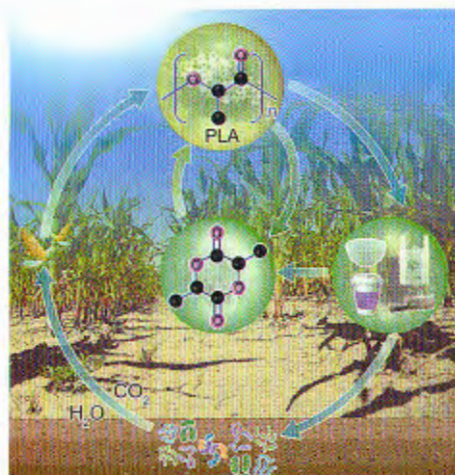


Cover Image

Effect of Exogenous Carboxyl and Hydroxyl Groups on Pyrolysis Reaction of High Molecular Weight Poly(L-Lactide) under the Catalysis of Tin

Li-Dong Feng, Xin-Chao Bian, Gao Li, and Xue-Si Chen

Poly(lactide (PLA) derived from renewable agricultural resources and PLA products can be completely biodegraded into CO_2 and H_2O in soil, which is helpful to partly solve the increasing "white pollution". PLA can also be recycled into lactide by pyrolysis. The mechanism of PLA pyrolysis was obtained under different chemical environments.



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<https://doi.org/10.1007/s10118-021-2557-4>

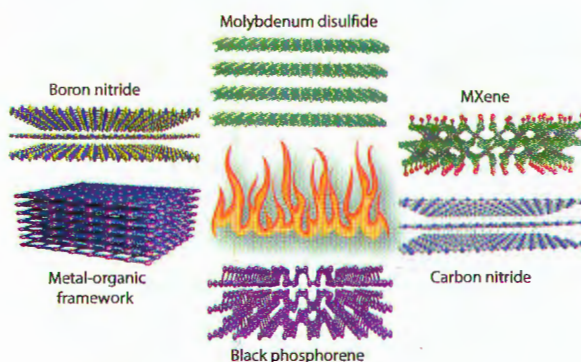
Contents

Reviews

Recent Progress in Two-dimensional Nanomaterials Following Graphene for Improving Fire Safety of Polymer (Nano)composites

Wei Cai, Bi-Bo Wang, Xin Wang, Yu-Lu Zhu, Zhao-Xin Li, Zhou-Mei Xu, Lei Song, Wei-Zhao Hu, and Yuan Hu

Compared to graphene-based flame retardants, other two-dimensional nanomaterials render complementary properties to polymer composites, including low dielectric constant, toxic gas suppression, and char-promoting formation effect. This review summarizes and introduces research progress of h-BN, MoS_2 , MOF, BP, MXene, and CN nanosheets on the fire safety of polymer composites.



Chinese Journal of Polymer Science, 2021, 39(8), 935–956

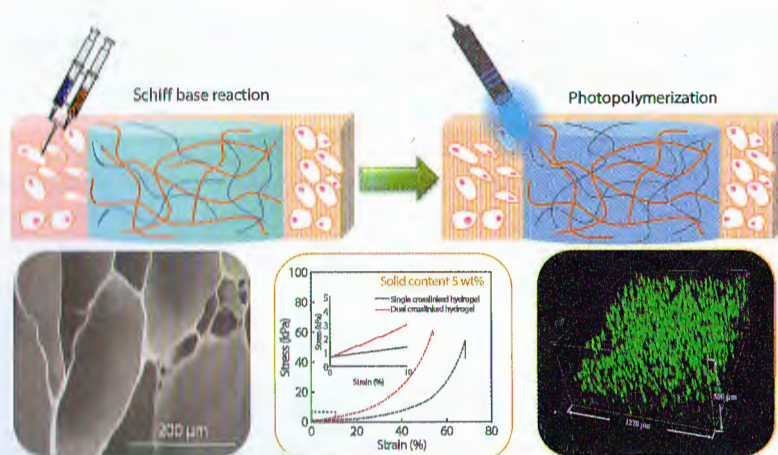
<https://doi.org/10.1007/s10118-021-2575-2>

Articles

Injectable Hyaluronic Acid/Poly(γ -glutamic acid) Hydrogel with Step-by-step Tunable Properties for Soft Tissue Engineering

Xue-Bin Ma, Rong Yang, Kanaparedu P. C. Sekhar, and Bo Chi

Injectable hydrogels with step-by-step tunable crosslinking degree are prepared using a dual crosslinking strategy. Developed HA/ γ -PGA hydrogel exhibit step-by-step tunable swelling behavior, enzymatic degradation behavior and mechanical properties, as well as a good cytocompatibility.

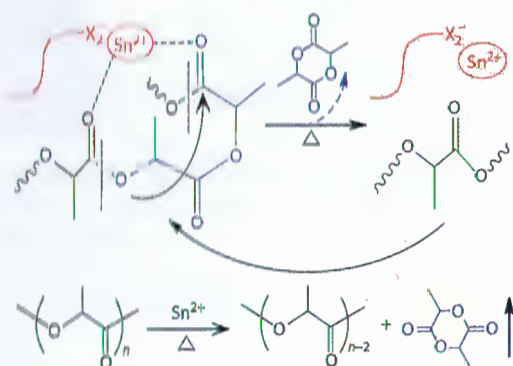


Chinese Journal of Polymer Science, 2021, 39(8), 957–965
<https://doi.org/10.1007/s10118-021-2558-3>

Effect of Exogenous Carboxyl and Hydroxyl Groups on Pyrolysis Reaction of High Molecular Weight Poly(L-Lactide) under the Catalysis of Tin

Li-Dong Feng, Xin-Chao Bian, Gao Li, and Xue-Si Chen

Under the catalysis of Sn^{2+} , the PLLA pyrolysis reaction could occur at a random position of PLLA backbone, and thus a lactide molecule was eliminated selectively, then the two PLLA segments on both sides of the elimination point for lactide can be regenerated into a new PLLA molecule.

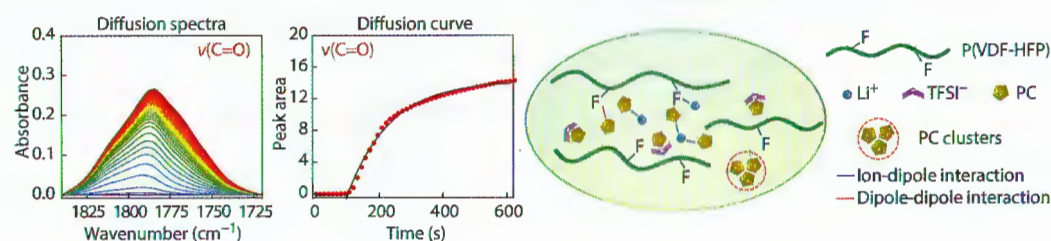


Chinese Journal of Polymer Science, 2021, 39(8), 966–974
<https://doi.org/10.1007/s10118-021-2557-4>

Transport of Propylene Carbonate-LiTFSI Electrolytes in P(VDF-HFP) Using Time-resolved ATR-FTIR Spectroscopy: Diffusion Coefficients and Molecular Interactions

Hui-Xian Li, Lei Hou, and Pei-Yi Wu

ATR-FTIR spectroscopy is employed to investigate the transport mechanism of gel electrolytes by monitoring the diffusion behavior of propylene carbonate-LiTFSI solution through P(VDF-HFP). Diffusion coefficients and molecular interactions within the gel electrolytes have been simultaneously obtained. Li^+ diffuses with propylene carbonate through ion-dipole interactions between Li^+ and $\text{C}=\text{O}$.

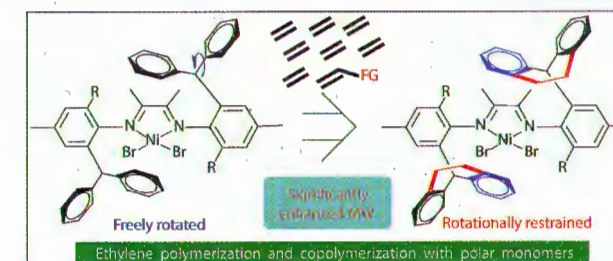


Chinese Journal of Polymer Science, 2021, 39(8), 975–983
<https://doi.org/10.1007/s10118-021-2571-6>

Benzosuberyl Substituents as a "Sandwich-like" Function in Olefin Polymerization Catalysis

Yu-Yin Wang, Chao-Qun Wang, Xiao-Qiang Hu, Yan Xia, Yue Chi, Yi-Xin Zhang, and Zhong-Bao Jian

Benzosuberyl substituent that acts as "sandwich-like" shielding in C_2 -type α -diimine nickel catalysts enables enhancement of molecular weight in ethylene (co)polymerization.

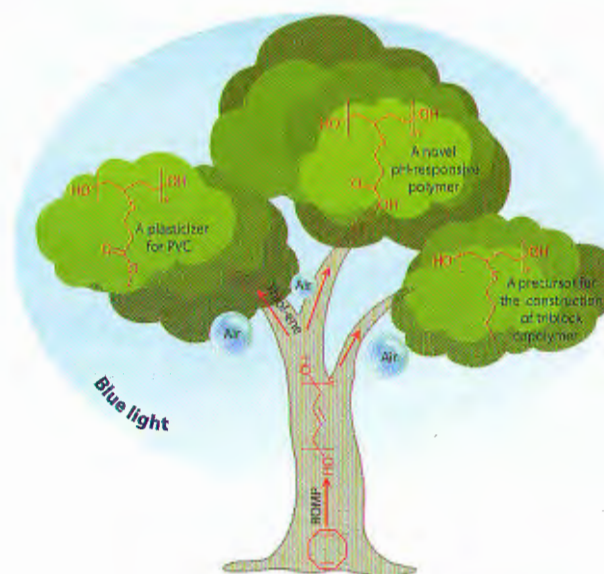


Chinese Journal of Polymer Science, 2021, 39(8), 984–993
<https://doi.org/10.1007/s10118-021-2562-7>

Hydroxyl-terminated Polyethylenes Bearing Functional Side Groups: Facile Synthesis and Their Properties

Wan-Bin Zhang, Jie Luo, Yan-Meng Wang, Xiu-Zhong Zhu, Ce Zhang, Jing Liu, Mei-Le Ni, and Guang-Hua Zhang

A series of hydroxyl terminated polyethylenes bearing various side groups were synthesized by the combination of ROMP and blue light photocatalytic thiol-ene reaction. The structure-property relationships of functional polyethylenes were elucidated, and their potential applications were explored.

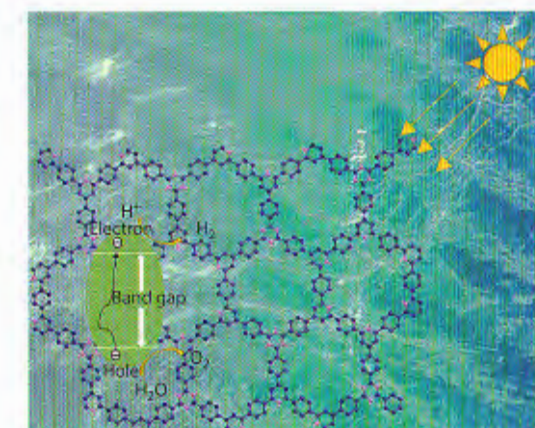


Chinese Journal of Polymer Science, 2021, 39(8), 994–1003
<https://doi.org/10.1007/s10118-021-2572-5>

Metal-free Synthesis of Pyridyl Conjugated Microporous Polymers for Photocatalytic Hydrogen Evolution

Qin-Ruo Zeng, Zhong-Hua Cheng, Chen Yang, Yan He, Nan Meng, Charl F. J. Faul, and Yao-Zu Liao

Pyridyl conjugated microporous polymers (PCMPs) with different band gap structures were synthesized using a green route without metal catalysis, and these polymers were used in the field of photocatalytic hydrogen evolution. The average hydrogen evolution rate of PCMP23-2 was as high as $1198 \mu\text{mol} \cdot \text{h}^{-1} \cdot \text{g}^{-1}$.

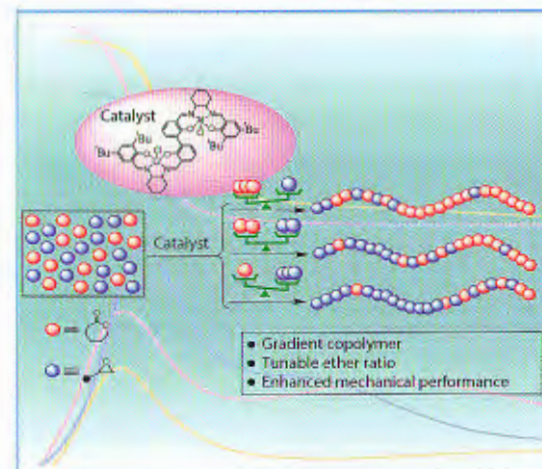


Chinese Journal of Polymer Science, 2021, 39(8), 1004–1012
<https://doi.org/10.1007/s10118-021-2574-3>

Flexible Gradient Poly(ether-ester) from the Copolymerization of Epoxides and ϵ -Caprolactone Mediated by a Hetero-bimetallic Complex

Wei-Min Ren, Hong-Juan Gao, and Tian-Jun Yue

We realized the copolymerization of ϵ -caprolactone and epoxides catalyzed by biphenyl-linked heteronuclear salen Cr-Al complex in the presence of PPNCI to access a gradient copolymer with an enhanced property, compared with the block copolymers or blend of PPO and PCL homopolymers with the same ratio.

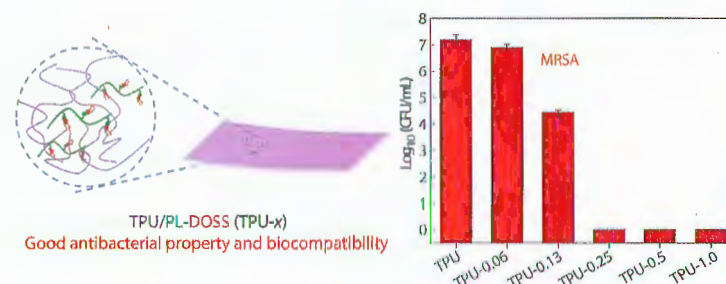


Chinese Journal of Polymer Science, 2021, 39(8), 1013–1019
<https://doi.org/10.1007/s10118-021-2559-2>

Antibacterial Thermoplastic Polyurethane/PL-DOSS Composite Films

Xiao Liu, Jian-Wei Guo, Ya-Dong Liu, Ming Liu, Hui Liu, Miao-Miao Han, and Sheng-Xiang Ji

The antibacterial PL-DOSS complex forms nanoparticles in TPU-x composites and >99% reduction of the colony forming unit (CFU) is obtained in TPU-x films at a relatively low content of PL-DOSS.

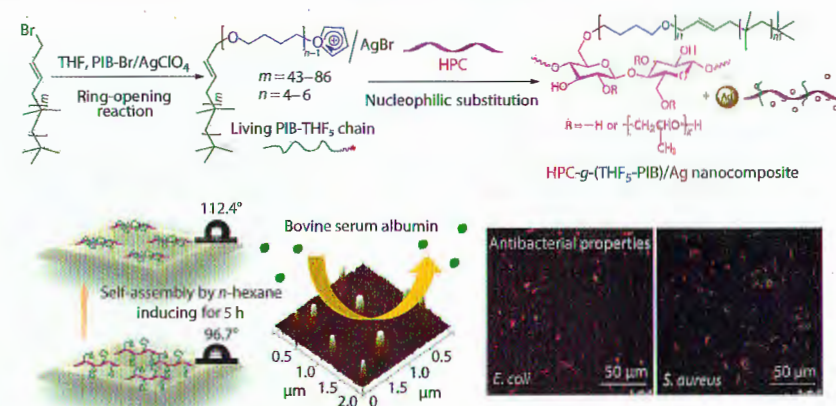


Chinese Journal of Polymer Science, 2021, 39(8), 1020–1028
<https://doi.org/10.1007/s10118-021-2578-z>

Amphiphilic Graft Copolymers of Hydroxypropyl Cellulose Backbone with Nonpolar Polyisobutylene Branches

Jin-Rui Deng, Cong-Lei Zhao, Zhi-Tao Wei, and Yi-Xian Wu

The novel amphiphilic HPC-g-(THF₅-PIB)/Ag nanocomposites with hydrophobic soft nonpolar PIB branches and hydrophilic hard polar HPC backbone behave good anti-protein adsorption performance and antibacterial activities.

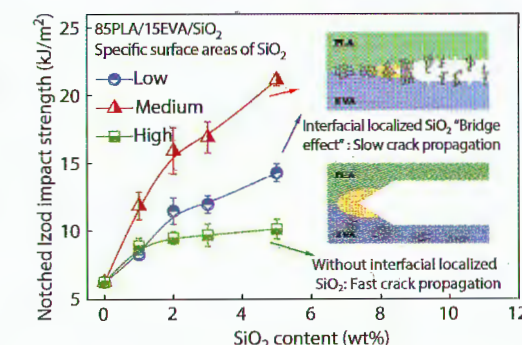


Chinese Journal of Polymer Science, 2021, 39(8), 1029–1039
<https://doi.org/10.1007/s10118-021-2546-7>

Improving Impact Toughness of Polylactide/Ethylene-co-vinyl-acetate Blends via Adding Fumed Silica Nanoparticles: Effects of Specific Surface Area-dependent Interfacial Selective Distribution of Silica

Ting-Ting Zhang, Mei-Xi Zhou, Zhen-You Guo, You-Bo Zhao, Di Han, Hao Xiu, Hong-Wei Bai, Qin Zhang, and Qiang Fu

The selective distribution of SiO₂ is largely determined by their specific surface areas and SiO₂ with lower specific surface area tends to be located at the interface. The interfacial selective distribution of SiO₂ which exhibit a bridge effect can improve the interfacial adhesion and lead to an obvious enhancement in impact toughness.

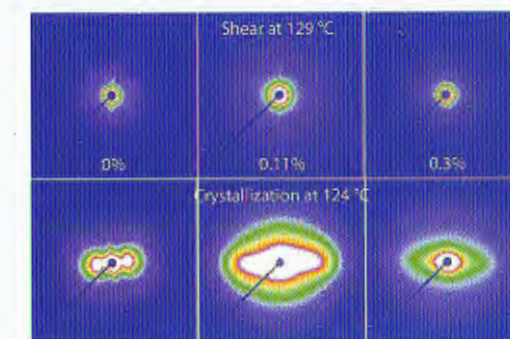


Chinese Journal of Polymer Science, 2021, 39(8), 1040–1049
<https://doi.org/10.1007/s10118-021-2565-4>

The Influence of Ethyl Branch on Formation of Shish-Kebab Crystals in Bimodal Polyethylene under Shear at Low Temperature

Zong-Bao Wang, Yi-Min Mao, Xu-Ke Li, Yi-Guo Li, Chatchai Jarumaneeroj, Boonyakeat Thitisak, Piyawan Tiyaipiboonchaiya, Wonchalem Rungswang, and Benjamin S. Hsiao

Formation of shish-kebab crystals in bimodal polyethylene with different ethyl branches under shear at the temperature close to the melting point was investigated by *in situ* SAXS/WAXD techniques, indicating that shish formation was due to the stretch of entangled chains and the formation of enough point nuclei was the critical process.

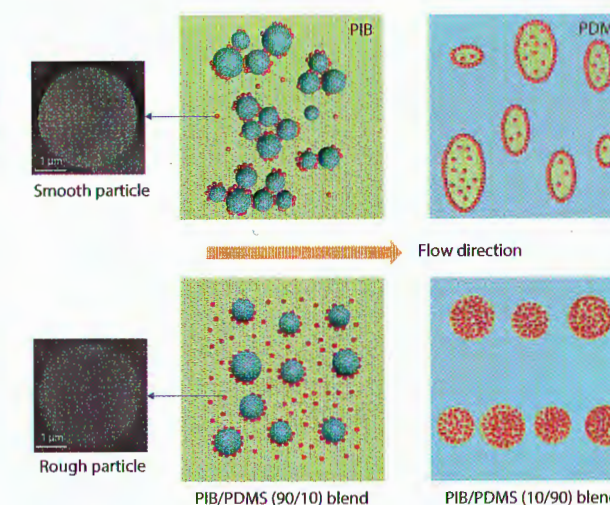


Chinese Journal of Polymer Science, 2021, 39(8), 1050–1058
<https://doi.org/10.1007/s10118-021-2568-1>

Structural Evolution in Flowing Immiscible Blends in the Presence of Rough Particles: Dependence of Shear Rate and Blend Ratio

Si-Ying Xiang, Ying-Chun Yao, Miao-Miao Lu, Ya-Jiang Huang, Mi-Qiu Kong, and Guang-Xian Li

Surface roughness of particles strongly affected their diffusion and distribution behaviors, thereby determining the size and spatial arrangement of droplets in the blends. Therefore, the morphology of polymer blends can be varied by adding particles with different diffusion and distribution behaviors, which can be realized by changing the roughness of particles together with shear conditions.



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<https://doi.org/10.1007/s10118-021-2569-0>