

# polymer

**Light-induced wettability changes on polymer surfaces**

The diagram illustrates the photoisomerization of azobenzene derivatives. The chemical structures shown are azobenzene and its photoisomers, which are used to modify polymer surfaces. The process is triggered by light ( $h\nu$ ), leading to changes in the surface morphology and wettability, as demonstrated by the contact angle measurements.

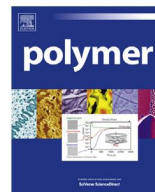
Special Issue: Polymerized Ionic Liquids: From structure and properties to emerging technology

*Guest Editors*

Timothy E. Long and Jiayin Yuan

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**ScienceDirect**



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**GUEST EDITED BY TIMOTHY E. LONG & JIAYIN YUAN**

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**SPECIAL ISSUE PAPERS**

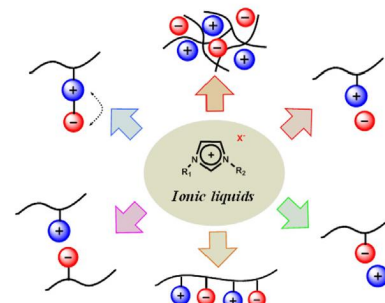
**15th anniversary of polymerised ionic liquids**

pp 3289–3297

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<sup>b</sup> Functional Ionic Liquid Laboratories, Graduate School of Technology, Tokyo University of Agriculture and Technology, Japan

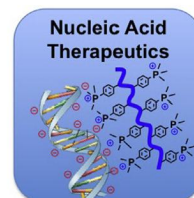
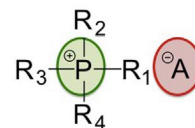


**Phosphonium cation-containing polymers: From ionic liquids to polyelectrolytes**

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Chainika Jangu, Timothy E. Long\*

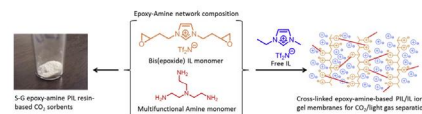
Department of Chemistry, Macromolecules and Interfaces Institute, Virginia Tech., Blacksburg, VA 24061, United States



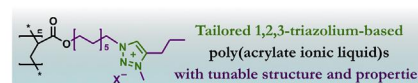
- Ionic Liquids**
- ❖ Thermal & chemical stability
  - ❖ High ionic conductivity
  - ❖ Negligible volatility
  - ❖ Tunable polarity
  - ❖ Low melting point

**Cross-linked ionic resins and gels from epoxide-functionalized imidazolium ionic liquid monomers**

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William M. McDanel<sup>a</sup>, Matthew G. Cowan<sup>a</sup>, Trevor K. Carlisle<sup>a</sup>, Anna K. Swanson<sup>a</sup>, Richard D. Noble<sup>a,\*</sup>, Douglas L. Gin<sup>a,b,\*\*</sup><sup>a</sup>Department of Chemical and Biological Engineering, University of Colorado, Boulder, CO 80309, United States<sup>b</sup>Department of Chemistry and Biochemistry, University of Colorado, Boulder, CO 80309, United States**1,2,3-Triazolium-based poly(acrylate ionic liquid)s**

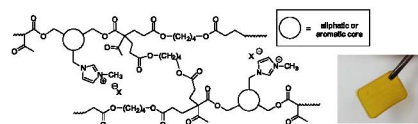
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Rakhi Sood<sup>a</sup>, Mona Marie Obadia<sup>a</sup>, Bhanu Prakash Mudraboyina<sup>a</sup>, Biao Zhang<sup>a</sup>, Anatoli Serghei<sup>a</sup>, Julien Bernard<sup>a</sup>, Eric Drockenmuller<sup>a,b,\*</sup><sup>a</sup>Université Claude Bernard Lyon 1, INSA de Lyon, Ingénierie des Matériaux Polymères (IMP – UMR CNRS 5223), 15 Boulevard Latarjet, 69622 Villeurbanne Cedex, France<sup>b</sup>Institut Universitaire de France (IUF), France**Crosslinked imidazolium-containing polyester networks containing a pendant imidazolium group: Swelling studies and thermal properties**

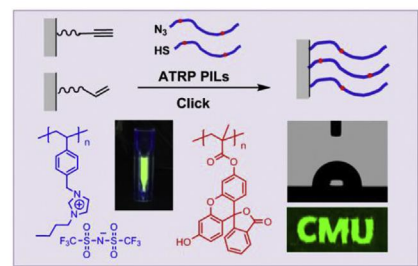
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Carli P. Whittington, Lucas A. Daily, Kevin M. Miller\*

Department of Chemistry, Murray State University, 1201 Jesse D. Jones Hall, Murray, KY 42071, USA

**Clickable poly(ionic liquid)s for modification of glass and silicon surfaces**

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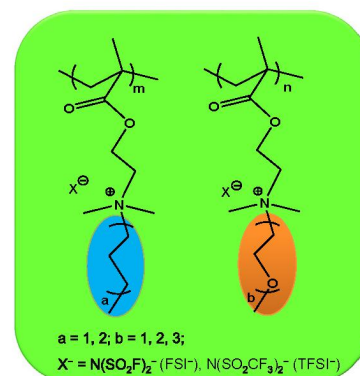
Hongkun He<sup>a,b</sup>, Saadyah Averick<sup>a</sup>, Elliot Roth<sup>b</sup>, David Luebke<sup>b</sup>, Hunaid Nulwala<sup>a,b,\*</sup>, Krzysztof Matyjaszewski<sup>a,b,\*</sup><sup>a</sup>Center for Macromolecular Engineering, Department of Chemistry, Carnegie Mellon University, 4400 Fifth Avenue, Pittsburgh, PA 15213, USA<sup>b</sup>National Energy Technology Laboratory, United States Department of Energy, P.O. Box 10940, Pittsburgh, PA 15236, USA

**Polymeric ionic liquids based on ether functionalized ammoniums and perfluorinated sulfonimides**

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Heng Zhang, Li Li, Wenfang Feng, Zhibin Zhou\*, Jin Nie\*

Key Laboratory for Large-Format Battery Materials and System (Ministry of Education), School of Chemistry and Chemical Engineering, Huazhong University of Science and Technology, 1037 Luoyu Road, Wuhan 430074, China

**Protic and aprotic anionic oligomeric ionic liquids**

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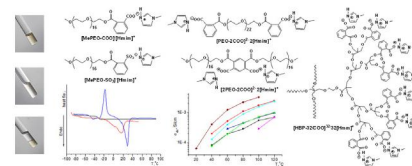
V.V. Shevchenko<sup>a,\*</sup>, A.V. Strytsky<sup>a</sup>, N.S. Klymenko<sup>a</sup>, M.A. Gumenna<sup>a</sup>, A.A. Fomenko<sup>a</sup>,  
 V.N. Bliznyuk<sup>b</sup>, V.V. Trachevsky<sup>c</sup>, V.V. Davydenko<sup>a</sup>, V.V. Tsukruk<sup>d</sup>

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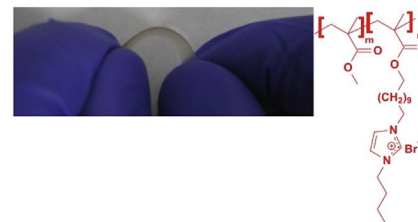
<sup>d</sup>School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA 30332-0245, USA

**Polymerized ionic liquid diblock copolymers with long alkyl side-chain length**

pp 3360–3369

Jacob R. Nykaza, Yuesheng Ye, Yossef A. Elabd\*

Department of Chemical and Biological Engineering, Drexel University, Philadelphia 19104, PA, USA

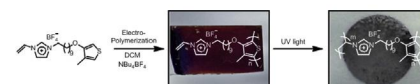
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Scott M. Brombosz<sup>a</sup>, Sönke Seifert<sup>a</sup>, Millicent A. Firestone<sup>b,\*</sup>

<sup>a</sup>Argonne National Laboratory, Argonne, IL 60439, USA

<sup>b</sup>Center for Integrated Nanotechnologies, Los Alamos National Laboratory, P.O. Box 1663, MS K771, Los Alamos, NM 87545, USA

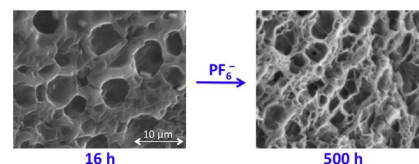


## Anion and solvent responsive copolymeric gels – Morphology, annealing, and surfactant stimuli

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Hong Gu, John Texter\*

Coatings Research Institute, School of Engineering Technology, Eastern Michigan University, Ypsilanti, MI 48197, USA



## Truly solid state electrochromic devices constructed from polymeric ionic liquids as solid electrolytes and electrodes formulated by vapor phase polymerization of 3,4-ethylenedioxythiophene

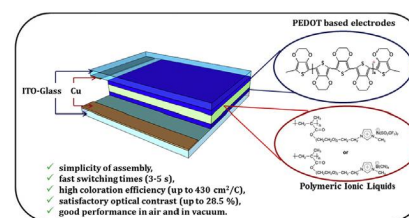
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Alexander S. Shaplov<sup>a,\*</sup>, Denis O. Ponkratov<sup>a</sup>, Pierre-Henri Aubert<sup>b</sup>, Elena I. Lozinskaya<sup>a</sup>, Cédric Plesse<sup>b</sup>, Ali Maziz<sup>b</sup>, Petr S. Vlasov<sup>a,c</sup>, Frédéric Vidal<sup>b</sup>, Yakov S. Vygodskii<sup>a</sup>

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<sup>b</sup> Laboratoire de Physico-chimie des Polymères et des Interfaces (LPPI), Université de Cergy-Pontoise, 5 mail Gay-Lussac, 95031 Cergy-Pontoise Cedex, France

<sup>c</sup> Department of Macromolecular Chemistry, Saint-Petersburg State University, Universitetsky Pr. 26, 198504 Saint-Petersburg, Russia



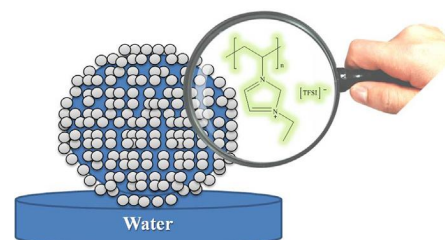
## Simple route to prepare stable liquid marbles using poly(ionic liquid)s

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Ana M. Fernandes<sup>a</sup>, Raquel Gracia<sup>a</sup>, G. Patricia Leal<sup>a</sup>, Maria Paulis<sup>a</sup>, David Mecerreyes<sup>a,b,\*</sup>

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<sup>b</sup> Ikerbasque, Basque Foundation for Science, E-48011 Bilbao, Spain



## Post-polymerization modification and organocatalysis using reactive statistical poly(ionic liquid)-based copolymers

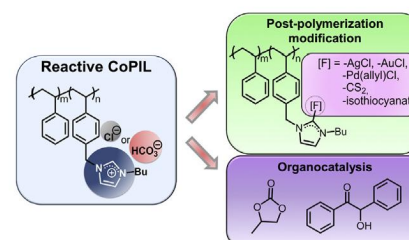
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Paul Coupillaud<sup>a,b,c</sup>, Joan Vignolle<sup>a,b</sup>, David Mecerreyes<sup>c</sup>, Daniel Taton<sup>a,b,\*</sup>

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<sup>c</sup> POLYMAT Institute for Polymer Materials, University of the Basque Country UPV/EHU, Joxe Mari Korta Center, Avda. Tolosa 72, 20018 Donostia-san Sebastian, Spain

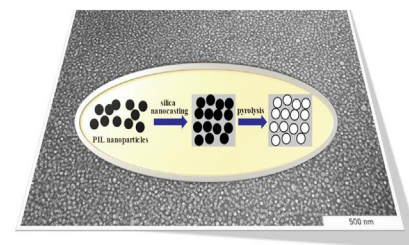


**Poly(ionic liquid) nanoparticles as novel colloidal template for silica nanocasting**

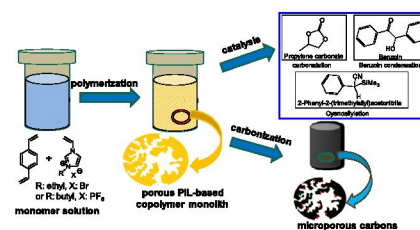
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Sebastian Soll, Markus Antonietti, Jiayin Yuan\*

Department of Colloid Chemistry, Max Planck Institute of Colloids and Interfaces, Potsdam 14476, Germany

**Functional mesoporous poly(ionic liquid)-based copolymer monoliths: From synthesis to catalysis and microporous carbon production**

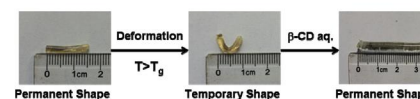
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Danuta Kuzmicz<sup>a</sup>, Paul Coupillaud<sup>b,c</sup>, Yongjun Men<sup>a</sup>, Joan Vignolle<sup>b,c</sup>,  
Giordano Vendramineto<sup>b,c</sup>, Martina Ambroggi<sup>a</sup>, Daniel Taton<sup>b,c,\*\*</sup>, Jiayin Yuan<sup>a,\*</sup><sup>a</sup> Max Planck Institute of Colloids and Interfaces, Department of Colloid Chemistry, Am Mühlenberg 1, 14476 Potsdam, Germany<sup>b</sup> Centre National de la Recherche Scientifique, Laboratoire de Chimie des Polymères Organiques, 16 Avenue Pey-Berland, F-33607 Pessac Cedex, France<sup>c</sup> Université de Bordeaux, Laboratoire de Chimie des Polymères Organiques, IPB-ENSCBP, F-33607 Pessac Cedex, France**Shape memory poly(ionic liquid) gels controlled by host–guest interaction with  $\beta$ -cyclodextrin**

pp 3431–3435

Chao Yuan, Jiangna Guo, Feng Yan\*

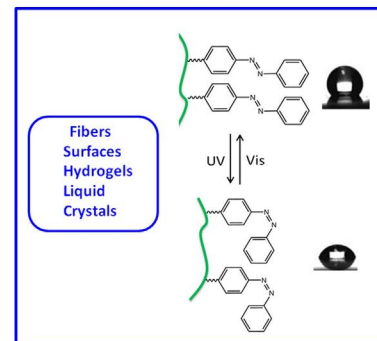
Jiangsu Key Laboratory of Advanced Functional Polymer Design and Application, Department of Polymer Science and Engineering, College of Chemistry, Chemical Engineering and Materials Science, Soochow University, Suzhou 215123, China

**FEATURE ARTICLE****Light-induced wettability changes on polymer surfaces**

pp 3436–3453

Natalie Wagner, Patrick Theato\*

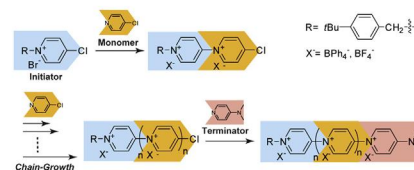
Institute for Technical and Macromolecular Chemistry, University of Hamburg, Bundesstraße 45, 20146 Hamburg, Germany



## POLYMER COMMUNICATIONS

## Terminal defined chain-growth polycondensation of 4-chloropyridine

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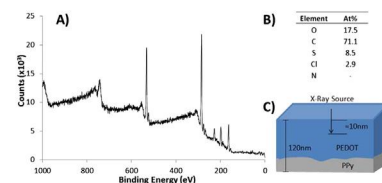
Keiji Nose<sup>a</sup>, Tomokazu Iyoda<sup>a,b,\*</sup>, Takanobu Sanji<sup>b</sup><sup>a</sup>Chemical Resources Laboratory, Tokyo Institute of Technology, 4259 Nagatsuta, Midori-ku, Yokohama 226-8503, Japan<sup>b</sup>JST-ERATO Iyoda Supra-Integrated Material Project, 4259-S2-3 Nagatsuta, Midori-ku, Yokohama 226-8503, Japan

## Evidence for 'bottom up' growth during vapor phase polymerization of conducting polymers

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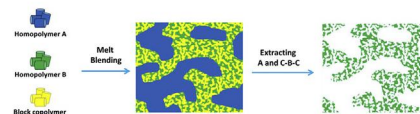
Robert Brooke, Manrico Fabretto\*, Pejman Hojati-Talemi, Peter Murphy, Drew Evans

Thin Film Coatings Group, Mawson Institute, University of South Australia, Mawson Lakes, 5095 SA, Australia



## Hierarchically porous polymeric materials from ternary polymer blends

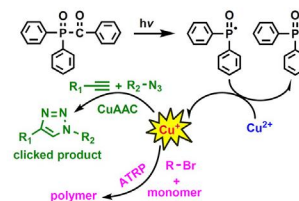
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Jun Wang<sup>a</sup>, Benoît H. Lessard<sup>b</sup>, Milan Maric<sup>b</sup>, Basil D. Favis<sup>a,\*</sup><sup>a</sup>CREPEC, Department of Chemical Engineering, École Polytechnique de Montréal, Montréal, Québec H3T 1J4, Canada<sup>b</sup>CREPEC, Department of Chemical Engineering, McGill University, Montréal, Québec H3A 2B2, Canada

## POLYMER PAPERS

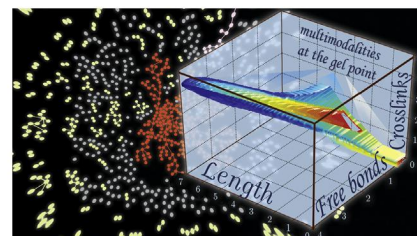
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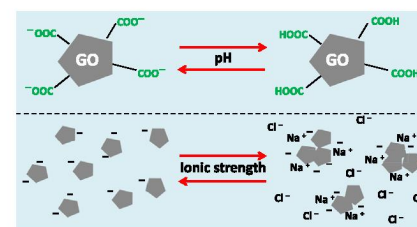
Yusuf Yagci<sup>a,b,\*</sup>, Mehmet Atilla Tasdelen<sup>c</sup>, Steffen Jockusch<sup>d</sup><sup>a</sup>Department of Chemistry, Istanbul Technical University, Maslak, Istanbul 34469, Turkey<sup>b</sup>Center of Excellence for Advanced Materials Research (CEAMR) and Chemistry Department, Faculty of Science, King Abdulaziz University, Jeddah 21589, Saudi Arabia<sup>c</sup>Department of Polymer Engineering, Faculty of Engineering, Yalova University, 77100 Yalova, Turkey<sup>d</sup>Department of Chemistry, Columbia University, New York, NY 10027, United States

**Transition into the gel regime for free radical crosslinking polymerisation in a batch reactor**

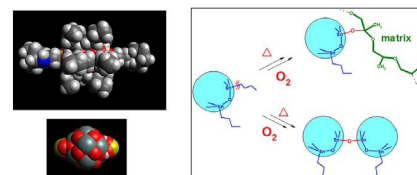
pp 3475–3489

I. Kryven<sup>a,\*</sup>, P.D. Iedema<sup>a,b</sup><sup>a</sup> University of Amsterdam, Science Park 904, 1098 XH Amsterdam, The Netherlands<sup>b</sup> Dutch Polymer Institute DPI, PO Box 902, 5600 AX Eindhoven, The Netherlands**Nano-sized graphene oxide as sole surfactant in miniemulsion polymerization for nanocomposite synthesis: Effect of pH and ionic strength**

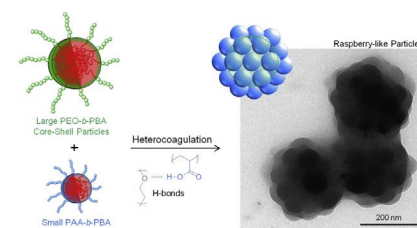
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S.H. Che Man<sup>a,b</sup>, David Ly<sup>a</sup>, Michael R. Whittaker<sup>a</sup>, Stuart C. Thickett<sup>a</sup>, Per B. Zetterlund<sup>a,\*</sup><sup>a</sup> Centre for Advanced Macromolecular Design (CAMD), School of Chemical Engineering, The University of New South Wales, Sydney, NSW 2052, Australia<sup>b</sup> Polymer Engineering Department, Faculty of Chemical Engineering, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor, Malaysia**Tin-based “super-POSS” building blocks in epoxy nanocomposites with highly improved oxidation resistance**

pp 3498–3515

Adam Strachota<sup>a,\*</sup>, Krzysztof Rodzeń<sup>a</sup>, François Ribot<sup>b,c,d</sup>, Magdalena Perchacz<sup>a</sup>, Miroslava Trchová<sup>a</sup>, Miloš Steinhart<sup>a</sup>, Larisa Starovoytova<sup>a</sup>, Miroslav Šlouf<sup>a</sup>, Beata Strachota<sup>a</sup><sup>a</sup> Institute of Macromolecular Chemistry v.v.i., Academy of Sciences of the Czech Republic, Heyrovského nam. 2, CZ-162 00 Praha, Czech Republic<sup>b</sup> Sorbonne Universités, UPMC Univ Paris 06, UMR 7574, Chimie de la Matière Condensée de Paris, F-75005 Paris, France<sup>c</sup> CNRS, UMR 7574, Chimie de la Matière Condensée de Paris, F-75005 Paris, France<sup>d</sup> Collège de France, UMR 7574, Chimie de la Matière Condensée de Paris, F-75005 Paris, France**High yield preparation of all-organic raspberry-like particles by heterocoagulation via hydrogen bonding interaction**

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Marion Chenal<sup>a,b</sup>, Jutta Rieger<sup>a,b</sup>, Allan Philippe<sup>c</sup>, Laurent Bouteiller<sup>a,b,\*</sup><sup>a</sup> Sorbonne Universités, UPMC Univ Paris 06, UMR 8232, IPCM, Chimie des Polymères, F-75005 Paris, France<sup>b</sup> CNRS, UMR 8232, IPCM, Chimie des Polymères, F-75005 Paris, France<sup>c</sup> Univ Koblenz-Landau, Institute for Environmental Sciences, Department of Environmental and Soil Chemistry, D-76829 Landau, Germany



**Cross-linked degradable poly( $\beta$ -thioester) networks via amine-catalyzed thiol-ene click polymerization**

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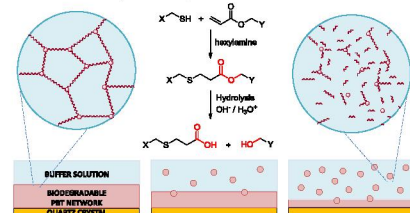
Joke Vandenberg<sup>a</sup>, Marloes Peeters<sup>b</sup>, Tobias Kretschmer<sup>a,c</sup>, Patrick Wagner<sup>b,d</sup>,  
Thomas Junkers<sup>a,d,\*</sup>

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Wetenschapspark 1, B-3590 Diepenbeek, Belgium

<sup>c</sup> Faculty of Health, Medicine and Life Sciences, Maastricht University, Universiteitssingel 60,  
6229ER Maastricht, The Netherlands

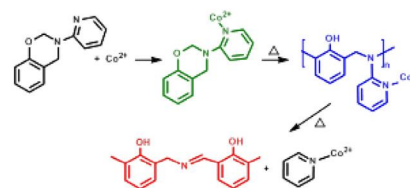
<sup>d</sup> IMEC, Division IMOMEC, Wetenschapspark 1, 3590 Diepenbeek, Belgium

BIODEGRADABLE POLY( $\beta$ -THIOESTER) NETWORKS VIA THIOL-ENE MICHAEL ADDITION**Metal ion functional polybenzoxazine based on phenol and 2-aminopyridine**

pp 3533–3542

Tugba Orhan Lekesiz, Jale Hacaloglu\*

Department of Chemistry, Middle East Technical University, 06531 Ankara, Turkey

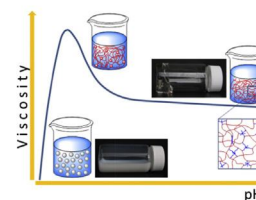
**Facile synthesis of tunable alkali soluble latexes**

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Alexander Dundua<sup>a,b</sup>, Katharina Landfester<sup>a</sup>, Andreas Taden<sup>a,b,\*</sup>

<sup>a</sup> Max Planck Institute for Polymer Research, 55128 Mainz, Germany

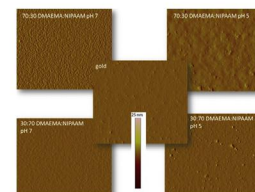
<sup>b</sup> Henkel AG & Co. KGaA, Adhesive Research, 40191 Duesseldorf, Germany

**Stimuli response of cationic polymer brush prepared by ATRP: Application in peptide fractionation**

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Colleen Scott\*, Bojan Mitrovic, Stephanie Eastwood, Gary Kinsel

Department of Chemistry & Biochemistry, Southern Illinois University, Carbondale, IL 62901-4409, USA



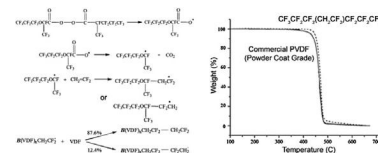
**Bis(perfluoro-2-n-propoxyethyl)diacyl peroxide initiated homopolymerization of vinylidene fluoride (VDF) and copolymerization with perfluoro-n-propylvinylether (PPVE)**

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Junyi Wu<sup>a,\*</sup>, Xinggui Zhou<sup>a</sup>, Frank W. Harris<sup>b,\*</sup>

<sup>a</sup> Chemical Engineering Department, East China University of Science and Technology, 130#, Meilong Road, Shanghai 200237, China

<sup>b</sup> Akron Polymer Systems, Inc., 62 N. Summit Street, Akron, OH 44308, USA

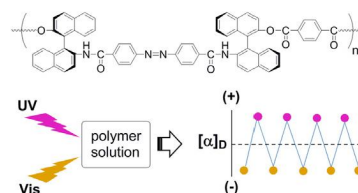


**Stimuli-responsive polymers. 10. Photo-regulation of optical rotations in azobenzene modified poly(ester-amide)s containing highly structured, atropisomeric backbone geometries**

pp 3564–3572

Joseph G. Lynch, Gary D. Jaycox\*

DuPont Central Research and Development, Materials Science and Engineering, Experimental Station, Wilmington, DE 19880-0500, USA



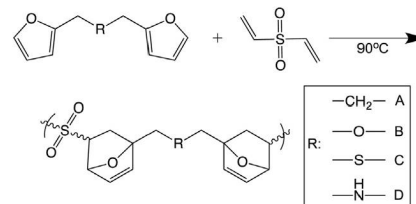
**Diels–Alder polysulfones as dielectric materials: Computational guidance & synthesis**

pp 3573–3578

Robert G. Lorenzini<sup>a,b</sup>, Jordan A. Greco<sup>a</sup>, Robert R. Birge<sup>a</sup>, Gregory A. Sotzing<sup>a,b,\*</sup>

<sup>a</sup> Department of Chemistry, University of Connecticut, 55 North Eagleville Road, Storrs, CT 06269, United States

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**pH-sensitive nanogels based on Boltorn<sup>®</sup> H40 and poly(vinylpyridine) using mini-emulsion polymerization for delivery of hydrophobic anticancer drugs**

pp 3579–3590

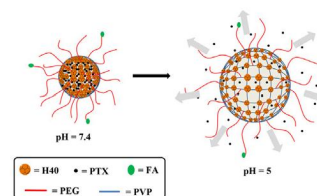
Hamid Sadeghi Abandansari<sup>a</sup>, Mohammad Reza Nabid<sup>a,\*</sup>, Seyed Jamal Tabatabaei Rezaei<sup>b</sup>, Hassan Niknejad<sup>c,d</sup>

<sup>a</sup> Faculty of Chemistry, Department of Polymer, Shahid Beheshti University, G. C., 1983963113 Tehran, Iran

<sup>b</sup> Department of Chemistry, University of Zanjan, P.O. Box 45195-313, Zanjan, Iran

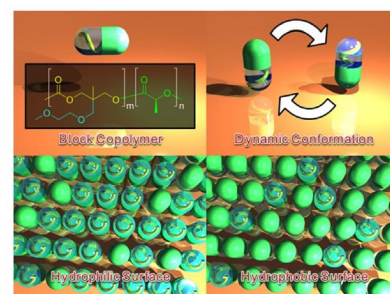
<sup>c</sup> Department of Tissue Engineering, School of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

<sup>d</sup> Nanomedicine and Tissue Engineering Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran



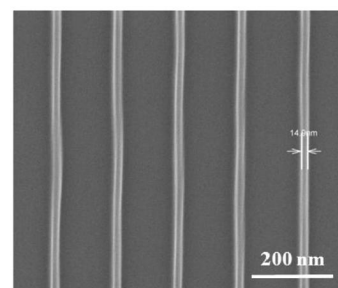
### Surface control of hydrophilicity and degradability with block copolymers composed of lactide and cyclic carbonate bearing methoxyethoxyl groups

pp 3591–3598

Hiroharu Ajiro<sup>a,b</sup>, Yoshikazu Takahashi<sup>b</sup>, Mitsuru Akashi<sup>a,b,\*</sup>, Tomoko Fujiwara<sup>c,\*\*</sup><sup>a</sup>The Center for Advanced Medical Engineering and Informatics, Osaka University, 2-2, Yamada-oka, Suita, Osaka 565-0871, Japan<sup>b</sup>Department of Applied Chemistry, Graduate School of Engineering, Osaka University, 2-1 Yamada-oka, Suita, Osaka 565-0871, Japan<sup>c</sup>Department of Chemistry, The University of Memphis, Memphis, TN 38152, United States

### Triphenylsulfonium salt methacrylate bound polymer resist for electron beam lithography

pp 3599–3604

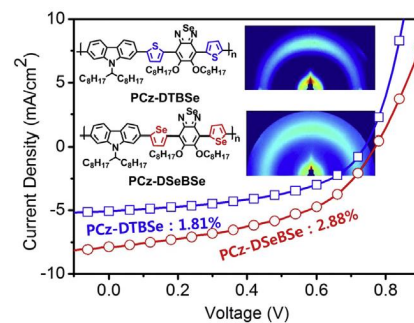
Jae Beom Yoo<sup>a</sup>, Sang-Wook Park<sup>b</sup>, Ha Na Kang<sup>a</sup>, Hemant S. Mondkar<sup>b</sup>, Kyunghwa Sohn<sup>b</sup>, Hyun-Mi Kim<sup>c</sup>, Ki-Bum Kim<sup>c</sup>, Haiwon Lee<sup>a,b,\*</sup><sup>a</sup>Department of Chemistry, Hanyang University, Seoul 133-791, Republic of Korea<sup>b</sup>Institute of Nano Science and Technology, Hanyang University, Seoul 133-791, Republic of Korea<sup>c</sup>Department of Material Science and Engineering, Seoul National University, Seoul 151-742, Republic of Korea

### Low-bandgap copolymers consisting of 2,1,3-benzoselenadiazole and carbazole derivatives with thiophene or selenophene $\pi$ -bridges

pp 3605–3613

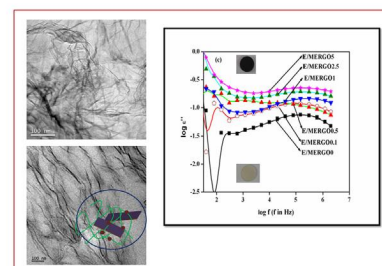
Ji-Hoon Kim, Jong Baek Park, Seung Ah Shin, Myung Ho Hyun\*, Do-Hoon Hwang\*

Department of Chemistry and Chemistry Institute for Functional Materials, Pusan National University, Busan 609-735, Republic of Korea



### Microwave exfoliated reduced graphene oxide epoxy nanocomposites for high performance applications

pp 3614–3627

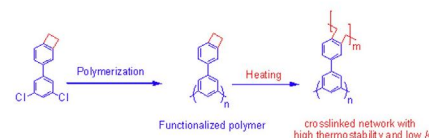
Bindu Sharmila T.K.<sup>a,b,c</sup>, Ajalesh B. Nair<sup>b,d</sup>, Beena T. Abraham<sup>c</sup>, P.M. Sabura Beegum<sup>a</sup>, Eby Thomas Thachil<sup>b,\*</sup><sup>a</sup>Department of Applied Chemistry, Cochin University of Science and Technology, Kochi, 682022 Kerala, India<sup>b</sup>Department of Polymer Science and Rubber Technology, Cochin University of Science and Technology, Kochi, 682022 Kerala, India<sup>c</sup>Department of Chemistry, T.M. Jacob Memorial Govt. College Manimalakunnu, Oliyapuram, 686679 Kerala, India<sup>d</sup>BK21 Plus Haptic Polymer Composite Research Team, Department of Polymer-Nano Science and Technology, Jeonju 561-756, Republic of Korea<sup>e</sup>Department of Chemistry, S.N.M. College Maliankara, Maliankara, 683516 Kerala, India

**Benzocyclobutene-functionalized poly(*m*-phenylene): A novel polymer with low dielectric constant and high thermostability**

pp 3628–3633

Jiawei Tong, Shen Diao\*, Kaikai Jin, Chao Yuan, Jiajia Wang, Jing Sun, Qiang Fang\*

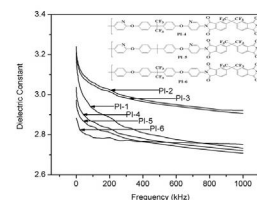
Key Laboratory of Organofluorine Chemistry and Laboratory of Synthetic and Self-Assembly Chemistry for Organic Functional Molecules, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, 345 Lingling Road, Shanghai 200032, PR China

**Novel soluble polyimides derived from 2,2'-bis[4-(5-amino-2-pyridinoxy)phenyl]hexafluoropropane: Preparation, characterization, and optical, dielectric properties**

pp 3634–3641

Yue Guan, Daming Wang, Guangliang Song, Guodong Dang, Chunhai Chen, Hongwei Zhou, Xiaogang Zhao\*

Alan G. MacDiarmid Institute, Jilin University, Changchun 130012, PR China

**Triptycene-based microporous polyimides: Synthesis and their high selectivity for CO<sub>2</sub> capture**

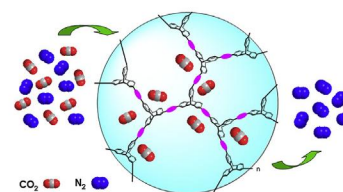
pp 3642–3647

Chun Zhang<sup>a,\*</sup>, Tian-Long Zhai<sup>a</sup>, Jing-Jing Wang<sup>a</sup>, Zhen Wang<sup>a</sup>, Jun-Min Liu<sup>b,\*</sup>, Bien Tan<sup>c</sup>, Xiang-Liang Yang<sup>a</sup>, Hui-Bi Xu<sup>a</sup>

<sup>a</sup> College of Life Science and Technology, Huazhong University of Science and Technology, and National Engineering Research Center for Nanomedicine, Hubei 430074, China

<sup>b</sup> School of Chemistry and Chemical Engineering, Sun Yat-Sen University, Guangzhou 510275, China

<sup>c</sup> School of Chemistry and Chemical Engineering, Huazhong University of Science and Technology, Hubei 430074, China

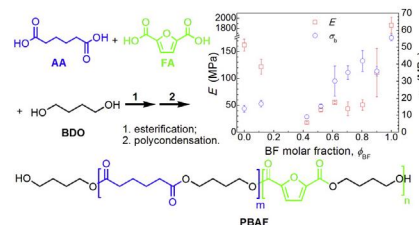
**Biobased poly(butylene 2,5-furandicarboxylate) and poly(butylene adipate-co-butylene 2,5-furandicarboxylate): From synthesis using highly purified 2,5-furandicarboxylic acid to thermo-mechanical properties**

pp 3648–3655

Binshuang Wu<sup>a</sup>, Yutao Xu<sup>a</sup>, Zhiyang Bu<sup>a</sup>, Linbo Wu<sup>a,\*</sup>, Bo-Geng Li<sup>a</sup>, Philippe Dubois<sup>b</sup>

<sup>a</sup> State Key Laboratory of Chemical Engineering at ZJU, Department of Chemical and Biological Engineering, Zhejiang University, Hangzhou 310027, China

<sup>b</sup> Laboratory of Polymeric and Composite Materials (LPCM), Center of Innovation and Research in Materials and Polymers (CIRMAP), University of Mons, Mons 7000, Belgium



## Initiating gradient photopolymerization and migration of a novel polymerizable polysiloxane $\alpha$ -hydroxy alkylphenones photoinitiator

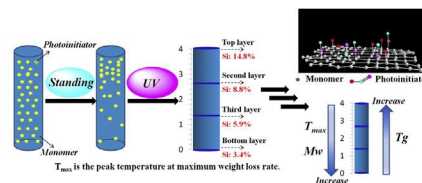
pp 3656–3665

Fang Sun<sup>a,b,\*</sup>, Yanxia Li<sup>b</sup>, Nan Zhang<sup>b</sup>, Jun Nie<sup>a,c</sup>

<sup>a</sup> State Key Laboratory of Chemical Resource Engineering, Beijing University of Chemical Technology, Beijing 100029, PR China

<sup>b</sup> College of Science, Beijing University of Chemical Technology, Beijing 100029, PR China

<sup>c</sup> College of Materials Science and Engineering, Beijing University of Chemical Technology, Beijing 100029, PR China

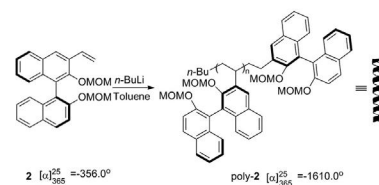


## Optically active helical vinyl polymers via helix-sense-selective anionic polymerization of (S)-3-vinyl-2,2'-bis(methoxymethoxy)-1,1'-binaphthyl

pp 3666–3671

Ye-Hui Chen, Jin Zhang, Li-Wen Yang, Nian-Fa Yang\*, Zhu-Sheng Yang

Key Laboratory of Environmentally Friendly Chemistry and Applications of Ministry of Education, College of Chemistry, Xiangtan University, Xiangtan, Hunan 411105, People's Republic of China

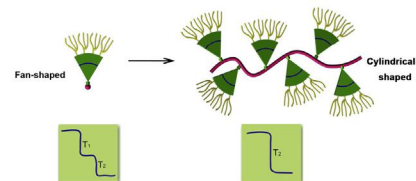


## Remarkable structure effects on thermoresponsive properties of dendritic macromolecules

pp 3672–3679

Xiong Tao, Kun Liu, Wen Li\*, Afang Zhang\*

Lab of Polymer Chemistry, Department of Polymer Materials, College of Materials Science and Engineering, Department of Chemistry, Shanghai University, Nanchen Street No. 333, Shanghai 200444, China

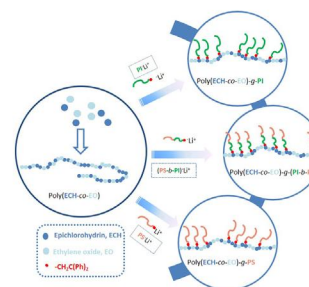


## Synthesis and characterization of graft copolymers with poly(epichlorohydrin-co-ethylene oxide) as backbone by combination of ring-opening polymerization with living anionic polymerization

pp 3680–3687

Tingting Tang, Xiaoshan Fan, Ying Jin, Guowei Wang\*

State Key Laboratory of Molecular Engineering of Polymers, Department of Macromolecular Science, Fudan University, Shanghai 200433, China



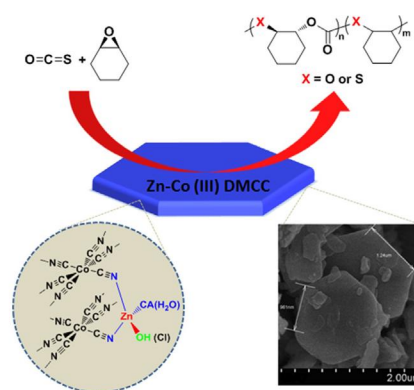
### Alternating copolymerization of carbonyl sulfide and Cyclohexene Oxide catalyzed by zinc–cobalt double metal cyanide complex

pp 3688–3695

Ming Luo, Xing-Hong Zhang\*, Bin-Yang Du, Qi Wang, Zhi-Qiang Fan

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

Poly(cyclohexene monothiocarbonate) was efficiently synthesized by the copolymerization of carbonyl sulfide(COS) with cyclohexene oxide (CHO) via Zn–Co(III) DMCC catalysis.



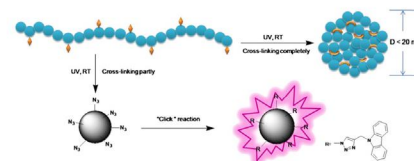
### A facile strategy for preparation of single-chain polymeric nanoparticles by intramolecular photo-crosslinking of azide polymers

pp 3696–3702

Guang Li<sup>a,\*</sup>, Farong Tao<sup>a</sup>, Liping Wang<sup>a</sup>, Yuchao Li<sup>a</sup>, Ruke Bai<sup>b,\*\*</sup>

<sup>a</sup>School of Materials Science and Engineering, Liaocheng University, Liaocheng 252059, China

<sup>b</sup>CAS Key Laboratory of Soft Matter Chemistry, Department of Polymer Science and Engineering, University of Science and Technology of China, Hefei 230026, China



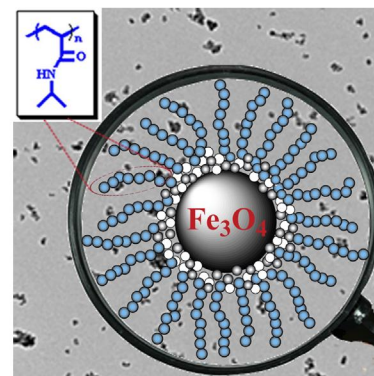
### Synthesis of PAA-g-PNIPAM well-defined graft polymer by sequential RAFT and SET-LRP and its application in preparing size-controlled super-paramagnetic Fe<sub>3</sub>O<sub>4</sub> nanoparticles as a stabilizer

pp 3703–3712

Xiuyu Jiang<sup>a</sup>, Sujuan Zhai<sup>a</sup>, Xue Jiang<sup>a</sup>, Guolin Lu<sup>a,b,\*\*</sup>, Xiaoyu Huang<sup>a,b,\*</sup>

<sup>a</sup>Laboratory of Synthetic and Self-Assembly Chemistry for Organic Functional Molecules, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, 345 Lingling Road, Shanghai 200032, PR China

<sup>b</sup>State Key Laboratory of Molecular Engineering of Polymers, Department of Macromolecular Science, Fudan University, 220 Handan Road, Shanghai 200433, PR China



### Anisotropy investigation of cobalt ferrite nanoparticles embedded in polyvinyl alcohol matrix: A Monte Carlo study

pp 3713–3719

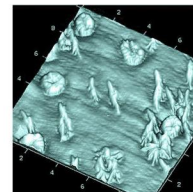
Sh. Mirzaee, S. Farjami Shayesteh\*, S. Mahdaviifar

Nanostructure Lab, Department of Physics, University of Guilan, Namjoo, PO Box: 1914, Rasht, Iran



## Morphology and properties tuning of PLA/cellulose nanocrystals bio-nanocomposites by means of reactive functionalization and blending with PVAc

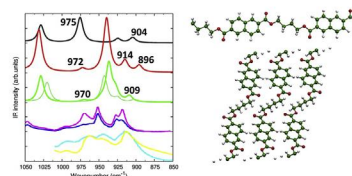
pp 3720–3728

Mariano Pracella<sup>a,\*</sup>, Md. Minhaz-Ul Haque<sup>b</sup>, Debora Puglia<sup>c</sup><sup>a</sup>*Institute of Composite and Biomedical Materials, IMCB-CNR, c/o Department of Civil, and Industrial Engineering, University of Pisa, Pisa 56122, Italy*<sup>b</sup>*Department of Civil and Industrial Engineering, University of Pisa, Pisa 56122, Italy*<sup>c</sup>*UdR INSTM, Department of Civil and Environmental Engineering, University of Perugia, Terni 05100, Italy*

## A revisit of the polymorphism of poly(butylene-2,6-naphthalate) from periodic first-principles calculations

pp 3729–3735

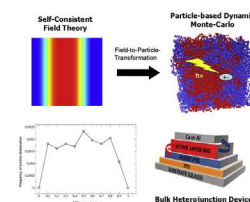
Alberto Milani

*Politecnico di Milano – Dip. Chimica, Materiali, Ing. Chimica “G. Natta”, P.zza Leonardo da Vinci 32, 20133 Milan, Italy*

## Photocurrent contribution from inter-segmental mixing in donor–acceptor-type polymer solar cells: A multiscale simulation study

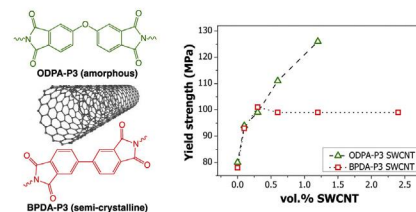
pp 3736–3745

Anton Pershin, Sergii Donets, Stephan A. Baeurle\*

*Institute of Physical and Theoretical Chemistry, University of Regensburg, D-93040 Regensburg, Germany*

## SWCNT induced crystallization in amorphous and semi-crystalline poly(etherimide)s: Morphology and thermo-mechanical properties

pp 3746–3757

Maruti Hegde<sup>a</sup>, Ugo Lafont<sup>a</sup>, Ben Norder<sup>b</sup>, Edward T. Samulski<sup>c</sup>, Michael Rubinstein<sup>c</sup>, Theo J. Dingemans<sup>a,\*</sup><sup>a</sup>*Faculty of Aerospace Engineering, Delft University of Technology, Kluyverweg 1, 2629 HS Delft, The Netherlands*<sup>b</sup>*Section Nanostructured Materials, Faculty of Chemical Engineering, Delft University of Technology, Julianalaan 136, 2628 BL Delft, The Netherlands*<sup>c</sup>*University of North Carolina at Chapel Hill, Department of Chemistry, Chapel Hill, NC 27599-3290, United States*

**$\beta$ -nucleated propylene–ethylene random copolymer filled with multi-walled carbon nanotubes: Mechanical, thermal and rheological properties**

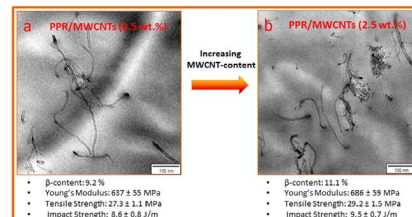
pp 3758–3769

Dimitrios G. Papageorgiou<sup>a,\*\*</sup>, Lazaros Tzounis<sup>b</sup>, George Z. Papageorgiou<sup>c</sup>,  
Dimitrios N. Bikiaris<sup>c</sup>, Konstantinos Chrissafis<sup>a,\*</sup>

<sup>a</sup>Solid State Physics Section, Physics Department, Aristotle University of Thessaloniki, 541 24 Thessaloniki, Greece

<sup>b</sup>Leibniz-Institut für Polymerforschung Dresden, Hohe Straße 6, 01069 Dresden, Germany

<sup>c</sup>Laboratory of Polymer Chemistry and Technology, Department of Chemistry, Aristotle University of Thessaloniki, 541 24 Thessaloniki, Greece



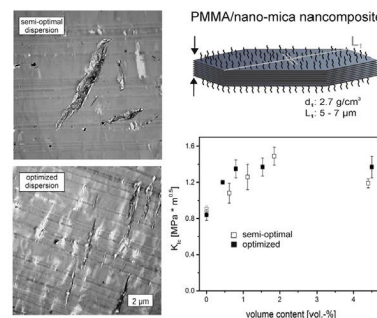
**On the importance of specific interface area in clay nanocomposites of PMMA filled with synthetic nano-mica**

pp 3770–3781

Mazen Ziadeh<sup>a</sup>, Bianca Fischer<sup>b</sup>, Jasmin Schmid<sup>a</sup>, Volker Altstädt<sup>b</sup>, Josef Breu<sup>a,\*</sup>

<sup>a</sup>Lehrstuhl für Anorganische Chemie I, Universität Bayreuth, Universitätsstrasse 30, 95440 Bayreuth, Germany

<sup>b</sup>Lehrstuhl für Polymere Werkstoffe, Universität Bayreuth, Universitätsstrasse 30, 95440 Bayreuth, Germany



**Influence of shear processing on morphology orientation and mechanical properties of styrene butadiene triblock copolymers**

pp 3782–3791

Nasir Mahmood<sup>a</sup>, Arthur Markus Anton<sup>b</sup>, Gaurav Gupta<sup>c</sup>, Tamoor Babur<sup>a</sup>, Konrad Knoll<sup>d</sup>,  
Thomas Thurn-Albrecht<sup>c</sup>, Friedrich Kremer<sup>b</sup>, Mario Beiner<sup>a,e,\*</sup>, Roland Weidisch<sup>a,e</sup>

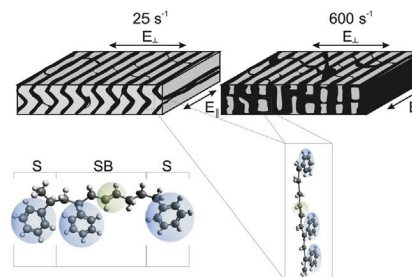
<sup>a</sup>Martin-Luther-Universität Halle-Wittenberg, Institut für Chemie, D-06099 Halle (Saale), Germany

<sup>b</sup>Universität Leipzig, Fakultät für Physik und Geowissenschaften, Linnéstraße 5, D-04103 Leipzig, Germany

<sup>c</sup>Martin-Luther-Universität Halle-Wittenberg, Institut für Physik, D-06099 Halle (Saale), Germany

<sup>d</sup>BASF SE, GMT/P – B001, D-67056 Ludwigshafen, Germany

<sup>e</sup>Fraunhofer Institut für Werkstoffmechanik IWM, Walter-Hülse-Straße 1, D-06120 Halle (Saale), Germany



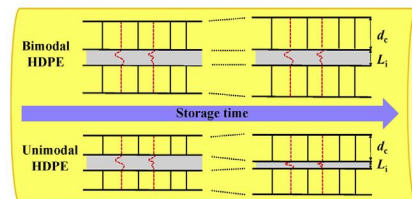
**Morphology of high-density polyethylene pipes stored under hydrostatic pressure at elevated temperature**

pp 3792–3800

Ning Sun<sup>a</sup>, Mirko Wenzel<sup>b</sup>, Alina Adams<sup>a,\*</sup>

<sup>a</sup>Institut für Technische und Makromolekulare Chemie, RWTH Aachen University, Templergraben 55, 52056 Aachen, Germany

<sup>b</sup>SKZ-German Plastic Center, Friedrich-Bergius-Ring 22, 97076 Würzburg, Germany



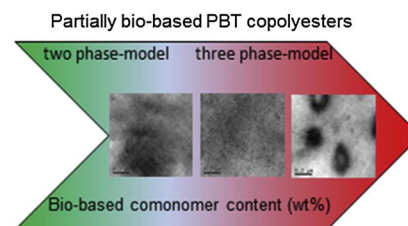


## Phase separation in poly(butylene terephthalate)-based materials prepared by solid-state modification

pp 3801–3810

Erik Gubbels<sup>a</sup>, Lidia Jasinska-Walc<sup>a,b</sup>, Daniel Hermida-Merino<sup>c,d</sup>, Michael Ryan Hansen<sup>e,f</sup>, Bart Noordover<sup>a,\*</sup>, Anne Spoelstra<sup>a</sup>, Han Goossens<sup>a,\*</sup>, Cor Koning<sup>a,g</sup>

<sup>a</sup>Laboratory of Polymer Materials, Department of Chemical Engineering and Chemistry, Eindhoven University of Technology, P.O. Box 513, 5600 MB Eindhoven, The Netherlands

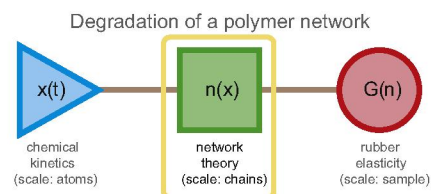


## A statistical theory of polymer network degradation

pp 3811–3817

Pierre Gilormini\*, Emmanuel Richaud, Jacques Verdu

PIMM, Arts et Métiers ParisTech, CNRS, 151 Bvd de l'Hôpital, 75013 Paris, France

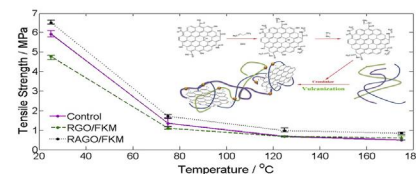


## Allyl-Functionalization enhanced thermally stable graphene/fluoroelastomer nanocomposites

pp 3818–3824

Junhua Wei, Jingjing Qiu\*

Department of Mechanical Engineering, Texas Tech University, 2500 Broadway, Lubbock, TX 79409-1021, United States



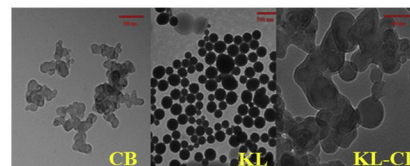
## Hybrid fillers of lignin and carbon black for lowering of viscoelastic loss in rubber compounds

pp 3825–3835

Kushal Bahl<sup>a</sup>, Toshikazu Miyoshi<sup>b</sup>, Sadhan C. Jana<sup>a,\*</sup>

<sup>a</sup>Department of Polymer Engineering, University of Akron, Akron, OH 44325-0301, USA

<sup>b</sup>Department of Polymer Science, University of Akron, Akron, OH 44325-3909, USA

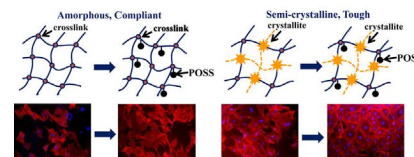


**Enhanced bone cell functions on poly( $\epsilon$ -caprolactone) triacrylate networks grafted with polyhedral oligomeric silsesquioxane nanocages**

pp 3836–3845

Lei Cai, Camera J. Foster, Xifeng Liu, Shanfeng Wang\*

Department of Materials Science and Engineering, The University of Tennessee, Knoxville, TN 37996, USA



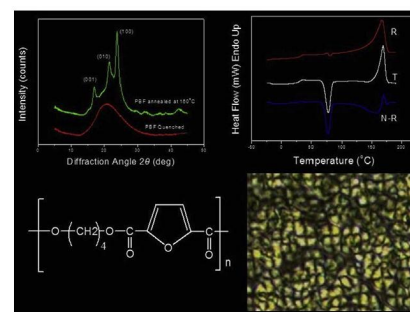
**Evaluation of polyesters from renewable resources as alternatives to the current fossil-based polymers. Phase transitions of poly(butylene 2,5-furan-dicarboxylate)**

pp 3846–3858

George Z. Papageorgiou<sup>a,\*</sup>, Vasilios Tsanaktsis<sup>a</sup>, Dimitrios G. Papageorgiou<sup>a</sup>, Stylianos Exarhopoulos<sup>b</sup>, Maria Papageorgiou<sup>b</sup>, Dimitrios N. Bikiaris<sup>a,\*</sup>

<sup>a</sup> Laboratory of Polymer Chemistry and Technology, Department of Chemistry, Aristotle University of Thessaloniki, GR-541 24 Thessaloniki, Macedonia, Greece

<sup>b</sup> Department of Food Technology, Technological Educational Institute of Thessaloniki, PO Box 141, GR-57400 Thessaloniki, Greece

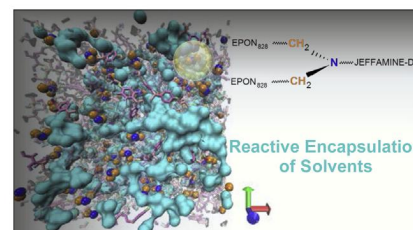


**Crosslink network rearrangement via reactive encapsulation of solvent in epoxy curing: A combined molecular simulation and experimental study**

pp 3859–3868

Changwoon Jang, Majid Sharifi, Giuseppe R. Palmese, Cameron F. Abrams\*

Department of Chemical and Biological Engineering, Drexel University, Philadelphia, PA 19104, United States



**Polymyrcene microstructure revisited from precise high-field nuclear magnetic resonance analysis**

pp 3869–3878

Sébastien Georges<sup>a,b,c,d</sup>, Marc Bria<sup>a,e</sup>, Philippe Zinck<sup>a,b,c,d</sup>, Marc Visseaux<sup>a,b,c,d,\*</sup>

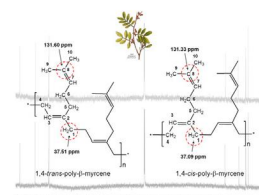
<sup>a</sup> Univ Lille Nord de France, F-59000 Lille, France

<sup>b</sup> ENSCL, Unité de Catalyse et Chimie du Solide (UCCS), CCM, F-59652 Villeneuve d'Ascq, France

<sup>c</sup> Université Lille 1, Sciences et Technologies, UCCS, CCM, F-59655 Villeneuve d'Ascq, France

<sup>d</sup> CNRS, UMR8181, F-59652 Villeneuve d'Ascq, France

<sup>e</sup> Université Lille 1, CCM RMN, F-59655 Villeneuve d'Ascq, France

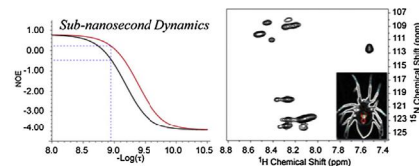


## Exploring the backbone dynamics of native spider silk proteins in Black Widow silk glands with solution-state NMR spectroscopy

pp 3879–3885

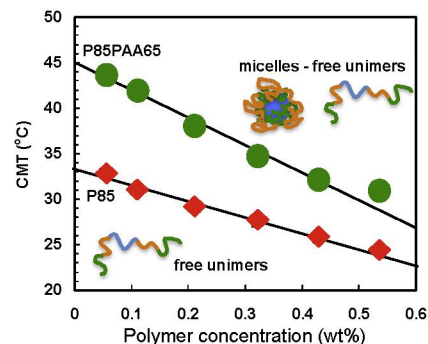
Dian Xu, Jeffery L. Yarger\*, Gregory P. Holland\*

Department of Chemistry and Biochemistry, Magnetic Resonance Research Center, Arizona State University, Tempe, AZ 85287-1604, United States



## Dissociation and thermal characteristics of poly(acrylic acid) modified pluronic block copolymers in aqueous solution

pp 3886–3893

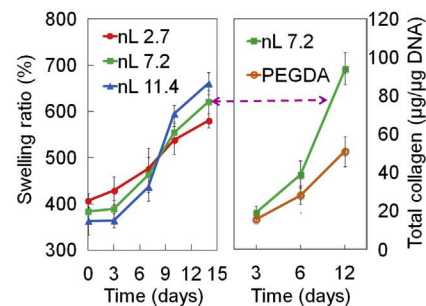
Y. Tian<sup>a,b</sup>, T. Alan Hatton<sup>a,d</sup>, Kam C. Tam<sup>c,\*</sup><sup>a</sup>Singapore-MIT Alliance, Singapore<sup>b</sup>School of Mechanical and Aerospace Engineering, Nanyang Technological University, 50 Nanyang Ave., 639798 Singapore<sup>c</sup>Department of Chemical Engineering, Waterloo Institute for Nanotechnology, University of Waterloo, 200 University Ave. W, Waterloo, Ontario, Canada N2L 3G1<sup>d</sup>Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA 02139, USA

## Time dependence of material properties of polyethylene glycol hydrogels chain extended with short hydroxy acid segments

pp 3894–3904

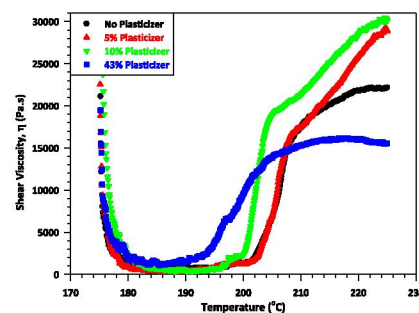
Danial Barati, Seyedsina Moeinzadeh, Ozan Karaman, Esmail Jabbari\*

Biomimetic Materials and Tissue Engineering Laboratory, Department of Chemical Engineering, University of South Carolina, Columbia, SC 29208, USA



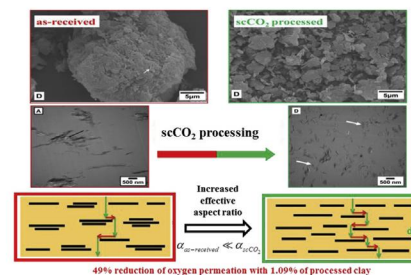
## Enhancement in interfacial reactive compatibilization by chain mobility

pp 3905–3914

Prashant A. Bhadane<sup>a</sup>, Andy H. Tsou<sup>b</sup>, John Cheng<sup>c</sup>, Maria D. Ellul<sup>d</sup>, Basil D. Favis<sup>a,\*</sup><sup>a</sup>CREPEC, Department of Chemical Engineering, École Polytechnique de Montréal, 2900 Édouard Montpetit, P.O. Box 6079, Station Centre-Ville, Montréal, Québec H3C 3A7, Canada<sup>b</sup>Global Chemical Research, ExxonMobil Chemical Company, 5200 Bayway Drive, Baytown, TX 77520, USA<sup>c</sup>Global Polyolefin Technology, ExxonMobil Chemical Company, 5200 Bayway Drive, Baytown, TX 77520, USA<sup>d</sup>Global Specialty Polymers Technology, ExxonMobil Chemical Company, 388 South Main Street, Akron, OH 44311-1065, USA

**Structure, permeability, and rheology of supercritical CO<sub>2</sub> dispersed polystyrene-clay nanocomposites**

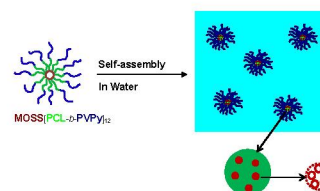
pp 3915–3924

Fengyuan Yang<sup>a,d</sup>, Mihai Manitiu<sup>b</sup>, Robert Krieger<sup>c</sup>, Rangaramanujam M. Kannan<sup>a,d,\*</sup><sup>a</sup> Department of Materials Science and Engineering, Johns Hopkins University, Baltimore, MD 21231, USA<sup>b</sup> Department of Materials Science and Engineering, Wayne State University, Detroit, MI 48202, USA<sup>c</sup> The Coca-Cola Company, Atlanta, GA 30313, USA<sup>d</sup> Center for Nanomedicine, Wilmer Eye Institute, Johns Hopkins School of Medicine, Baltimore, MD 21287, USA**Poly( $\epsilon$ -caprolactone)-block-poly(*N*-vinyl pyrrolidone) diblock copolymers grafted from macrocyclic oligomeric silsesquioxane**

pp 3925–3935

Yulin Yi, Lei Li, Sixun Zheng\*

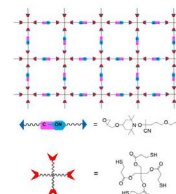
Department of Polymer Science and Engineering and the State Key Laboratory of Metal Matrix Composites, Shanghai Jiao Tong University, Shanghai 200240, China

**Room temperature self-healable epoxy elastomer with reversible alkoxyamines as crosslinkages**

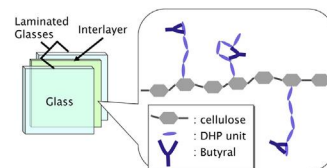
pp 3936–3943

Ze Ping Zhang, Min Zhi Rong, Ming Qiu Zhang\*

Key Laboratory for Polymeric Composite and Functional Materials of Ministry of Education, GD HPPC Lab, School of Chemistry and Chemical Engineering, Sun Yat-Sen University, Guangzhou 510275, PR China

**High performance films of cellulose butyral derivative having a necklace-like annular structure in the side chains**

pp 3944–3950

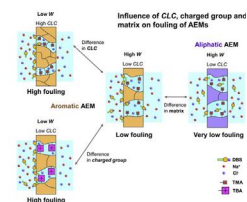
Chunyu Chang<sup>a,b</sup>, Yoshikuni Teramoto<sup>a</sup>, Yoshiyuki Nishio<sup>a,\*</sup><sup>a</sup> Division of Forest and Biomaterials Science, Graduate School of Agriculture, Kyoto University, Sakyo-ku, Kyoto 606-8502, Japan<sup>b</sup> Guangzhou Sugarcane Industry Research Institute, Guangzhou 510316, China

## Electrodialytic properties of aromatic and aliphatic type hydrocarbon-based anion-exchange membranes with various anion-exchange groups

pp 3951–3960

Mitsuru Higa\*, Nobuyuki Tanaka, Minami Nagase, Kazuhiro Yutani, Tomokazu Kameyama, Keita Takamura, Yuriko Kakihana

Graduate School of Science and Engineering, Yamaguchi University, 2-16-1 Tokiwadai, Ube-city, Yamaguchi 755-8611, Japan

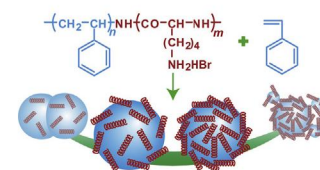


## Surface structure of stimuli-responsive polystyrene particles prepared by dispersion polymerization with a polystyrene/poly(L-lysine) block copolymer as a stabilizer

pp 3961–3969

Tomomichi Itoh\*, Izumi Abe, Tetsuo Tamamitsu, Hiroaki Shimomoto, Kenzo Inoue, Eiji Ihara

Department of Materials Science and Biotechnology, Graduate School of Science and Engineering, Ehime University, 3 Bunkyo-cho, Matsuyama, Ehime 790-8577, Japan



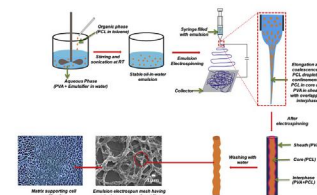
## Conductive 3D porous mesh of poly(ε-caprolactone) made via emulsion electrospinning

pp 3970–3979

Jit Pal<sup>a</sup>, Shivani Sharma<sup>b</sup>, Sunita Sanwaria<sup>a</sup>, Ritu Kulshreshtha<sup>b</sup>, Bhanu Nandan<sup>a</sup>, Rajiv K. Srivastava<sup>a,\*</sup>

<sup>a</sup>Department of Textile Technology, Indian Institute of Technology Delhi, Hauz Khas, New Delhi 110016, India

<sup>b</sup>Department of Biochemical Engineering and Biotechnology, Indian Institute of Technology Delhi, Hauz Khas, New Delhi 110016, India

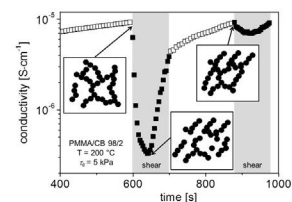


## Conductivity of carbon black-based polymer composites under creep in the molten state

pp 3980–3986

Zdeněk Starý\*, Johannes Krüchel, Dirk W. Schubert

Institute of Polymer Materials, Friedrich-Alexander-University Erlangen-Nuremberg, Martensstr. 7, 91058 Erlangen, Germany

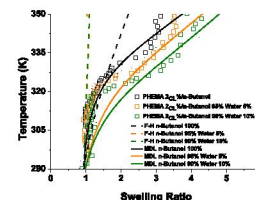


**Upper critical solution temperature-type thermosensitive hydrogel phase equilibrium of poly(2-hydroxyethyl methacrylate)/water/n-alkanol mixtures**

pp 3987–3994

Young Gyun Kim, Young Chan Bae\*

Division of Chemical Engineering and Molecular Thermodynamics Laboratory, Hanyang University, Seoul 133-791, Republic of Korea



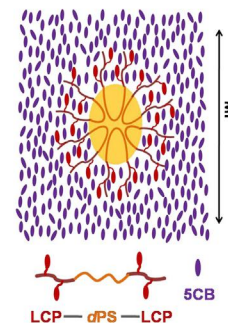
**Self-assembly of a liquid crystal ABA triblock copolymer in a nematic liquid crystal solvent**

pp 3995–4002

Mohammad Tariqul Islam<sup>a</sup>, Tahseen Kamal<sup>a</sup>, Taegy Shin<sup>b</sup>, Baikseok Seong<sup>b</sup>, Soo-Young Park<sup>a,\*</sup>

<sup>a</sup> Department of Polymer Science, Kyungpook National University, #1370 Sangyuk-dong, Buk-gu, Daegu 702-701, Republic of Korea

<sup>b</sup> Korea Atomic Energy Research Institute, Neutron Science Division, 1045 Daedeok-daero, Yuseong-gu, Daejeon 305-353, Republic of Korea



**Protein functionalized Pt nanoparticles-conducting polymer nanocomposite film: Characterization and immunosensor application**

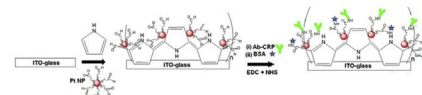
pp 4003–4011

Sujeet K. Mishra<sup>a,b</sup>, Avanish K. Srivastava<sup>a</sup>, Devendra Kumar<sup>b</sup>, Ashok Mulchandani<sup>c,\*</sup>, Rajesh<sup>a,\*</sup>

<sup>a</sup> CSIR-National Physical Laboratory, Dr. K.S. Krishnan Road, New Delhi 110012, India

<sup>b</sup> Department of Applied Chemistry, Delhi Technological University, Bawana Road, New Delhi 110042, India

<sup>c</sup> Department of Chemical and Environmental Engineering, University of California, Riverside, CA 92521, USA



**A micro- and nano-structured drug carrier based on biocompatible, hybrid polymeric nanoparticles for potential application in dry powder inhalation therapy**

pp 4012–4021

Sonia Al-Qadi<sup>a,b,\*</sup>, Carmen Remuñán-López<sup>a,\*\*</sup>

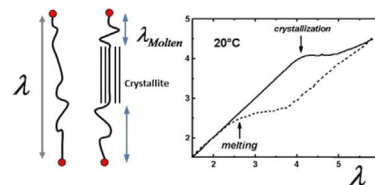
<sup>a</sup> NanoBiofar Group, Department of Pharmaceutical Technology, University of Santiago de Compostela, Faculty of Pharmacy, Campus Vida, 15782 Santiago de Compostela, Spain

<sup>b</sup> Analytical Biosciences, Department of Pharmacy, Faculty of Health and Medical Sciences, University of Copenhagen, Universitetsparken 2, 2100 Copenhagen Ø, Denmark



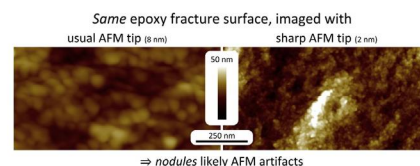
## The impact of strain-induced crystallization on strain during mechanical cycling of cross-linked natural rubber

pp 4022–4031

Pierre-Antoine Albouy<sup>a,\*</sup>, Arnaud Vieyres<sup>b</sup>, Roberto Pérez-Aparicio<sup>b</sup>, Olivier Sanséau<sup>b</sup>, Paul Sotta<sup>b</sup><sup>a</sup>Laboratoire de Physique des Solides, UMR 8502, Université Paris-Sud, F-91405 Orsay, France<sup>b</sup>Laboratoire Polymères et Matériaux Avancés, UMR 5268, CNRS/Solvay, R&I Centre Lyon, 69192 Saint-Fons, France

## Observation of elastic modulus inhomogeneities in thermosetting epoxies using AFM – Discerning facts and artifacts

pp 4032–4040

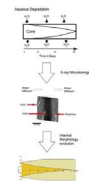
Dietmar Haba<sup>a,\*</sup>, Josef Kaufmann<sup>a</sup>, Andreas J. Brunner<sup>a</sup>, Katharina Resch<sup>b</sup>, Christian Teichert<sup>b</sup><sup>a</sup>Empa – Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland<sup>b</sup>Montanuniversität Leoben, Austria

## X-ray microtomographic analysis of $\alpha$ -tricalcium phosphate-poly(lactic-co-glycolic) acid nanocomposite degradation

pp 4041–4049

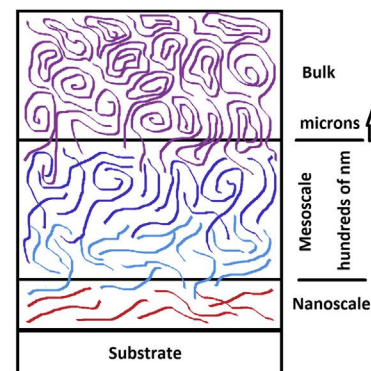
C.E. Barrett<sup>\*</sup>, R.E. Cameron

Cambridge Centre for Medical Materials, Department of Materials Science and Metallurgy, University of Cambridge, 27 Charles Babbage Road, Cambridge CB3 0FS, UK



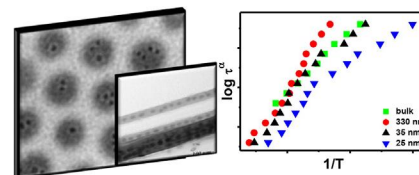
## Thickness threshold of structural ordering in thin MEH-PPV films

pp 4050–4056

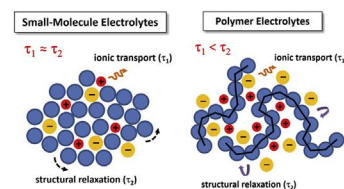
Pavel Urbánek<sup>a</sup>, Ivo Kuřitka<sup>a,\*</sup>, Stanislav Danis<sup>b</sup>, Jana Toušková<sup>c</sup>, Jiří Toušek<sup>c</sup><sup>a</sup>Centre of Polymer Systems, University Institute, Tomas Bata University in Zlín, Nad Ovcírnou 3685, 760 01 Zlín, Czech Republic<sup>b</sup>Charles University in Prague, Faculty of Mathematics and Physics, Department of Condensed Matter Physics, Ke Karlovu 5, 121 16 Prague, Czech Republic<sup>c</sup>Charles University in Prague, Faculty of Mathematics and Physics, Department of Macromolecular Physics, V Holešovičkách 2, 180 00 Prague, Czech Republic

**Dynamic study of polystyrene-*block*-poly(4-vinylpyridine) copolymer in bulk and confined in cylindrical nanopores**

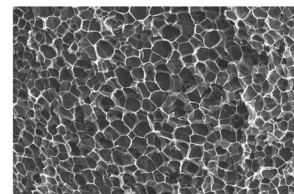
pp 4057–4066

Jon Maiz<sup>a,b,c</sup>, Wei Zhao<sup>b</sup>, Yu Gu<sup>b</sup>, Jimmy Lawrence<sup>b</sup>, Arantxa Arbe<sup>c</sup>, Angel Alegría<sup>c,d</sup>, Todd Emrick<sup>b</sup>, Juan Colmenero<sup>c,d,e,\*</sup>, Thomas P. Russell<sup>b,\*</sup>, Carmen Mijangos<sup>a,\*</sup><sup>a</sup> Instituto de Ciencia y Tecnología de Polímeros, CSIC, c/ Juan de la Cierva 3, 28006 Madrid, Spain<sup>b</sup> Department of Polymer Science and Engineering, University of Massachusetts, Amherst, MA 01003, USA<sup>c</sup> Centro de Física de Materiales CSIC-UPV/EHU, Paseo Manuel de Lardizábal 5, 20018 San Sebastián, Spain<sup>d</sup> Departamento de Física de Materiales, Universidad del País Vasco (UPV/EHU), Apartado 1072, 20080 San Sebastián, Spain<sup>e</sup> Donostia International Physics Center, Paseo Manuel de Lardizábal 4, 20018 San Sebastián, Spain**Examination of the fundamental relation between ionic transport and segmental relaxation in polymer electrolytes**

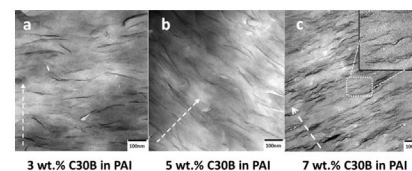
pp 4067–4076

Yangyang Wang<sup>a,\*</sup>, Fei Fan<sup>a</sup>, Alexander L. Agapov<sup>a</sup>, Tomonori Saito<sup>b</sup>, Jun Yang<sup>c</sup>, Xiang Yu<sup>b</sup>, Kunlun Hong<sup>c</sup>, Jimmy Mays<sup>a,b</sup>, Alexei P. Sokolov<sup>a,b</sup><sup>a</sup> Department of Chemistry, University of Tennessee, Knoxville, TN 37996, USA<sup>b</sup> Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA<sup>c</sup> Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA**Extruded PLA/clay nanocomposite foams blown with supercritical CO<sub>2</sub>**

pp 4077–4090

M. Keshtkar<sup>a</sup>, M. Nofar<sup>a</sup>, C.B. Park<sup>a,\*</sup>, P.J. Carreau<sup>b</sup><sup>a</sup> Microcellular Plastics Manufacturing Laboratory, Department of Mechanical and Industrial Engineering, University of Toronto, Toronto, Ontario, Canada<sup>b</sup> CREPEC, Chemical Engineering Department, Ecole Polytechnique, Montreal, Quebec, Canada**Enhanced gas barrier and mechanical properties in organoclay reinforced multi-layer poly(amide-imide) nanocomposite film**

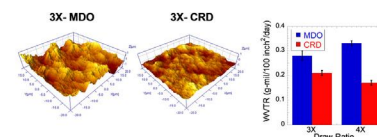
pp 4091–4101

Orcun Yucel<sup>a</sup>, Emre Unsal<sup>a</sup>, John Harvey<sup>b</sup>, Matt Graham<sup>b</sup>, Daniel H. Jones<sup>c</sup>, Miko Cakmak<sup>a,\*</sup><sup>a</sup> Polymer Engineering Academic Centre, The University of Akron, 250 S. Forge St., Akron, OH 44325-0301, USA<sup>b</sup> Akron Polymer Systems, 62 N. Summit St. Akron, OH 44308, USA<sup>c</sup> Lockheed Martin Corporation, 1210 Massillon Road, Akron, OH 44315-0001, USA

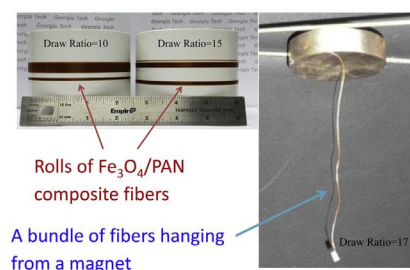


**Machine direction orientation of high density polyethylene (HDPE): Barrier and optical properties**

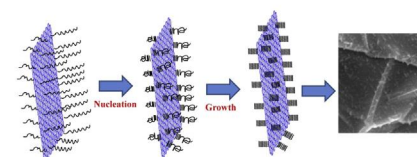
pp 4102–4115

Tirtha Chatterjee<sup>a,\*</sup>, Rajen Patel<sup>b</sup>, John Garnett IV<sup>b</sup>, Rajesh Paradkar<sup>c</sup>, Shouren Ge<sup>d</sup>, Lizhi Liu<sup>d</sup>, Kenneth T. Forziati, Jr.<sup>e</sup>, Nik Shah<sup>e</sup><sup>a</sup>Analytical Sciences, The Dow Chemical Company, Midland, MI 48667, USA<sup>b</sup>Performance Packaging, The Dow Chemical Company, Freeport, TX 77541, USA<sup>c</sup>Analytical Technology Center, The Dow Chemical Company, Freeport, TX 77541, USA<sup>d</sup>Analytical Sciences, The Dow Chemical Company, Freeport, TX 77541, USA<sup>e</sup>Parkinson Technologies Inc., Woonsocket, RI 02895, USA**High-strength superparamagnetic composite fibers**

pp 4116–4124

An-Ting Chien<sup>a</sup>, Bradley A. Newcomb<sup>a</sup>, Daniel Sabo<sup>b</sup>, Julianne Robbins<sup>b</sup>, Z. John Zhang<sup>b</sup>, Satish Kumar<sup>a,\*</sup><sup>a</sup>School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA 30332-0295, USA<sup>b</sup>School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA 30332-0400, USA**Crystallization behaviors in the isotactic polypropylene/graphene composites**

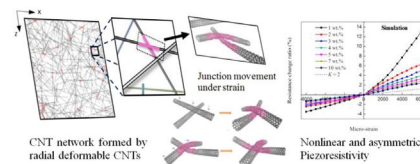
pp 4125–4135

Songmei Zhao<sup>a,b</sup>, Fenghua Chen<sup>a,\*</sup>, Yingjuan Huang<sup>c</sup>, Jin-Yong Dong<sup>c</sup>, Charles C. Han<sup>a,\*</sup><sup>a</sup>State Key Laboratory of Polymer Physics and Chemistry, Joint Laboratory of Polymer Science and Materials, Beijing National Laboratory for Molecular Sciences, Institute of Chemistry, Chinese Academy of Science, Beijing 100190, China<sup>b</sup>University of Chinese Academy of Science, Beijing 100049, China<sup>c</sup>CAS Key Laboratory of Engineering Plastics, Joint Laboratory of Polymer Science and Materials, Beijing National Laboratory for Molecular Sciences, Institute of Chemistry, Chinese Academy of Science, Beijing 100190, China**On the mechanism of piezoresistivity of carbon nanotube polymer composites**

pp 4136–4149

Shen Gong, Zheng H. Zhu<sup>\*</sup>

Department of Earth and Space Science and Engineering, York University, 4700 Keele Street, Toronto, Ontario M3J 1P3, Canada

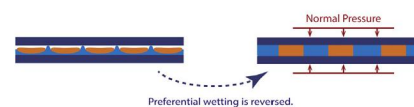


**External normal pressure prevents preferential wetting of PS/PMMA blend thin films**

pp 4150–4155

Zheng Zhang, Zhen Wang, Yifu Ding\*

Department of Mechanical Engineering, University of Colorado at Boulder, Boulder, CO 80309-0427, USA



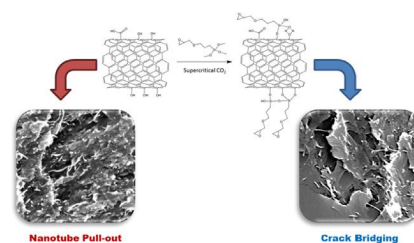
**Supercritical carbon dioxide-assisted silanization of multi-walled carbon nanotubes and their effect on the thermo-mechanical properties of epoxy nanocomposites**

pp 4156–4163

Danny Vennerberg<sup>a</sup>, Ryan Hall<sup>a</sup>, Michael R. Kessler<sup>a,b,\*</sup>

<sup>a</sup> Dept. of Materials Science and Engineering, Iowa State University, Ames, IA, United States

<sup>b</sup> School of Mechanical and Materials Engineering, Washington State University, Pullman, WA, United States



**Fracture-induced activation in mechanophore-linked, rubber toughened PMMA**

pp 4164–4171

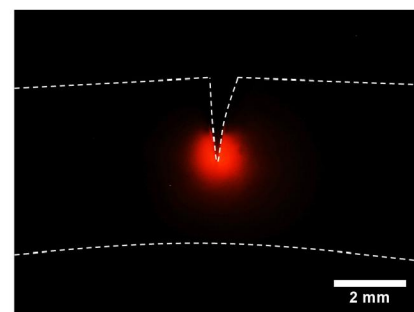
Asha-Dee N. Celestine<sup>a,d</sup>, Brett A. Beiermann<sup>b,d</sup>, Preston A. May<sup>c,d</sup>, Jeffrey S. Moore<sup>c,d</sup>, Nancy R. Sottos<sup>b,d</sup>, Scott R. White<sup>a,d,\*</sup>

<sup>a</sup> Department of Aerospace Engineering, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA

<sup>b</sup> Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA

<sup>c</sup> Department of Chemistry, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA

<sup>d</sup> Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA

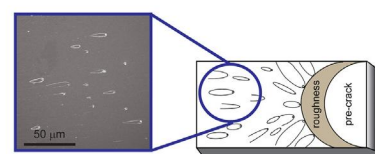


**Effect of block copolymer concentration and core composition on toughening epoxies**

pp 4172–4181

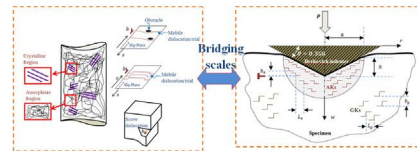
Erica M. Redline, Carmelo Declet-Perez, Frank S. Bates, Lorraine F. Francis\*

Department of Chemical Engineering and Materials Science, University of Minnesota, 421 Washington Ave. SE, Minneapolis, MN 55455, USA



## Strain gradient plasticity for amorphous and crystalline polymers with application to micro- and nano-scale deformation analysis

pp 4182–4198

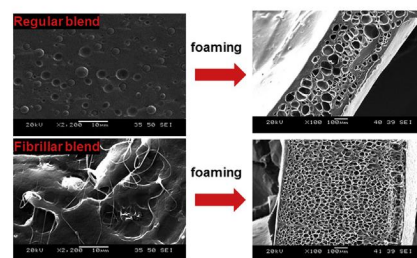
George Z. Voyiadjis<sup>a,\*</sup>, Amir Shojaei<sup>b</sup>, Navid Mozaffari<sup>a</sup><sup>a</sup>Department of Civil and Environmental Engineering, Louisiana State University, Baton Rouge, LA 70803, United States<sup>b</sup>Department of Mechanical Engineering, Louisiana State University, Baton Rouge, LA 70803, United States

## Dispersed polypropylene fibrils improve the foaming ability of a polyethylene matrix

pp 4199–4205

Ali Rizvi, Chul B. Park\*

Microcellular Plastics Manufacturing Laboratory, Department of Mechanical and Industrial Engineering, University of Toronto, 5 King's College Road, Toronto, Ontario M5S 3G8, Canada

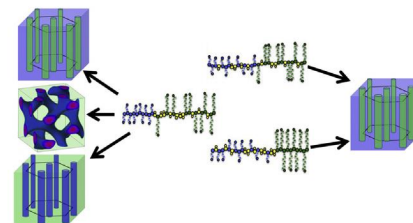


## Role of the segment distribution in the microphase separation of acrylic diblock and triblock terpolymers

pp 4206–4215

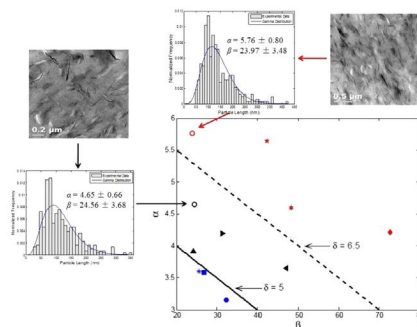
James A. Bergman, Eric W. Cochran\*, Jennifer M. Heinen

Department of Chemical and Biological Engineering, Iowa State University, Ames, IA 50010, USA



## Quantification of layered silicate dispersion in polymer nanocomposites

pp 4216–4225

Qian Gou<sup>a</sup>, Mark D. Wetzel<sup>b</sup>, Babatunde A. Ogunnaike<sup>a,\*</sup><sup>a</sup>University of Delaware, Newark, DE, USA<sup>b</sup>E. I. du Pont de Nemours and Co., Inc., Wilmington, DE, USA

**Thermophysical properties of the dragline silk of *Nephila clavipes* spider**

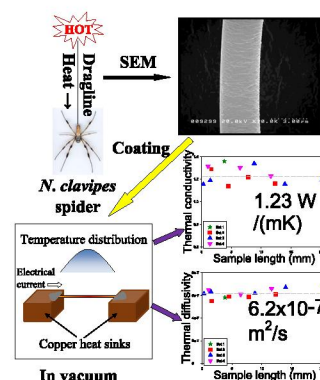
pp 4226–4231

Changhu Xing<sup>a,\*</sup>, Troy Munro<sup>a,b</sup>, Benjamin White<sup>a</sup>, Heng Ban<sup>a</sup>, Cameron G. Copeland<sup>c</sup>, Randolph V. Lewis<sup>c</sup>

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<sup>c</sup>Synthetic Bioproducts Center, Utah State University, North Logan, UT 84341, USA



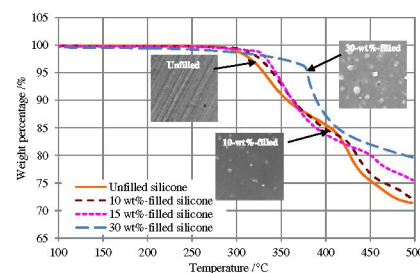
**Effect of Al<sub>2</sub>O<sub>3</sub> fibers on the high-temperature stability of silicone elastomer**

pp 4232–4240

Yiyang Yao<sup>a</sup>, Guo-Quan Lu<sup>a,b,\*</sup>, Dushan Boroyevich<sup>b</sup>, Khai D.T. Ngo<sup>b</sup>

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<sup>b</sup>Dept. of Electrical and Computer Engineering, Center of Power Electronics Systems, Virginia Polytechnic Institute and State University, USA



**Meltblown fiber mats and their tensile strength**

pp 4241–4247

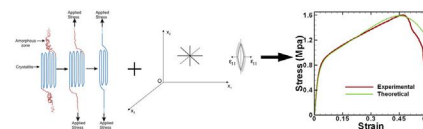
S. Sinha-Ray<sup>a,b</sup>, A.L. Yarin<sup>a,c,\*</sup>, B. Pourdeyhimi<sup>d</sup>

<sup>a</sup>Department of Mechanical and Industrial Engineering, University of Illinois at Chicago, 842 W. Taylor St., Chicago, IL 60607-7022, USA

<sup>b</sup>United States Gypsum, 700 North US Highway 45, Libertyville, IL 60048-1296, USA

<sup>c</sup>College of Engineering, Korea University, Seoul, South Korea

<sup>d</sup>3427 The Nonwovens Institute, Box 8301, North Carolina State University, Raleigh, NC 27695-8301, USA



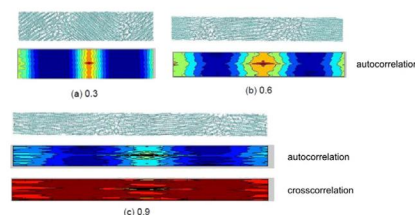
**Dependence of mechanical properties on crystal orientation of semi-crystalline polyethylene structures**

pp 4248–4257

Xin Dong<sup>a</sup>, David L. McDowell<sup>a,b</sup>, Surya R. Kalidindi<sup>a,b</sup>, Karl I. Jacob<sup>a,b,\*</sup>

<sup>a</sup>School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA 30332, USA

<sup>b</sup>Woodruff School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA 30332, USA

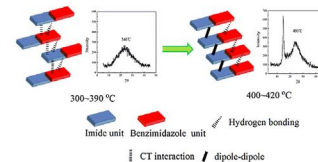


## The evolution of macromolecular packing and sudden crystallization in rigid-rod polyimide via effect of multiple H-bonding on charge transfer (CT) interactions

pp 4258–4269

Longbo Luo, Jing Yao, Xu Wang, Ke Li, Jieyang Huang, Baoyin Li, Huina Wang, Yan feng, Xiangyang Liu\*

State Key Laboratory of Polymer Material and Engineering, College of Polymer Science and Engineering, Sichuan University, Chengdu 610065, PR China



## In-situ microstructural changes of polyacrylonitrile based fibers with stretching deformation

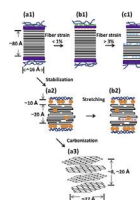
pp 4270–4280

Yu Gong<sup>a,b</sup>, Rong Du<sup>a,b</sup>, Guang Mo<sup>a</sup>, Xueqing Xing<sup>a</sup>, Chun-Xiang Lü<sup>c</sup>, Zhonghua Wu<sup>a,b,\*</sup>

<sup>a</sup>Institute of High Energy Physics, Chinese Academy of Sciences, Beijing 100049, China

<sup>b</sup>University of the Chinese Academy of Sciences, Beijing 100049, China

<sup>c</sup>Institute of Coal Chemistry, Chinese Academy of Sciences, Taiyuan 030001, China



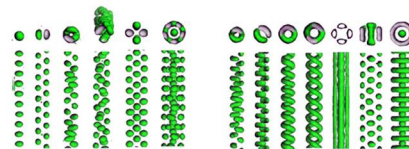
## Phase behaviors of sphere-forming triblock copolymers confined in nanopores: A dynamic density functional theory study

pp 4281–4288

Qing-Hai Hao<sup>a,\*</sup>, Bing Miao<sup>b,\*</sup>, Qing-Gong Song<sup>a</sup>, Xiao-Hui Niu<sup>a</sup>, Tie-Ju Liu<sup>a</sup>

<sup>a</sup>College of Science, Civil Aviation University of China, Tianjin 300300, China

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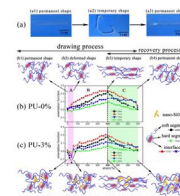


## Probing the structure evolution/orientation induced by interaction between polyurethane segments and SiO<sub>2</sub> surface in shape memory process

pp 4289–4298

Miaoming Huang, Xia Dong\*, Yunyun Gao, Qian Xing, Wanli Li, Dujin Wang

Beijing National Laboratory for Molecular Sciences, CAS Key Laboratory of Engineering Plastics, Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190, China



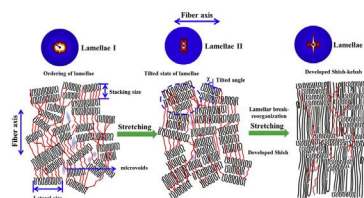
**Lamellae break induced formation of shish-kebab during hot stretching of ultra-high molecular weight polyethylene precursor fibers investigated by *in situ* small angle X-ray scattering** pp 4299–4306

Yu Tian<sup>a</sup>, Caizhen Zhu<sup>a,b,c,\*</sup>, Jinghua Gong<sup>a</sup>, Shenglin Yang<sup>a</sup>, Jinghong Ma<sup>a,\*</sup>, Jian Xu<sup>a,c</sup>

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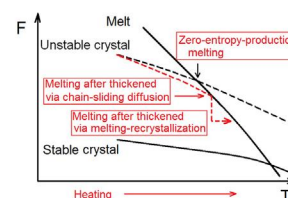
**Combining fast-scan chip-calorimeter with molecular simulations to investigate superheating behaviors of lamellar polymer crystals** pp 4307–4312

Huanhuan Gao<sup>a</sup>, Jing Wang<sup>a</sup>, Christoph Schick<sup>b</sup>, Akihiko Toda<sup>c</sup>, Dongshan Zhou<sup>a</sup>, Wenbing Hu<sup>a,\*</sup>

<sup>a</sup> Key Laboratory of High Performance Polymer Materials and Technology, State Key Laboratory of Coordination Chemistry, School of Chemistry and Chemical Engineering, Nanjing University, 210093 Nanjing, China

<sup>b</sup> University of Rostock, Institute of Physics, 18051 Rostock, Germany

<sup>c</sup> Graduate School of Integrated Arts and Sciences, Hiroshima University, Higashi-Hiroshima 739-8521, Japan



**Highly toughened polylactide with novel sliding graft copolymer by *in situ* reactive compatibilization, crosslinking and chain extension** pp 4313–4323

Xue Li<sup>a</sup>, Hailan Kang<sup>a</sup>, Jianxiang Shen<sup>a</sup>, Liqun Zhang<sup>a,b,\*</sup>, Toshio Nishi<sup>c</sup>, Kohzo Ito<sup>d,\*\*</sup>, Changming Zhao<sup>d</sup>, Phil Coates<sup>e</sup>

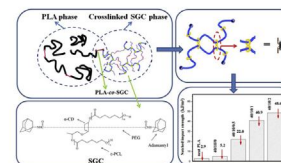
<sup>a</sup> State Key Laboratory for Organic-Inorganic Composites, Beijing University of Chemical Technology, Beijing 100029, China

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

<sup>e</sup> School of Engineering, Design and Technology, Bradford University, Bradford BD7 1DP, UK

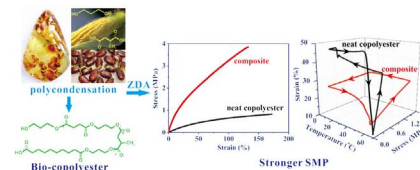


**Synthesis of bio-based copolyester and its reinforcement with zinc diacrylate for shape memory application** pp 4324–4331

Wenshan Guo<sup>a</sup>, Zuoli Shen<sup>a</sup>, Baochun Guo<sup>a,\*</sup>, Liqun Zhang<sup>b,\*</sup>, Demin Jia<sup>a</sup>

<sup>a</sup> Department of Polymer Materials and Engineering, South China University of Technology, Guangzhou 510640, China

<sup>b</sup> Key Laboratory of Beijing City for Preparation and Processing of Novel Polymer Materials, Beijing University of Chemical Technology, Beijing 100029, China



## Lamellar orientation of polyamide 6 thin film crystallization on solid substrates

pp 4332–4340

Lu-Wei Zhong<sup>a</sup>, Xiang-Kui Ren<sup>a</sup>, Shuang Yang<sup>a</sup>, Er-Qiang Chen<sup>a,\*</sup>, Chun-Xia Sun<sup>b</sup>, Alexander Stroeks<sup>b,\*</sup>, Tie-Ying Yang<sup>c</sup>

<sup>a</sup>Beijing National Laboratory for Molecular Sciences, Department of Polymer Science and Engineering and the Key Laboratory of Polymer Chemistry and Physics of Ministry of Education, College of Chemistry and Molecular Engineering, Peking University, Beijing 100871, China

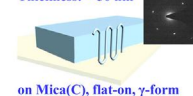
<sup>b</sup>Material Science Center, DSM Ahead, P.O. Box 18, 6160 MD Geleen, The Netherlands

<sup>c</sup>Shanghai Institute of Applied Physics, Chinese Academy of Sciences, Shanghai 201204, China

PA6 Lamellar orientation depending on thin film thickness and substrate property

Thickness: < 50 nm

Thickness: 50 nm ~ 5 μm

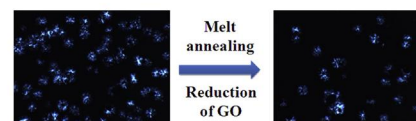


## The probable influence of *in situ* thermal reduction of graphene oxides on the crystallization behavior of isotactic polypropylene

pp 4341–4347

Jiashu Fan, Ruijin Huang, Shibing Ye, Tianjiao Li, Jiachun Feng\*

State Key Laboratory of Molecular Engineering of Polymers, Department of Macromolecular Science, Fudan University, Shanghai 200433, PR China



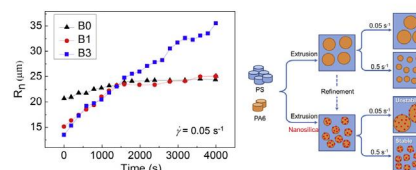
## Flow-induced morphological instability in nanosilica-filled polyamide 6/polystyrene blends

pp 4348–4357

Miqiu Kong<sup>a</sup>, Yajiang Huang<sup>a,\*</sup>, Yadong Lv<sup>a</sup>, Shihu Wang<sup>b</sup>, Qi Yang<sup>a</sup>, Guangxian Li<sup>a</sup>

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<sup>b</sup>Department of Chemical Engineering, University of Michigan, Ann Arbor, MI 48109, USA

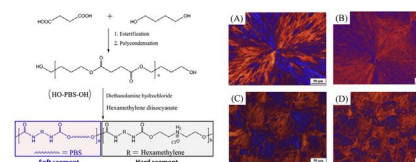


## Synthesis and characterization of segmented poly(butylene succinate) urethane ionenes containing secondary amine cation

pp 4358–4368

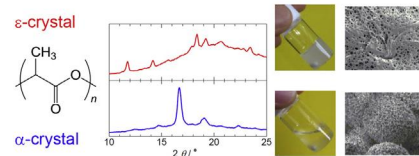
Fang Wu, Cai-Li Huang, Jian-Bing Zeng\*, Shao-Long Li, Yu-Zhong Wang\*

Center for Degradable and Flame-Retardant Polymeric Materials (ERCPM-MoE), College of Chemistry, State Key Laboratory of Polymer Materials Engineering, National Engineering Laboratory of Eco-Friendly Polymeric Materials (Sichuan), Sichuan University, 29 Wangjiang Road, Chengdu 610064, China

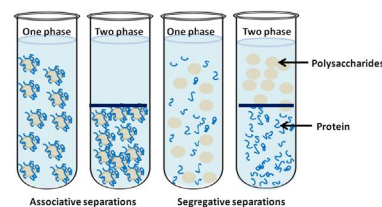


**Fabrication and characterization of poly(L-lactic acid) gels induced by fibrous complex crystallization with solvents**

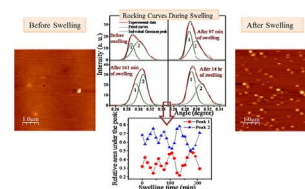
pp 4369–4378

Yasuhiro Matsuda<sup>a,\*</sup>, Akinobu Fukatsu<sup>a</sup>, Yangyang Wang<sup>b</sup>, Kazuaki Miyamoto<sup>a</sup>, Jimmy W. Mays<sup>b,c</sup>, Shigeru Tasaka<sup>a</sup><sup>a</sup> Department of Applied Chemistry and Biochemical Engineering, Shizuoka University, 3-5-1 Johoku, Naka-ku, Hamamatsu, 432-8561, Japan<sup>b</sup> Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN, 37831, United States<sup>c</sup> Department of Chemistry, The University of Tennessee, Knoxville, TN, 37996, United States**Study of the phase separation behaviour of native or preheated WPI with polysaccharides**

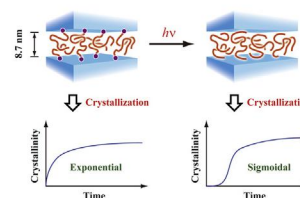
pp 4379–4384

Ji-Yeon Chun<sup>a</sup>, Geun-Pyo Hong<sup>b</sup>, Suvimol Surassmo<sup>c</sup>, Jochen Weiss<sup>d</sup>, Sang-Gi Min<sup>a</sup>, Mi-Jung Choi<sup>e,\*</sup><sup>a</sup> Department of Bioindustrial Technologies, Konkuk University, Seoul, Republic of Korea<sup>b</sup> Department of Food Bioengineering, Jeju National University, Jeju, Republic of Korea<sup>c</sup> Nanodelivery System Laboratory (NDS), National Nanotechnology Center (NANOTEC), National Science and Technology Development Agency (NSTDA), Pathumthani, Thailand<sup>d</sup> Department of Food Physics and Meat Science, Institute of Food Science and Biotechnology, University of Hohenheim, Stuttgart, Germany<sup>e</sup> Department of Bioresources and Food Science, Konkuk University, Seoul, Republic of Korea**Swelling dynamics and swelling induced structural changes of polyelectrolyte ultrathin films**

pp 4385–4393

Tanusree Samanta<sup>a</sup>, M. Mukherjee<sup>a,\*</sup>, Andrea Lausi<sup>b</sup><sup>a</sup> Saha Institute of Nuclear Physics, 1/AF, Bidhannagar, Kolkata 700064, India<sup>b</sup> Elettra – Sincrotrone Trieste S.C.p.A., Basovizza, Trieste 34149, Italy**Crystallization behavior of poly(ε-caprolactone) chains confined in lamellar nanodomains**

pp 4394–4400

Shintaro Nakagawa<sup>a</sup>, Takumi Tanaka<sup>a</sup>, Takashi Ishizone<sup>a</sup>, Shuichi Nojima<sup>a,\*</sup>, Kohei Kamimura<sup>b</sup>, Kazuo Yamaguchi<sup>b,c</sup>, Seiichi Nakahama<sup>c</sup><sup>a</sup> Department of Organic and Polymeric Materials, Graduate School of Science and Engineering, Tokyo Institute of Technology, H-125, 2-12-1 Ookayama, Meguro-Ku, Tokyo 152-8552, Japan<sup>b</sup> Department of Chemistry, Faculty of Science, Kanagawa University, Hiratsuka, Kanagawa 259-1293, Japan<sup>c</sup> Research Institute for Photofunctionalized Materials, Kanagawa University, Hiratsuka, Kanagawa 259-1293, Japan



## Controlling of crystallite orientation for poly(ethylene oxide) thin films with cellulose single nano-fibers

pp 4401–4404

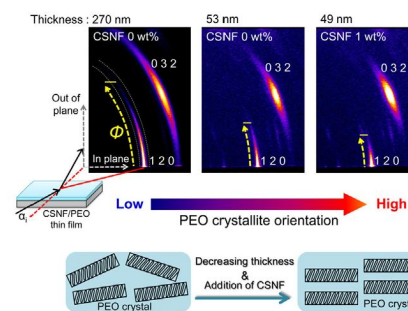
Miki Noda Fukuya<sup>a,b,c,\*</sup>, Kazunobu Senoo<sup>a,\*\*</sup>, Masaru Kotera<sup>d,\*\*\*</sup>, Mamoru Yoshimoto<sup>b</sup>,  
Osami Sakata<sup>b,c</sup>

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<sup>c</sup> Synchrotron X-ray Station at SPring-8, National Institute for Materials Science (NIMS), 1-1-1 Kouto, Sayo, Hyogo 679-5148, Japan

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