ISSN 0256-7679
CN 11-2015/O6

Chinese Journal of POLYMER SCIENCE

Volume 39 Number 5 May 2021



Chinese Journal of Polymer Science
Vol. 39 No. 5 May 2021 PP. 525–650

CJPS Chinese J. Polym. Sci.
高分子科学（英文版）
CCS 中国化学会 CHINESE CHEMICAL SOCIETY
ICCAS 1956 中国科学院化学研究所 INSTITUTE OF CHEMISTRY CHINESE ACADEMY OF SCIENCES
Springer
中国科学技术协会 CHINA ASSOCIATION FOR SCIENCE AND TECHNOLOGY

Chinese Journal of Polymer Science

Volume 39 • Number 5 • May 2021

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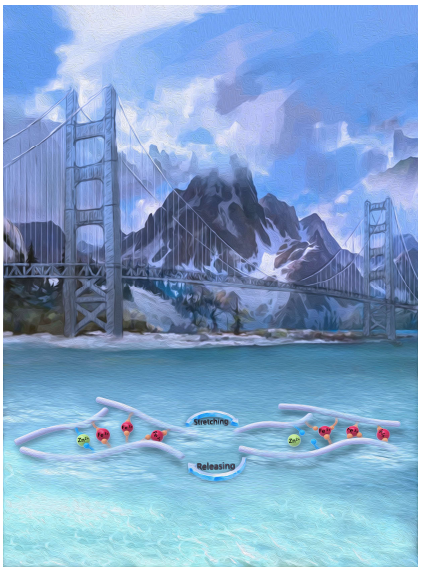
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Cover Image

Reversible Mechanochemistry Enabled Autonomous Sustaining of Robustness of Polymers—An Example of Next Generation Self-healing Strategy

Ming-Xuan Li, Min-Zhi Rong, and Ming-Qiu Zhang

Mechanically activated reversible intrinsic hindrance and restoration of early minor damages in polyurethane prove workable through the cascading variation of metal-ligand complexations. A prototype of molecular-level internal equilibrium protection mechanisms in artificial materials based on synergistic effect between two types of dynamic crosslinkages is thus established.



Chinese Journal of Polymer Science, 2021, 39(5), 545–553
https://doi.org/10.1007/s10118-021-2532-0

Chinese Journal of Polymer Science Vol. 39, No. 5, May 2021

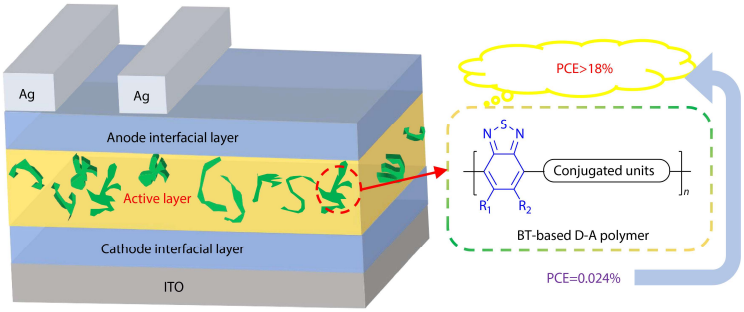
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Benzothiadiazole-based Conjugated Polymers for Organic Solar Cells

Chao Wang, Feng Liu, Qiao-Mei Chen, Cheng-Yi Xiao, Yong-Gang Wu, and Wei-Wei Li

This review summarized the recent developments of BT-based conjugated polymers and their application in OSCs, especially some typical BT-based conjugated polymers, hoping to reveal the importance of BT-based conjugated polymers in OSCs.



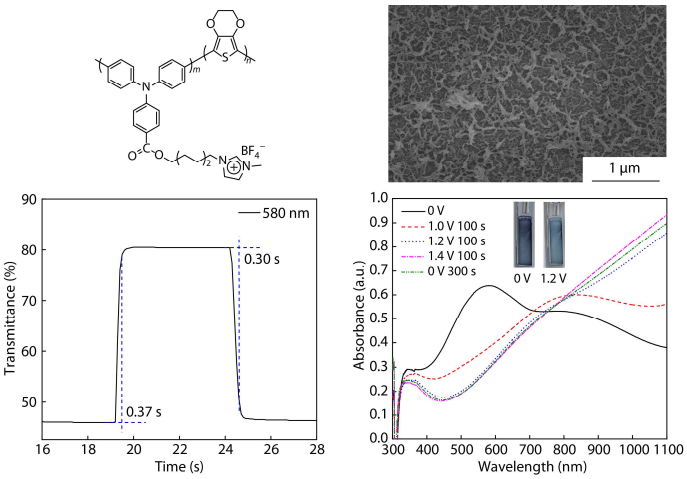
Chinese Journal of Polymer Science, 2021, 39(5), 525–536
https://doi.org/10.1007/s10118-021-2537-8

Articles

A Conjugated Copolymer Bearing Imidazolium-based Ionic Liquid: Electrochemical Synthesis and Electrochromic Properties

Xiao-Jing Lv, Li-Bin Xu, Liang Qian, Yuan-Yuan Yang, Zhi-Yi Xu, Jin Li, and Cheng Zhang

A conjugated copolymer with pendent imidazolium-based ionic liquid was prepared *via* electrochemical polymerization. The copolymer exhibits similar color changes and faster switching time compared with PEDOT. It is more intriguing that the copolymer presents electrochromism in free supporting electrolyte.

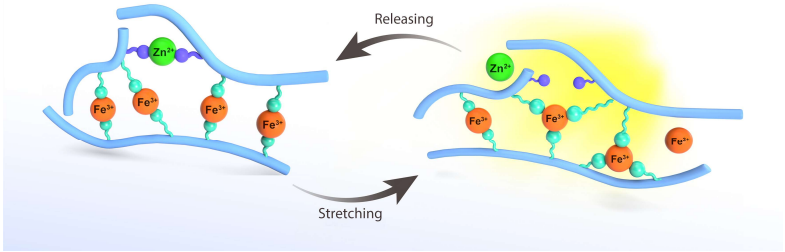


Chinese Journal of Polymer Science, 2021, 39(5), 537–544
https://doi.org/10.1007/s10118-021-2525-z

Reversible Mechanochemistry Enabled Autonomous Sustaining of Robustness of Polymers—An Example of Next Generation Self-healing Strategy

Ming-Xuan Li, Min-Zhi Rong, and Ming-Qiu Zhang

Mechanically activated reversible intrinsic hindrance and restoration of early minor damages in polyurethane prove workable through the cascading variation of metal-ligand complexations. A prototype of molecular-level internal equilibrium protection mechanisms in artificial materials based on synergistic effect between two types of dynamic crosslinkages is thus established.

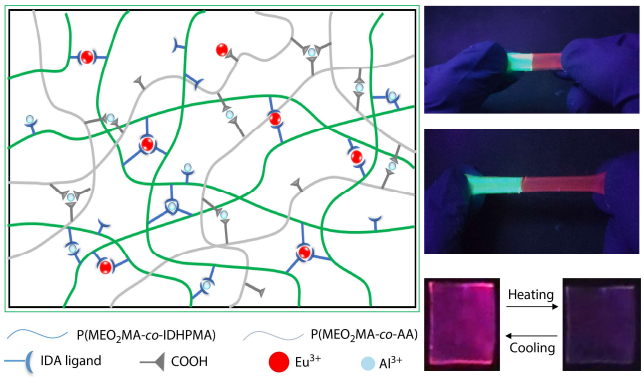


Chinese Journal of Polymer Science, 2021, 39(5), 545–553
https://doi.org/10.1007/s10118-021-2532-0

Tough Double Metal-ion Cross-linked Elastomers with Temperature-adaptable Self-healing and Luminescence Properties

Qi-Yan Yin, Cheng-Hao Dai, Huan Chen, Kai Gou, Hong-Zhou Guan, Peng-Han Wang, Jing-Tao Jiang, and Geng-Sheng Weng

Tough elastomers with temperature-adaptable self-healing properties and thermo-fluorochromic response were fabricated using aluminum (Al) and fluorescent europium (Eu) ions as cross-linkers. The mechanical, self-healing and luminescence properties of these elastomers can be readily adjusted by tuning the ratio of the two types of metal ions.

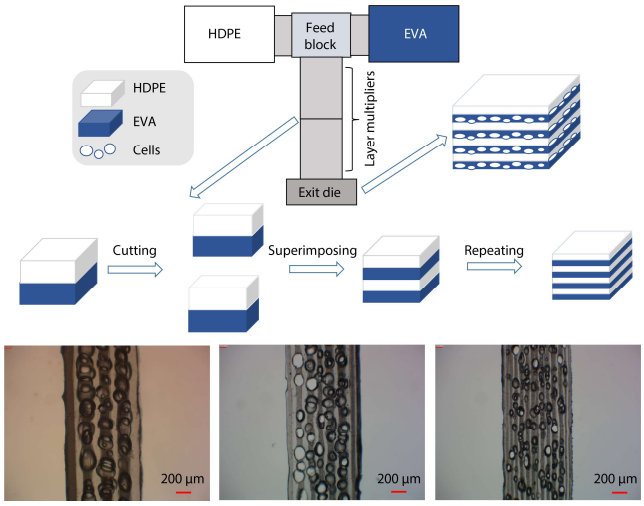


Chinese Journal of Polymer Science, 2021, 39(5), 554–565
https://doi.org/10.1007/s10118-021-2517-z

Foam/Film Alternating Multilayer Structure with High Toughness and Low Thermal Conductivity Prepared *via* Microlayer Coextrusion

Qi Luo, Hong-Ting Pu, Zhi-Hua Zhang, Xiong Zhang, and Cheng-Long Yu

The foam/film alternating multilayer sheets are prepared *via* microlayer coextrusion. The effects of layer number and foam relative thickness on morphology, mechanical properties, damping and heat-insulation properties are investigated, which shows high toughness and low thermal conductivity, indicating a possible method for preparing materials with high toughness and heat-insulating properties.

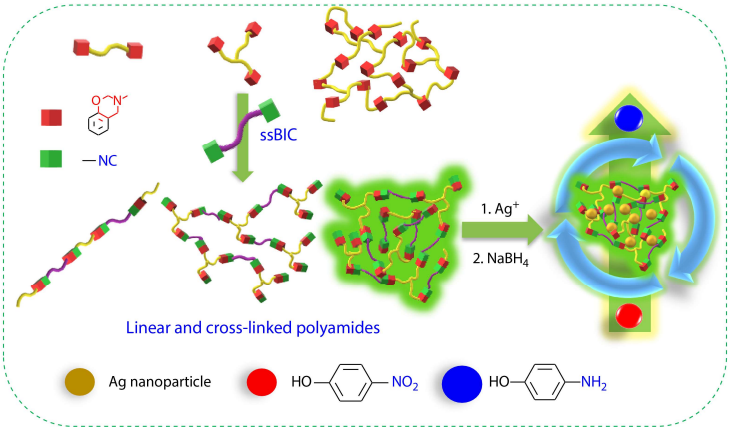


Chinese Journal of Polymer Science, 2021, 39(5), 566–572
https://doi.org/10.1007/s10118-021-2524-0

Facile Mechanochemical Preparation of Polyamide-derivatives *via* Solid-state Benzoxazine-isocyanide Chemistry

Xu Sun, Wei Shi, Xin-Yu Zhou, and Sheng Ding

Herein, the preparation of linear and crosslinked, phenolic hydroxyl modified polyamides (PAs) *via* solid-state benzoxazine-isocyanide chemistry (ssBIC) is reported. The ssBIC displayed advantages of simple operation, mild condition, high efficiency, great flexibility in substrate designing, insensitivity to oxygen/water and no solubility limitation. The application of the obtained PA as the matrix for loading silver nanoparticles was also discussed.

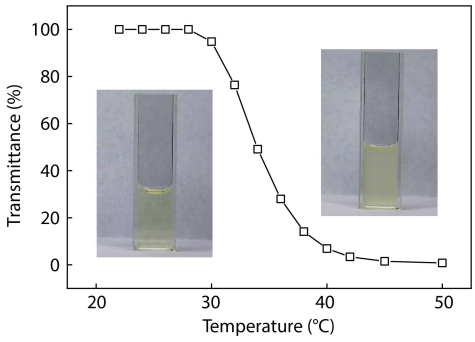


Chinese Journal of Polymer Science, 2021, 39(5), 573–584
https://doi.org/10.1007/s10118-021-2510-6

Tunable Lower Critical Solution Temperature of Poly(butyl acrylate) in Ionic Liquid Blends

Lie Chen, Jin Huang, Cong Zhao, Jia-Jia Zhou, and Ming-Jie Liu

We describe the lower critical solution temperature (LCST)-type phase behavior of poly(butyl acrylate) (PBA) dissolved in 1-alkyl-3-methylimidazolium bis{(trifluoromethyl) sulfonyl}amide ionic liquids. The influence of the molecular weight and cation side chain length on the LCST of PBA/ionic liquids solution is systematically studied through a typical procedure.

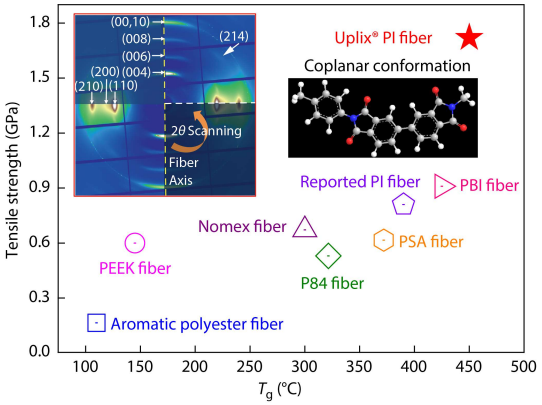


Chinese Journal of Polymer Science, 2021, 39(5), 585–591
https://doi.org/10.1007/s10118-021-2522-2

Scalable Reaction-spinning of Rigid-rod Upilex-S® Type Polyimide Fiber with an Ultrahigh T_g

Sen-Sen Zheng, Han Dong, Shi-Hua Wang, Jie Dong, Tao Guo, Xin Zhao, and Qing-Hua Zhang

A rigid-rod Upilex-S® type polyimide fiber was successfully prepared by a novel and facile "reaction-spinning" method, which shows higher tensile strength and modulus than most commercial thermal-oxidative polymeric fibers with an ultrahigh glass transition temperature T_g of 478 °C. Accordingly, the fiber has a great potential applied in some harsh conditions.

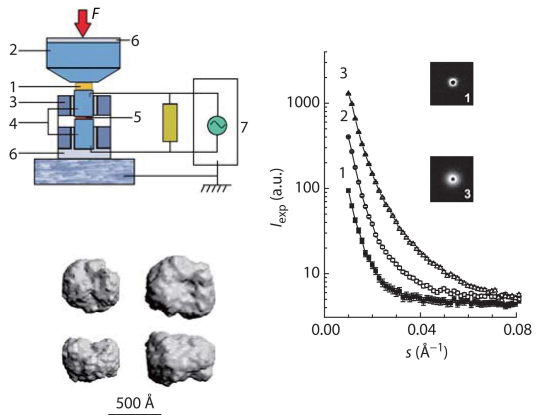


Chinese Journal of Polymer Science, 2021, 39(5), 592–600
https://doi.org/10.1007/s10118-021-2508-0

Structural Changes and Electrodynamic Effects in Polymers under Fast Uniaxial Compression

Aleksey. I. Aleksandrov, Ivan A. Aleksandrov, Vitaliy G. Shevchenko, and Aleksandr N. Ozerin

Rheological explosion in polymers under uniaxial compression in an open volume occurs at the end of continuous rapid plastic deformation after several stages of creep. X-ray diffraction methods were used to investigate changes in the structure and morphology of polymers during deformation and rheological explosion.

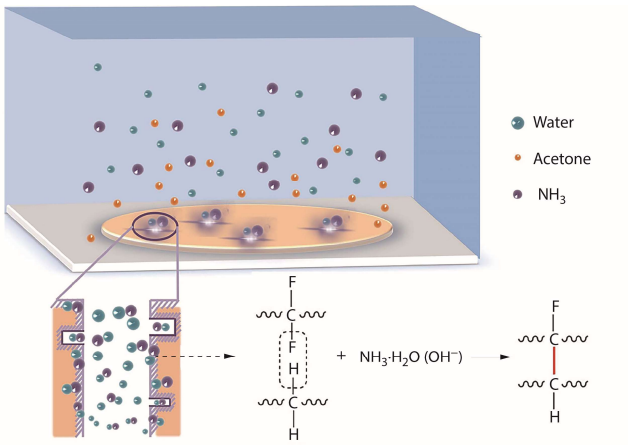


Chinese Journal of Polymer Science, 2021, 39(5), 601–609
https://doi.org/10.1007/s10118-021-2511-5

Tailoring Morphology of PVDF-HFP Membrane *via* One-step Reactive Vapor Induced Phase Separation for Efficient Oil-Water Separation

Peng Huo, Cheng-Tang Zhong, and Xiao-Peng Xiong

PVDF-HFP membrane with tunable morphology can be prepared *via* one-step reactive VIPS process, where ammonia water from atmosphere results in dehydrofluorination cross-linking of PVDF-HFP, facilitating phase separation and thus controlling the porous structure.

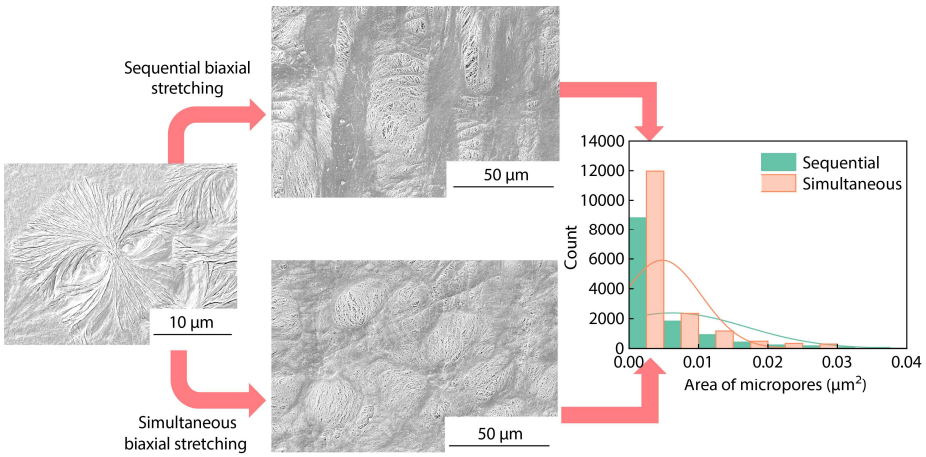


Chinese Journal of Polymer Science, 2021, 39(5), 610–619
https://doi.org/10.1007/s10118-021-2527-x

Comparison of the Structural Evolution of β Polypropylene during the Sequential and Simultaneous Biaxial Stretching Process

Dao-Xin Zhang, Lei Ding, Feng Yang, Fang Lan, Ya Cao, and Ming Xiang

The structural evolution of β polypropylene during the processing of two different stretching methods is studied. The different stretching methods lead to significantly different lamellae deformation modes and the microporous membrane obtained by the simultaneous biaxial stretching process has superior pore size distribution and mechanical properties.

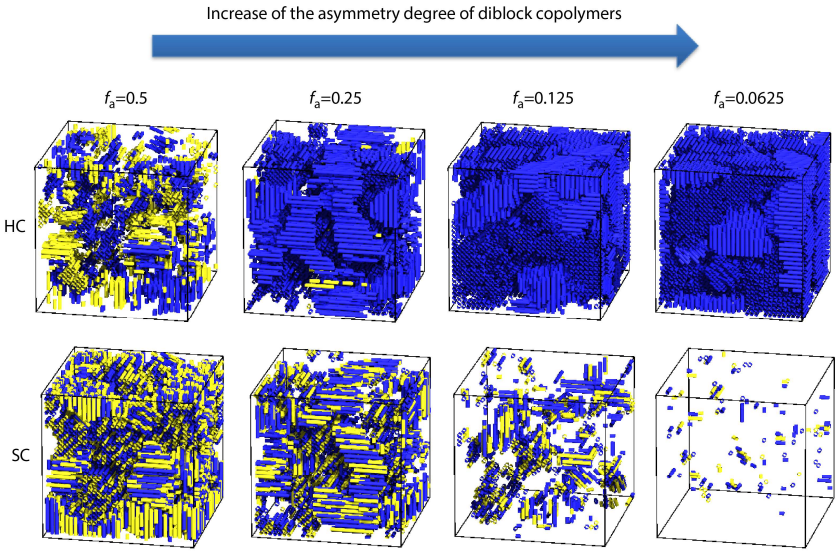


Chinese Journal of Polymer Science, 2021, 39(5), 620–631
https://doi.org/10.1007/s10118-021-2534-y

Stereocomplex Crystallization in Asymmetric Diblock Copolymers Studied by Dynamic Monte Carlo Simulations

Ying Xu, Jun Yang, Zong-Fa Liu, Zhi-Ping Zhou, Zhao-Peng Liang, Tong-Fan Hao, and Yi-Jing Nie

The asymmetric diblock copolymers with higher degree of asymmetry exhibit higher difference between volume fractions of beads with different blocks, and local miscibility between different kinds of beads is lower, leading to lower SC content.

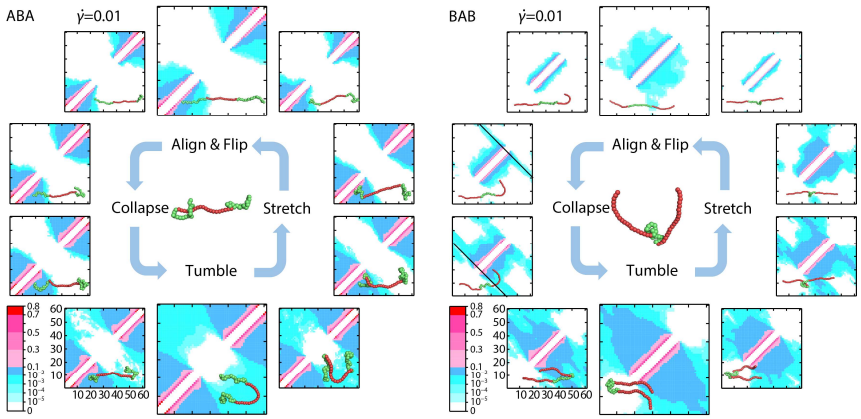


Chinese Journal of Polymer Science, 2021, 39(5), 632–639
https://doi.org/10.1007/s10118-021-2512-4

Conformational and Dynamical Evolution of Block Copolymers in Shear Flow

Xiang-Xin Kong, Wen-Duo Chen, Feng-Chao Cui, and Yun-Qi Li

At small and intermediate shear strength, the type of the central blocks of block copolymers plays a more important role in the conformational and dynamical evolution of the copolymers.



Chinese Journal of Polymer Science, 2021, 39(5), 640–650
https://doi.org/10.1007/s10118-021-2523-1