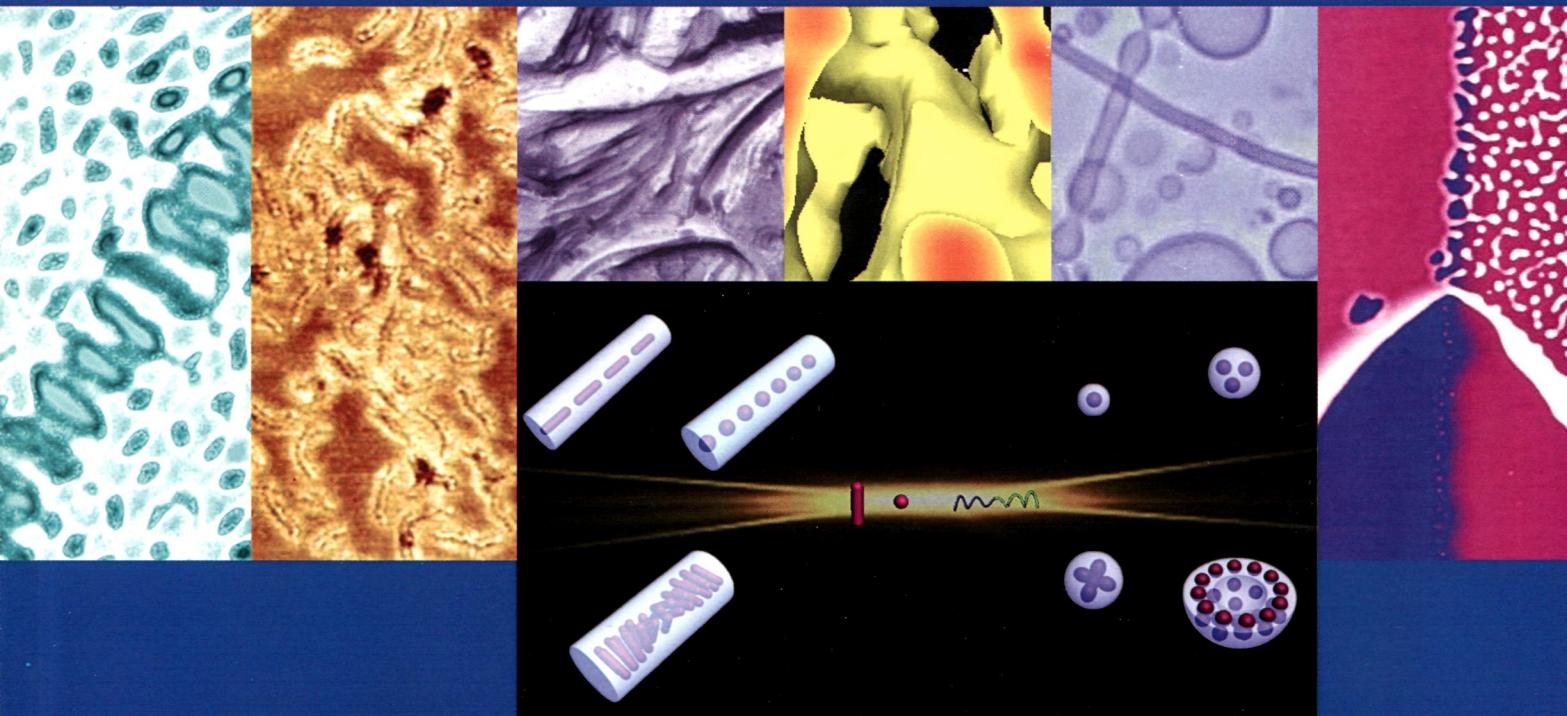


17U  
p80/3



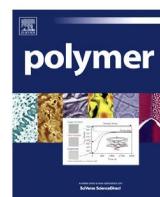
VOLUME 55 ISSUE 10, 13 MAY 2014

# polymer



Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

**ScienceDirect**



Polymer Vol. 55, No. 10, 13 May 2014

## Contents

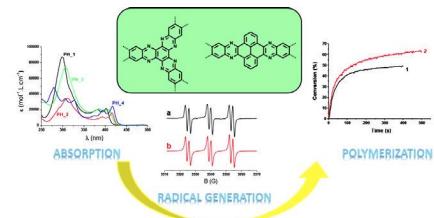
## POLYMER PAPERS

**Photoinitiators based on a phenazine scaffold: High performance systems upon near-UV or visible LED (385, 395 and 405 nm) irradiations** pp 2285–2293

Mohamad-Ali Tehfe<sup>a</sup>, Frédéric Dumur<sup>b</sup>, Pu Xiao<sup>a</sup>, Jing Zhang<sup>a</sup>, Bernadette Graff<sup>a</sup>, Fabrice Morlet-Savary<sup>a</sup>, Didier Gigmes<sup>b,\*</sup>, Jean-Pierre Fouassier<sup>a,b</sup>, Jacques Lalevée<sup>a,\*</sup>

<sup>a</sup>Institut de Science des Matériaux de Mulhouse IS2M, UMR CNRS 7361, UHA, 15, rue Jean Starcky, 68057 Mulhouse Cedex, France

<sup>b</sup>Aix-Marseille Université, CNRS, Institut de Chimie Radicalaire, UMR 7273, F-13397 Marseille Cedex 20, France



**Bio-based poly(ethylene terephthalate) copolymers made from cyclic monomers derived from tartaric acid**

pp 2294–2304

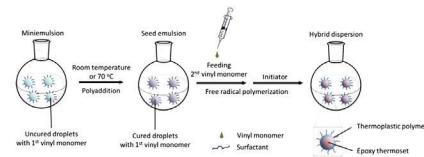
Cristina Japu, Antxon Martínez de Ilarduya, Abdelilah Alla, Sebastián Muñoz-Guerra\*

Departament d'Enginyeria Química, Universitat Politècnica de Catalunya, ETSEIB, Diagonal 647, 08028 Barcelona, Spain

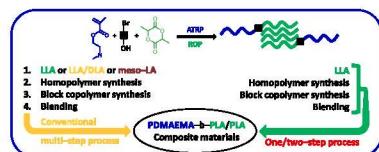


**Thermoset-thermoplastic hybrid nanoparticles and composite coatings**

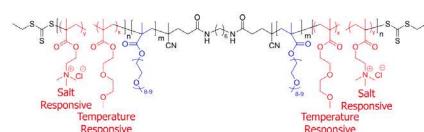
pp 2305–2315

Yang Zhang<sup>a,b</sup>, Rebecca Foos<sup>b</sup>, Katharina Landfester<sup>a</sup>, Andreas Taden<sup>a,b,\*</sup><sup>a</sup> Max-Planck-Institute for Polymer Research, Mainz, Germany<sup>b</sup> Henkel AG & Co. KGaA, Adhesive Research, Düsseldorf 40589, Germany**Linear amphiphilic diblock copolymers of lactide and 2-dimethylaminoethyl methacrylate using bifunctional-initiator and one-pot approaches**

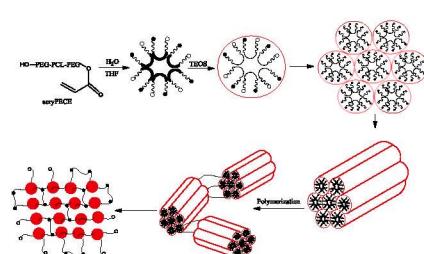
pp 2316–2324

Maksym A. Kryuchkov<sup>a,\*</sup>, Christophe Detrembleur<sup>b</sup>, C. Geraldine Bazuin<sup>a,\*\*</sup><sup>a</sup> Département de chimie, Centre de recherche sur les matériaux auto-assemblés (CRMAA/CSACS), Université de Montréal, C.P. 6128 Succ. Centre-ville, Montréal, QC H3C 3J7, Canada<sup>b</sup> Centre d'Étude et de Recherche sur les Macromolécules (CERM), Université de Liège, Sart-Tilman, Liège, Belgium**RAFT polymerization of temperature- and salt-responsive block copolymers as reversible hydrogels**

pp 2325–2331

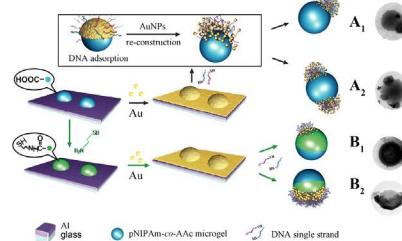
Sean T. Hemp<sup>a</sup>, Adam E. Smith<sup>b</sup>, W. Clayton Bunyard<sup>c</sup>, Michael H. Rubinstein<sup>d</sup>, Timothy E. Long<sup>a,\*</sup><sup>a</sup> Department of Chemistry, Macromolecules and Interfaces Institute, Virginia Tech, Blacksburg, VA 24061, USA<sup>b</sup> Department of Chemical Engineering, The University of Mississippi, University, MS 38677, USA<sup>c</sup> Department of Material Science, Corporate Research & Engineering, Kimberly-Clark Corporation, 2100 Winchester Road, Neenah, WI 54956, USA<sup>d</sup> Department of Chemistry, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA**Creating polymer templates and their use in the in-situ synthesis of biodegradable composite networks**

pp 2332–2339

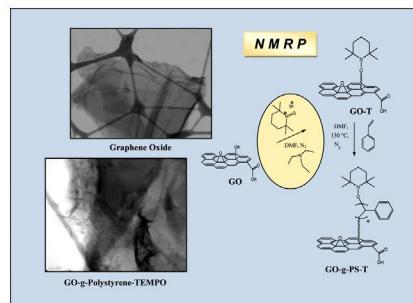
Nitin Patil<sup>a</sup>, Jarred Kelsey<sup>a</sup>, Jordan Fischer<sup>a</sup>, Brian Grady<sup>b</sup>, Jeffery L. White<sup>a,\*</sup><sup>a</sup> Department of Chemistry, Oklahoma State University, Stillwater, OK 74078, USA<sup>b</sup> Department of Chemical, Biological, and Materials Engineering, University of Oklahoma, USA

**Non-spherical Janus microgels driven by thiolated DNA interactions**

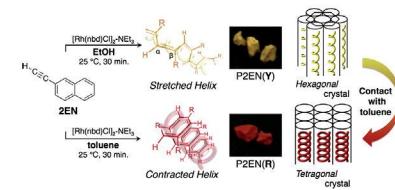
pp 2340-2346

Jingxia Wang<sup>a,b,c</sup>, Liang Hu<sup>a</sup>, Yanlin Song<sup>b</sup>, Michael J. Serpe<sup>a,\*</sup><sup>a</sup> Department of Chemistry, University of Alberta, Edmonton, Alberta T6G 2G2, Canada<sup>b</sup> Laboratory of Green Printing, Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190, China<sup>c</sup> Laboratory of Bio-inspired Smart Interface Science, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing 100190, China**Graphene oxide modification with graft polymers via nitroxide mediated radical polymerization**

pp 2347-2355

Omar García-Valdez<sup>a</sup>, Raquel Ledezma-Rodríguez<sup>a</sup>, Enrique Saldívar-Guerra<sup>a,\*</sup>, Luis Yate<sup>b</sup>, Sergio Moya<sup>b</sup>, Ronald F. Ziolo<sup>a,\*</sup><sup>a</sup> Centro de Investigación en Química Aplicada (CIQA), Blvd. Enrique Reyna No. 140, Saltillo, Coah. 25294, Mexico<sup>b</sup> CIC BiomaGUNE Paseo Miramón, 182 Edificio Empresarial C, E-20009 San Sebastián, Gipuzkoa, Spain**Structural determination of *stretched helix* and *contracted helix* having yellow and red colors of poly(2-ethynynlnaphthalene) prepared with a [Rh(norbornadiene)Cl]<sub>2</sub>-triethylamine catalyst**

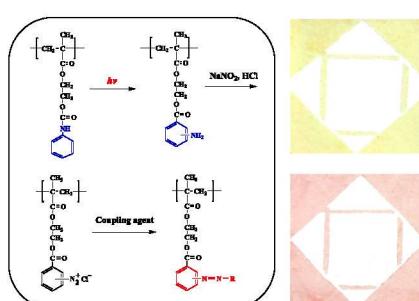
pp 2356-2361

Yasuteru Mawatari<sup>a,b,\*</sup>, Asahi Motoshige<sup>a</sup>, Yoshiaki Yoshida<sup>a</sup>, Ranko Motoshige<sup>a</sup>, Takahiro Sasaki<sup>a</sup>, Masayoshi Tabata<sup>a,b,\*</sup><sup>a</sup> Department of Applied Chemistry, Graduate School of Engineering, Muroran Institute of Technology, 27-1 Mizumoto-cho, Muroran, Hokkaido 050-8585, Japan<sup>b</sup> Research Center for Environmentally Friendly Materials Engineering, Muroran Institute of Technology, 27-1 Mizumoto-cho, Muroran, Hokkaido 050-8585, Japan**Photo-induced aminobenzoate group formation on a polymeric photobase generator bearing *N*-phenylcarbamate groups and its application to color imaging material**

pp 2362-2368

Kyu Ho Chae\*, U Chan Yang, Min Kwon Lee

Department of Polymer Engineering, Chonnam National University, Gwangju 500-757, Republic of Korea



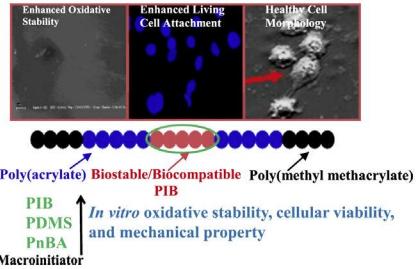
**Effect of atom transfer radical polymerization macroinitiator on properties of poly(meth)acrylate-based pentablock type of thermoplastic elastomers** pp 2369–2379

Ravikumar Muppalla<sup>a</sup>, Swati Srivastava<sup>b</sup>, Partha Roy<sup>b</sup>, Suresh K. Jewrajka<sup>a,c,\*</sup>

<sup>a</sup> Reverse Osmosis Discipline, CSIR–Central Salt and Marine Chemicals Research Institute, Bhavnagar 364002, Gujarat, India

<sup>b</sup> Molecular Endocrinology Laboratory, Department of Biotechnology, Indian Institute of Technology Roorkee, Roorkee 247 667, Uttarakhand, India

<sup>c</sup> AcSIR–Central Salt & Marine Chemicals Research Institute, Bhavnagar 364002, Gujarat, India



**One-stage photoinitiated RAFT dispersion polymerization – Reaction parameters for achieving high particle size uniformity** pp 2380–2388

Jianbo Tan<sup>a,b</sup>, Xin Rao<sup>a,b</sup>, Dan Jiang<sup>c</sup>, Jianwen Yang<sup>a,b</sup>, Zhaohua Zeng<sup>a,b,\*</sup>

<sup>a</sup> Key Laboratory for Polymeric Composite and Functional Materials of Ministry of Education, School of Chemistry and Chemical Engineering, Sun Yat-Sen University, Guangzhou 510275, China

<sup>b</sup> Key Laboratory of Designed Synthesis and Application of Polymer Material, School of Chemistry and Chemical Engineering, Sun Yat-Sen University, Guangzhou 510275, China

<sup>c</sup> Instrumental Analysis and Research Centre, Sun Yat-Sen University, Guangzhou 510275, China



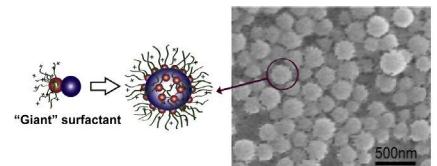
**Synthesis and property of polystyrene particle with smart surface by emulsion polymerization using “giant” surfactant** pp 2389–2393

Yanqi Wei<sup>a,b</sup>, Yingjie Wang<sup>a,b</sup>, Zehua Zeng<sup>a,b</sup>, Shuang Zhang<sup>a,b</sup>, Daoben Hua<sup>a,b,c,\*</sup>

<sup>a</sup> Jiangsu Key Laboratory of Radiation Medicine and Protection, School for Radiological and Interdisciplinary Sciences (RAD-X), and School of Radiation Medicine and Protection, Medical College, Soochow University, Suzhou 215123, China

<sup>b</sup> Department of Polymer Science and Engineering, College of Chemistry, Chemical Engineering and Materials Science, Soochow University, Suzhou 215123, China

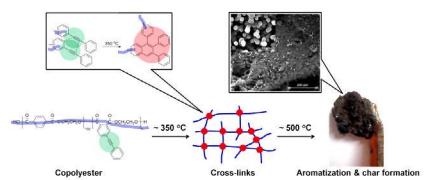
<sup>c</sup> Collaborative Innovation Center of Radiological Medicine of Jiangsu Higher Education Institutions, Suzhou 215123, China



**A flame-retardant-free and thermo-cross-linkable copolyester: Flame-retardant and anti-dripping mode of action** pp 2394–2403

Hai-Bo Zhao, Bo-Wen Liu, Xiao-Lin Wang, Li Chen\*, Xiu-Li Wang, Yu-Zhong Wang\*

Center for Degradation and Flame-Retardant Polymeric Materials, College of Chemistry, State Key Laboratory of Polymer Materials Engineering, National Engineering Laboratory of Eco-Friendly Polymeric Materials (Sichuan), Sichuan University, Chengdu 610064, PR China

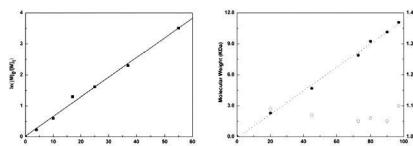
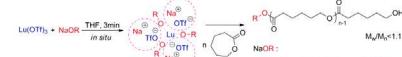


**A novel approach to RE–OR bond from *in situ* reaction of rare earth triflates and sodium alkoxides: A versatile catalyst for living ring-opening polymerization of  $\epsilon$ -caprolactone** pp 2404–2410

Lixin You<sup>a</sup>, Zhiqian Shen<sup>a</sup>, Jie Kong<sup>b</sup>, Jun Ling<sup>a,\*</sup>

<sup>a</sup> MOE Key Laboratory of Macromolecular Synthesis and Functionalization, Department of Polymer Science and Engineering, Zhejiang University, Hangzhou 310027, China

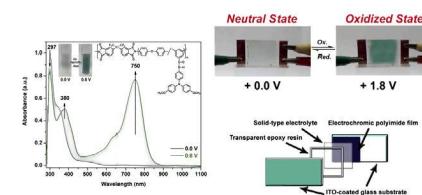
<sup>b</sup> Shaanxi Key Laboratory of Macromolecular Science and Technology, School of Science, Northwestern Polytechnical University, Xi'an 710072, China



**Synthesis and electrochromic properties of aromatic polyimides bearing pendent triphenylamine units** pp 2411–2421

Sheng-Huei Hsiao<sup>\*</sup>, Yu-Tan Chou

Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, Taipei 10608, Taiwan, ROC



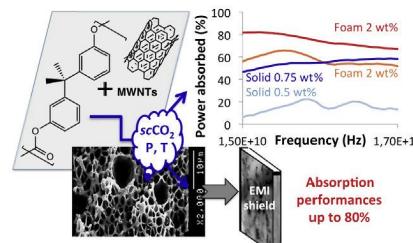
**Supercritical CO<sub>2</sub> and polycarbonate based nanocomposites: A critical issue for foaming** pp 2422–2431

Laure Monnereau<sup>a</sup>, Laetitia Urbanczyk<sup>b</sup>, Jean-Michel Thomassin<sup>b</sup>, Michaël Alexandre<sup>b</sup>, Christine Jérôme<sup>b</sup>, Isabelle Huynen<sup>c</sup>, Christian Bailly<sup>c</sup>, Christophe Detrembleur<sup>b,\*</sup>

<sup>a</sup> Institute of Organic Chemistry, KIT-Campus South, Fritz-Haber Weg 6, 76131 Karlsruhe, Germany

<sup>b</sup> Center for Education and Research on Macromolecules (CERM), University of Liège, Building B6a, 4000 Liège, Belgium

<sup>c</sup> Research Center in Micro and Nanoscopic Materials and Electronic Devices, CeRMN, Université Catholique de Louvain, 1348 Louvain-la-Neuve, Belgium



**Aromatic thermotropic polyesters based on 2,5-furandicarboxylic acid and vanillic acid** pp 2432–2439

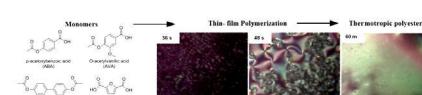
Carolus H.R.M. Wilsens<sup>a,d</sup>, Bart A.J. Noordover<sup>a,d</sup>, Sanjay Rastogi<sup>b,c,d,\*</sup>

<sup>a</sup> Laboratory of Polymer Materials, Eindhoven University of Technology, 5600MB Eindhoven, The Netherlands

<sup>b</sup> Department of Biobased Materials, Maastricht University, P.O. Box 616, 6200MD Maastricht, The Netherlands

<sup>c</sup> Department of Materials, Loughborough University, Loughborough, Leicestershire LE11 3TU, United Kingdom

<sup>d</sup> Dutch Polymer Institute (DPI), P.O. Box 902, 5600AX Eindhoven, The Netherlands

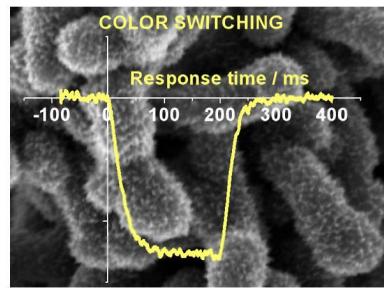


**Fast electrochromic response of ultraporous polyaniline nanofibers**

pp 2440–2444

Eustaquio M. Erro\*, Ana M. Baruzzi, Rodrigo A. Iglesias

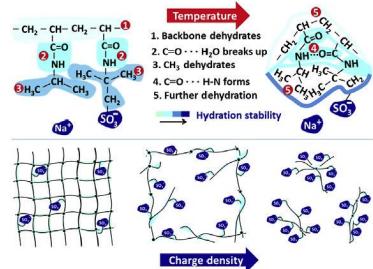
INFIQC, CONICET, Departamento de Fisicoquímica, Facultad de Ciencias Químicas, Universidad Nacional de Córdoba (UNC), Haya de la Torre s/n, 5000 Córdoba, Argentina

**Influence of charge density on rheological properties and dehydration dynamics of weakly charged poly(*N*-isopropylacrylamide) during phase transition**

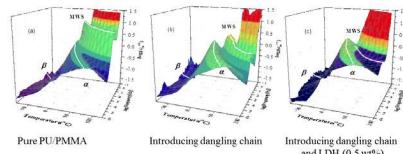
pp 2445–2454

Yilan Ye, Yonggang Shangguan\*, Yihu Song, Qiang Zheng\*

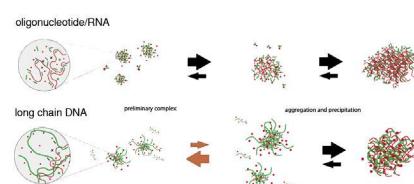
MOE Key Laboratory of Macromolecular Synthesis and Functionalization, Department of Polymer Science and Engineering, Zhejiang University, Hangzhou 310027, China

**Relaxation behavior of layered double hydroxides filled dangling chain-based polyurethane/polymethyl methacrylate nanocomposites**

pp 2455–2463

Wenwen Yu<sup>b</sup>, Miao Du<sup>a,b,\*</sup>, Weijuan Ye<sup>b</sup>, Weiyang Lv<sup>b</sup>, Qiang Zheng<sup>a,b,\*</sup><sup>a</sup> MOE Key Laboratory of Macromolecular Synthesis and Functionalization, Hangzhou 310027, China<sup>b</sup> Department of Polymer Science and Engineering, Zhejiang University, Hangzhou, 310027, China**Long-term kinetics of DNA interacting with polycations**

pp 2464–2471

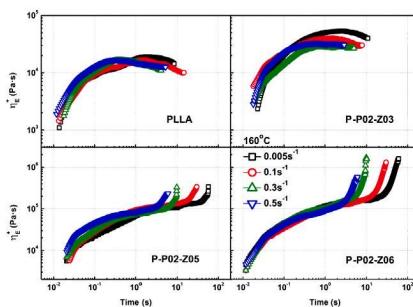
Cui Zheng<sup>a</sup>, Lin Niu<sup>a</sup>, Wei Pan<sup>a</sup>, Jihan Zhou<sup>a</sup>, Hua Lv<sup>b</sup>, Jianjun Cheng<sup>b</sup>, Dehai Liang<sup>a,\*</sup><sup>a</sup> Beijing National Laboratory for Molecular Sciences, Key Laboratory of Polymer Chemistry & Physics of Ministry of Education, College of Chemistry & Molecular Engineering, Peking University, Beijing 100871, PR China<sup>b</sup> Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA

**Preparation and rheological characterization of long chain branching polylactide**

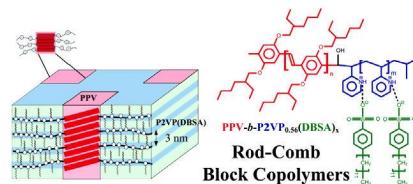
pp 2472-2480

Jianye Liu, Shijun Zhang\*, Liying Zhang, Yiqing Bai

SINOPEC Beijing Research Institute of Chemical Industry, Beijing 100013, People's Republic of China

**Phase transformation and self-assembly behavior of supramolecular rod-comb block copolymers**

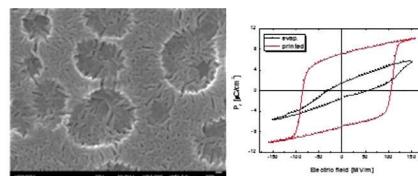
pp 2481-2490

Yi-Huan Lee<sup>a,b</sup>, Chun-Jie Chang<sup>a</sup>, Yi-Lung Yang<sup>a</sup>, Chi-Ju Chiang<sup>b</sup>, Yu-Ping Lee<sup>b</sup>, Ching Shen<sup>b</sup>, Kang-Ting Tsai<sup>c</sup>, Yi-Fan Chen<sup>d</sup>, Chi-An Dai<sup>a,b,\*</sup><sup>a</sup> Institute of Polymer Science and Engineering, National Taiwan University, Taipei 10617, Taiwan<sup>b</sup> Department of Chemical Engineering, National Taiwan University, Taipei 10617, Taiwan<sup>c</sup> Program of Landscape and Recreation, National Chung Hsing University, Taichung 40227, Taiwan<sup>d</sup> Department of Chemical and Materials Engineering, National Central University, Jhongli 32001, Taiwan**Transfer-printed thin film metal electrodes for high-performance ferroelectric P(VDF-TrFE) devices**

pp 2491-2495

Donyoung Kim, Dahl-Young Khang\*

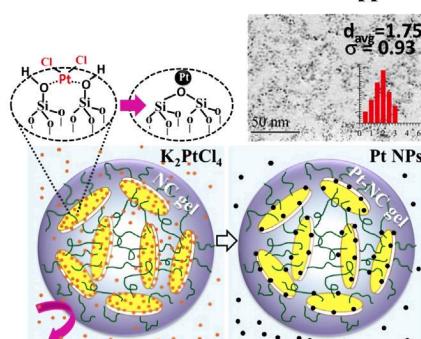
Department of Materials Science and Engineering, Yonsei University, Seoul 120-749, Republic of Korea

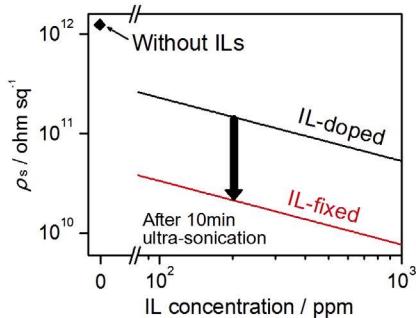
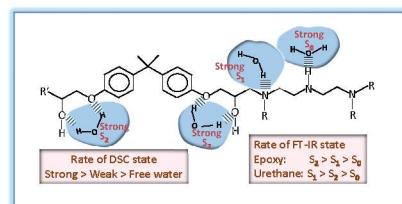
**Platinum–polymer–clay nanocomposite hydrogels via exfoliated clay-mediated in situ reduction**

pp 2496-2500

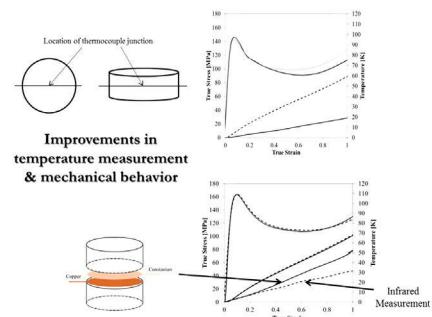
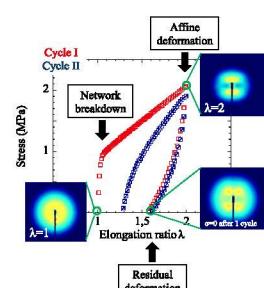
Kazutoshi Haraguchi\*, Dharmesh Varade

Kawamura Institute of Chemical Research, 631 Sakado, Sakura-shi, Chiba 285-0078, Japan



**Fixation of ionic liquids into polyether-based polyurethane films to maintain long-term antistatic properties****pp 2501–2504**Takuya Iwata<sup>a,b,c</sup>, Akiko Tsurumaki<sup>a,b</sup>, Saori Tajima<sup>a,b</sup>, Hiroyuki Ohno<sup>a,b,\*</sup><sup>a</sup>*Department of Biotechnology, Tokyo University of Agriculture and Technology, 2-24-16 Naka-cho, Koganei, Tokyo 184-8588, Japan*<sup>b</sup>*Functional Ionic Liquid Laboratories, Graduate School of Engineering, Tokyo University of Agriculture and Technology, 2-24-16 Naka-cho, Koganei, Tokyo 184-8588, Japan*<sup>c</sup>*Iwata & Co., Ltd., 1-2-11, Nishiki, Naka-ku, Nagoya, Aichi 460-0003 Japan***States of water absorbed in water-borne urethane/epoxy coatings****pp 2505–2513**Yukitoshi Takeshita<sup>a,\*</sup>, Ethan Becker<sup>b</sup>, Seizo Sakata<sup>a</sup>, Takashi Miwa<sup>a</sup>, Takashi Sawada<sup>a</sup><sup>a</sup>*NTT Energy and Environment Systems Laboratories, NTT Corporation, 3-9-11 Midori-cho, Musashino-shi, Tokyo 180-8585, Japan*<sup>b</sup>*University of Wisconsin Platteville, 1 University Plaza Platteville, WI 53818, USA***Novel temperature measurement method & thermodynamic investigations of amorphous polymers during high rate deformation****pp 2514–2522**

Michael J. Kendall, Richard F. Froud, Clive R. Siviour\*

*Department of Engineering Science, University of Oxford, Parks Road, Oxford OX1 3PJ, UK***Nanoparticles reorganizations in polymer nanocomposites under large deformation****pp 2523–2534**Nicolas Jouault<sup>a,\*</sup>, Florent Dalmas<sup>b</sup>, François Boué<sup>c</sup>, Jacques Jestin<sup>c</sup><sup>a</sup>*Sorbonne Universités, UPMC Univ. Paris 06, CNRS, UMR 8234, PHENIX, F-75005 Paris, France*<sup>b</sup>*Laboratoire MATEIS, INSA Lyon, CNRS UMR 5510, 69621 Villeurbanne Cedex, France*<sup>c</sup>*Laboratoire Léon Brillouin (LLB), CEA Saclay, 91191 Gif-Sur-Yvette, France*

**Role of strain induced crystallization and oxidative crosslinking in fracture properties of rubbers**

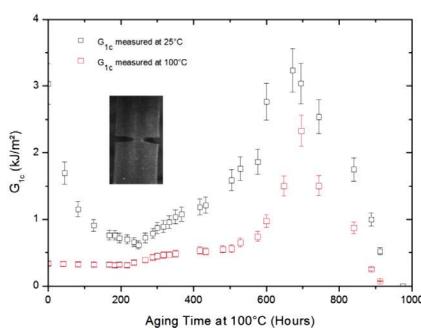
pp 2535-2542

Pierre Yves Le Gac<sup>a,\*</sup>, Morgane Broudin<sup>a</sup>, Gérard Roux<sup>b</sup>, Jacques Verdu<sup>c</sup>, Peter Davies<sup>a</sup>, Bruno Fayolle<sup>c</sup>

<sup>a</sup> IFREMER, Centre de Bretagne, Marine Structures Laboratory, BP70, 29280 Plouzane, France

<sup>b</sup> Thales Underwater Systems, TUS, route des Dolines, BP 157, 06903 Sophia-Antipolis Cedex, France

<sup>c</sup> PIMM, Arts et Métiers ParisTech, 151 Bd de l'Hôpital, F-75013 Paris, France

**Role of entanglements and bond scission in high strain-rate deformation of polymer gels**

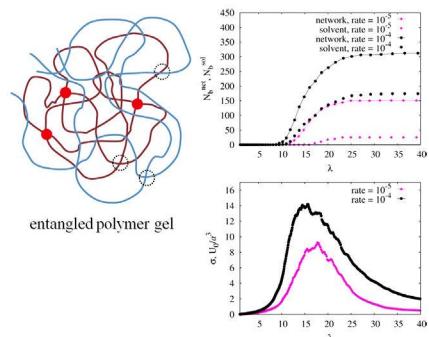
pp 2543-2551

Yelena R. Sliozberg<sup>a,b,\*</sup>, Robert S. Hoy<sup>c</sup>, Randy A. Mrozek<sup>a</sup>, Joseph L. Lenhart<sup>a</sup>, Jan W. Andzelm<sup>a,\*\*</sup>

<sup>a</sup> U.S. Army Research Laboratory, Aberdeen Proving Ground, MD 21005-5069, USA

<sup>b</sup> Bowhead Science and Technology, LLC, 15163 Dahlgren Rd., King George, VA 22485, USA

<sup>c</sup> Department of Physics, University of South Florida, Tampa, FL 33620-5700, USA

**Synthesis of star polymers by "core-first" one-pot method via ATRP: Monte Carlo simulations**

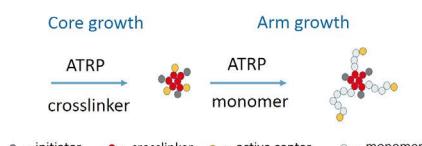
pp 2552-2561

Piotr Polanowski<sup>b</sup>, Jeremiasz K. Jeszka<sup>c</sup>, Krzysztof Matyjaszewski<sup>a,\*</sup>

<sup>a</sup> Department of Chemistry, Carnegie Mellon University, 4400 Fifth Avenue, Pittsburgh, PA 15213, USA

<sup>b</sup> Department of Molecular Physics, Technical University of Lodz, 90-924 Lodz, Poland

<sup>c</sup> Department of Man-Made Fibres, Technical University of Lodz, 90-924 Lodz, Poland

**Small-angle X-ray scattering studies on melting and recrystallization behaviors of poly(oxyethylene) crystallites in poly(*D,L*-lactide)/poly(oxyethylene) blends**

pp 2562-2569

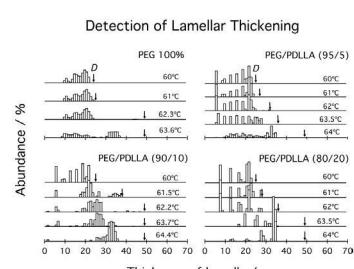
Nguyen-Dung Tien<sup>a</sup>, Sono Sasaki<sup>a,b</sup>, Hiroyasu Masunaga<sup>c</sup>, Nobutaka Shimizu<sup>d</sup>, Noriyuki Igarashi<sup>d</sup>, Shinichi Sakurai<sup>a,b,\*</sup>

<sup>a</sup> Department of Biobased Materials Science, Kyoto Institute of Technology, Matsugasaki, Sakyo-ku, Kyoto 606-8585, Japan

<sup>b</sup> Center for Fiber and Textile Science, Kyoto Institute of Technology, Japan

<sup>c</sup> Advanced Softmaterial Beamline (FSBL), Japan Synchrotron Radiation Research Institute (JASRI/SPring-8), Japan

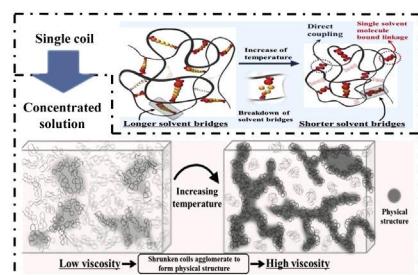
<sup>d</sup> Photon Factory, High Energy Accelerator Research Organization (KEK), Japan



**Solubility parameter-based analysis of polyacrylonitrile solutions in N,N-dimethyl formamide and dimethyl sulfoxide** pp 2570–2577

Youngho Eom, Byoung Chul Kim\*

*Department of Organic and Nano Engineering, Hanyang University, 222 Wangsimni-ro, Seongdong-gu, Seoul 133-791, Republic of Korea*

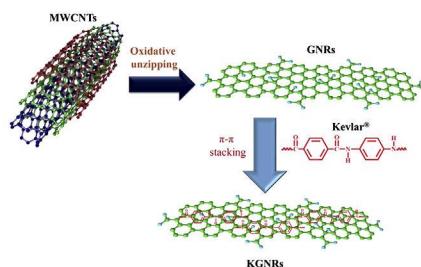

**Kevlar®-functionalized graphene nanoribbon for polymer reinforcement**

pp 2578–2587

Min Lian<sup>a</sup>, Jinchen Fan<sup>b</sup>, Zixing Shi<sup>a,\*</sup>, Hong Li<sup>a</sup>, Jie Yin<sup>a</sup>

<sup>a</sup>*School of Chemistry and Chemical Engineering, State Key Laboratory for Metal Matrix Composite Materials, Shanghai Jiao Tong University, Shanghai 200240, People's Republic of China*

<sup>b</sup>*College of Environmental and Chemical Engineering, Shanghai University of Electric Power, Shanghai 200090, People's Republic of China*


**Stretching induced phase separation in poly(vinylidene fluoride)/poly(butylene succinate) blends studied by *in-situ* X-ray scattering**

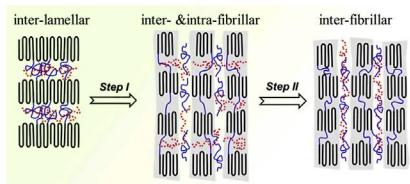
pp 2588–2596

Guoming Liu<sup>a</sup>, Konrad Schneider<sup>b</sup>, Liuchun Zheng<sup>a</sup>, Xiuqin Zhang<sup>c</sup>, Chuncheng Li<sup>a</sup>, Manfred Stamm<sup>b,\*</sup>, Dujin Wang<sup>a,\*</sup>

<sup>a</sup>*Beijing National Laboratory for Molecular Sciences, CAS Key Laboratory of Engineering Plastics, Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190, China*

<sup>b</sup>*Leibniz-Institut für Polymerforschung Dresden, e.V., Dresden 01069, Germany*

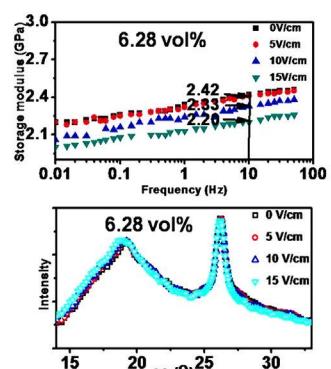
<sup>c</sup>*Beijing Key Laboratory of Clothing Materials R & D and Assessment, Department of Materials Science & Engineering, Beijing Institute of Fashion Technology, Beijing 100029, China*


**Joule heat dependence of dynamic tensile modulus of polyimide-vapor grown carbon fiber nanocomposites under applied electric field evaluated in terms of thermal fluctuation-induced tunneling effect**

pp 2597–2608

Panpan Zhang, Yuezhen Bin, Rong Zhang, Masaru Matsuo\*

*Department of Polymer Science and Materials, Dalian University of Technology, Dalian 116024, China*

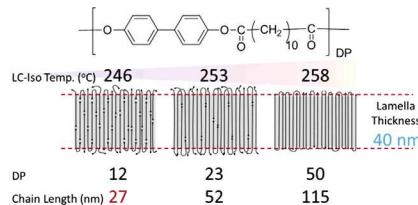


**Decrease in the isotropization temperature and enthalpy of main-chain polymer smectic liquid crystals as a result of the inclusion of chain ends** pp 2609–2613

Chiharu Takahashi<sup>a</sup>, Shusuke Yoshihara<sup>b</sup>, Sungmin Kang<sup>a</sup>, Koichi Sakajiri<sup>a</sup>, Junji Watanabe<sup>a</sup>, Masatoshi Tokita<sup>a,\*</sup>

<sup>a</sup> Department of Organic and Polymeric Materials, Tokyo Institute of Technology, Ookayama, Meguro-ku, Tokyo 152-8552, Japan

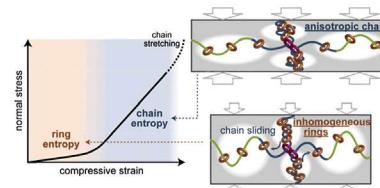
<sup>b</sup> Frontier Materials Development Laboratories, Kaneka Corporation 5-1-1, Torikai-Nishi, Settsu, Osaka 566-0072, Japan



**Peculiar elasticity and strain hardening attributable to counteracting entropy of chain and ring in slide-ring gels** pp 2614–2619

Kazuaki Kato\*, Takaaki Yasuda, Kohzo Ito\*

Department of Advanced Materials Science, Graduate School of Frontier Sciences, The University of Tokyo, 5-1-5 Kashiwanoha, Kashiwa, Chiba 277-8561, Japan



\*Corresponding author

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

**ScienceDirect**

Full text of this journal is available, on-line from **ScienceDirect**. Visit [www.sciencedirect.com](http://www.sciencedirect.com) for more information.

Abstracted/indexed in: AGRICOLA, Beilstein, BIOSIS Previews, CAB Abstracts, Chemical Abstracts, Current Contents: Life Sciences, Current Contents: Physical, Chemical and Earth Sciences, Current Contents Search, Derwent Drug File, Ei Compendex, EMBASE/Excerpta Medica, Medline, PASCAL, Research Alert, Science Citation Index, SciSearch. Also covered in the abstract and citation database SCOPUS®. Full text available on ScienceDirect®



ISSN 0032-3861