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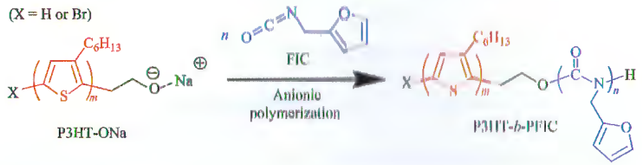
Articles

Synthesis of a Rod-rod Diblock Copolymer, Poly(3-hexylthiophene)-block-poly(furfuryl isocyanate), through the Anionic Polymerization with an Oxyanionic Macroinitiator

Chang-Geun Chae, Joonkeun Min, In-Gyu Bak, and Jae-Suk Lee

A rod-rod diblock copolymer, poly(3-hexylthiophene)-block-poly(furfuryl isocyanate) (P3HT-*b*-PFIC), was synthesized through the anionic polymerization with an oxyanionic macroinitiator of P3HT. The blend of P3HT-*b*-PFIC:C_{60} was utilized in the fabrication of thin film. The sequential Diels-Alder reaction and high-temperature thermal annealing allowed this blend to form nanoscale donor/acceptor interfaces.

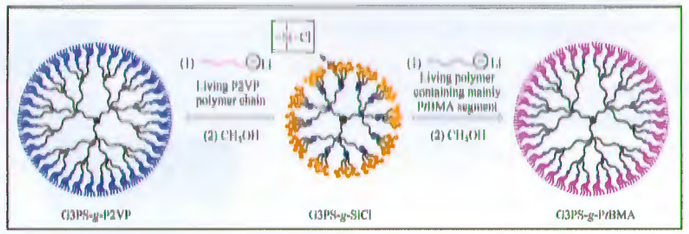


Chinese Journal of Polymer Science, 2019, 37(9), 866–874
https://doi.org/10.1007/s10118-019-2243-y

Amphiphilic Dendrimer-like Copolymers with High Chain Density by Living Anionic Polymerization

Ke Zheng and Jun-Po He

This article describes the synthesis of amphiphilic dendrimer-like copolymers *via* new routes based on anionic polymerization and chlorosilane coupling. The advantage of the present route is to prepare dendrimer-like polymers with high molecular weights and high density of the peripheral segments and functionalities.



Chinese Journal of Polymer Science, 2019, 37(9), 875–883
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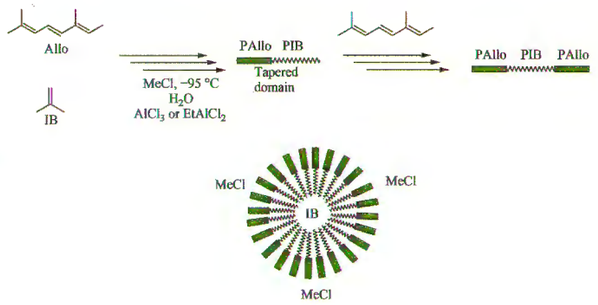
The Effect of Reaction Conditions on the Synthesis of Thermoplastic Elastomers Containing Polyalloocimene, Polyisobutylene and Tapered Blocks

Jozsef Kantor, Judit E. Puskas, and Gabor Kaszas

Isobutylene (IB) was copolymerized with alloocimene (Allo) in methyl chloride (MeCl) using $AlCl_3$ and ethylaluminum dichloride ($EtAlCl_2$) as coinitiators and adventitious moisture as initiator. Both $AlCl_3$ and $EtAlCl_2$ produced high molecular weight (M_n > 1.0 × 10^5 g/mol) thermoplastic elastomers (TPEs) with good mechanical properties in short reaction time (< 10 min).



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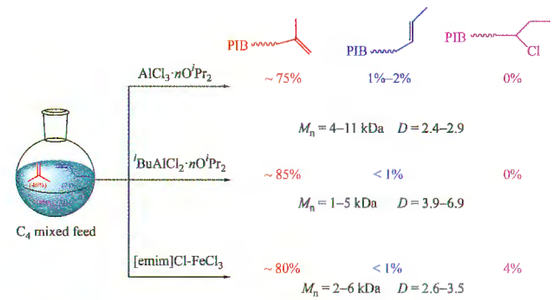
https://doi.org/10.1007/s10118-019-2254-8

Cationic Polymerization of Isobutylene and C_4 Mixed Feed Using Complexes of Lewis Acids with Ethers: A Comparative Study

Dmitriy I. Shiman, Ivan A. Berezianko, Irina V. Vasilenko, and Sergei V. Kostjuk

Cationic polymerization of C_4 mixed feed has been performed using catalytic systems based on complexes of Lewis acids with ethers. Among different catalysts studied here, the complexes of ^{t}BuAlCl$_2$ with diisopropyl ethers afforded HR PIB with desired low M_n and higher *exo*-olefin end group content.

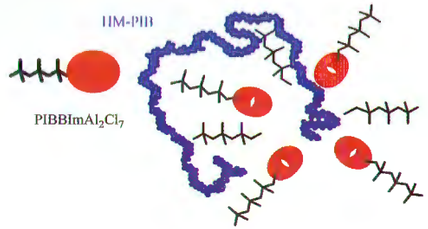


Chinese Journal of Polymer Science, 2019, 37(9), 891–897
https://doi.org/10.1007/s10118-019-2290-4

Controlling Heat Transfer for the Manufacturing of High Molecular Weight Polyisobutylene *via* Formation of Micelles

Szilard Csihony, Nicole Janssen, and Klaus Mühlbach

Functionalized low molecular weight polyisobutylene was used to form micelle-like structures in hydrophobic solvents. The functionalization included imidazolium heptachloroaluminate ionic groups that catalyze the cationic polymerization of isobutylene. The method can be used to produce high molecular weight polyisobutylene in a process similar to emulsion polymerization.



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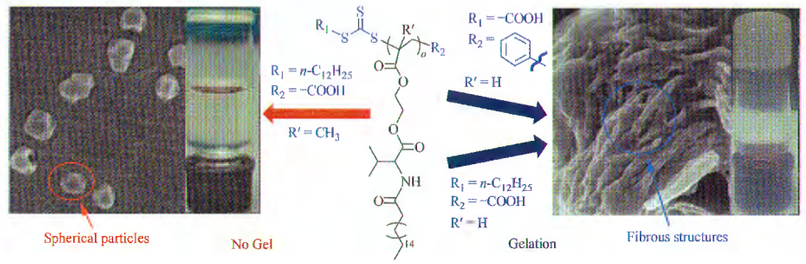
https://doi.org/10.1007/s10118-019-2250-z

Effects of Main-chain and Chain-ends on the Organogelation of Stearoyl Appended Pendant Valine Based Polymers

Mridula Nandi, Swagata Pan, Dipannita Ghosh, and Priyadarsi De

We demonstrate the effect of polymeric backbone and chain-end functionalities on the packing efficiency of stearoyl appended side-chain Val-based poly(methacrylate/acrylate) homopolymers, which made the gelation of poly(acrylate)s more favorable than poly(methacrylate)s. Simultaneously, additional interactions from the chain end group could assist in gelation in the case of poly(methacrylate) backbone.



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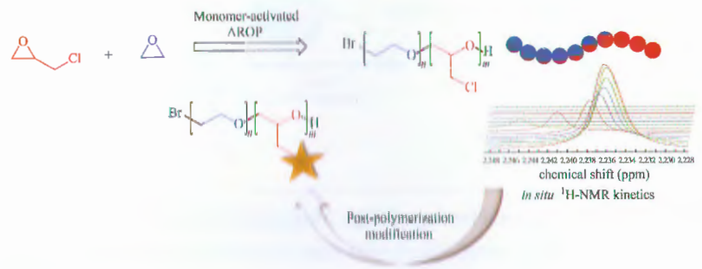
https://doi.org/10.1007/s10118-019-2265-5

Monomer-activated Copolymerization of Ethylene Oxide and Epichlorohydrin: *In Situ* Kinetics Evidences Tapered Block Copolymer Formation

Ann-Kathrin Danner, Daniel Leibig, Lea-Marie Vogt, and Holger Frey

The monomer-activated anionic ring-opening copolymerization (AROP) of ethylene oxide (EO) and epichlorohydrin (ECH) was investigated by *in situ* NMR. Surprisingly, the one-pot statistical anionic copolymerization *via* monomer-activated AROP resulted in the formation of strongly tapered, block like structures (reactivity ratios: $r_{EO} = 9.2$ and $r_{ECH} = 0.10$).



Chinese Journal of Polymer Science, 2019, 37(9), 912–918
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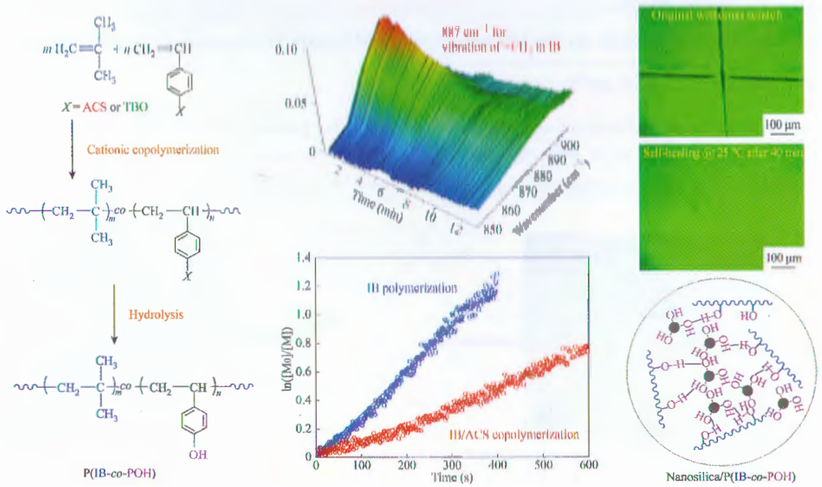
Functionalized Copolymers of Isobutylene with Vinyl Phenol: Synthesis, Characterization, and Property

Shi-Xuan Yang, Zi-Yu Fan, Feng-Yu Zhang, Si-Hao Li, and Yi-Xian Wu

Functionalized copolymers of isobutylene with vinyl phenol with good self-healing property and homogeneous dispersion for silica nanoparticles could be successfully synthesized by hydrolysis from the precursor of random copolymers of isobutylene with 4-acetoxystyrene or 4-*tert*-butoxystyrene *via* direct cationic copolymerization with $FeCl_3$-based initiating system.



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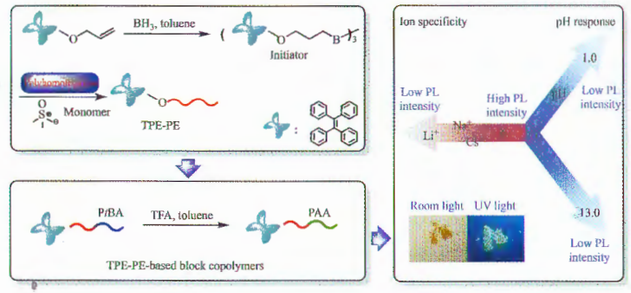
https://doi.org/10.1007/s10118-019-2329-6

pH-responsive AIE-active Polyethylene-based Block Copolymers

Yu Jiang and Nikos Hadjichristidis

A series of pH-responsive aggregation-induced emission (AIE)-active tetraphenylethene (TPE)-functionalized polymethylene-based block copolymers were synthesized by using polyhomologation and ATRP. The synthesized block copolymers exhibited AIE characteristics either in solution or bulk. Also, the block copolymers exhibited both pH-responsive and ion-specific fluorescence properties.



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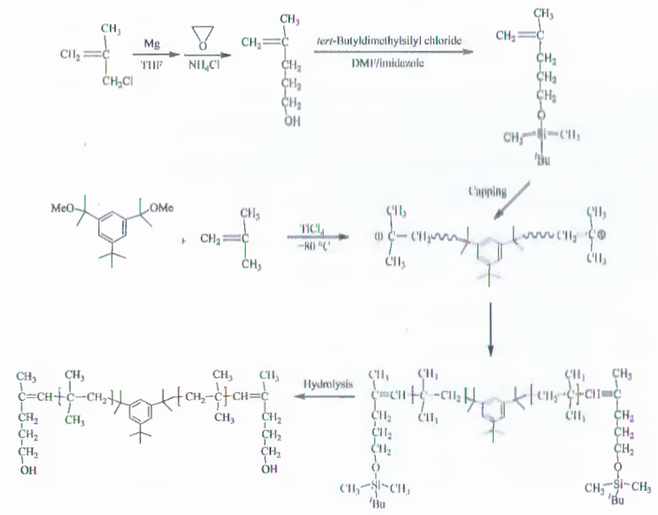
Synthesis and Properties of Hydroxytelechelic Polyisobutylenes by End Capping with *tert*-Butyl-dimethyl-(4-methyl-pent-4-enyloxy)-silane

Jing Li, Kang-Da Wu, Huang Shan, Jing-Han Zhang, Ming Zhao, Guang-Bi Gong, Wen-Li Guo, and Yi-Bo Wu

The living polyisobutylene synthesized by controlled cationic polymerization was capped with *tert*-butyl-dimethyl-(4-methyl-pent-4-enyl-oxy)-silane which was synthesized by Grignard reaction and hydroxyl proction reaction. Hydrolysis of these living polyisobutylenes end-capped with *tert*-butyl-dimethyl-(4-methyl-pent-4-enyloxy)-silane gave rise to hydroxytelechelic polyisobutylene.



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