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Special Issue: The 100th Anniversary of the Birth of Prof. Shi-Lin Yang

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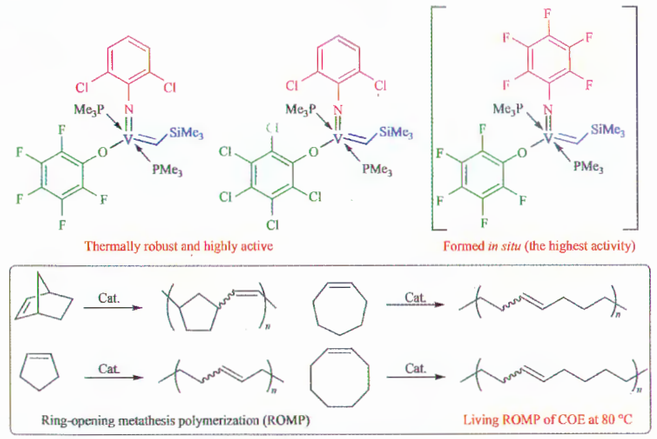
Feature Articles



Chinese Journal of Polymer Science, 2019, 37(10), 943–950
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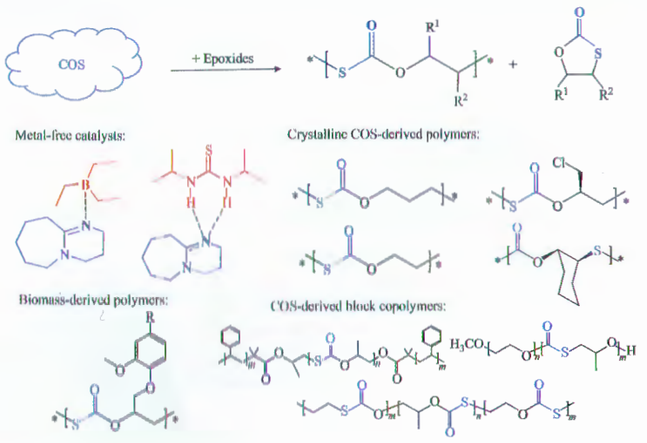
Reviews

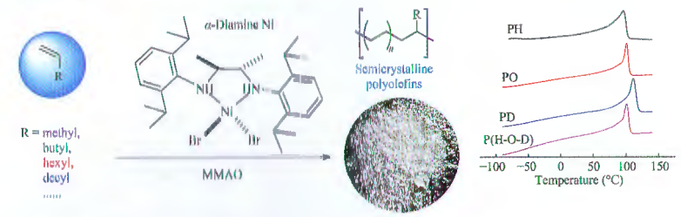


Chinese Journal of Polymer Science, 2019, 37(10), 951–958
https://doi.org/10.1007/s10118-019-2288-y

Regioselective Polymerizations of α-Olefins with an α-Diamine Nickel Catalyst

Heng Liao, Jie Gao, Liu Zhong, Hai-Yang Gao, and Qing Wu

The α-diamine nickel catalyst catalyzed α-olefins polymerization to produce semicrystalline polyolefins with high melting temperatures through regioselective 2,1-insertion and precise chain-straightening.

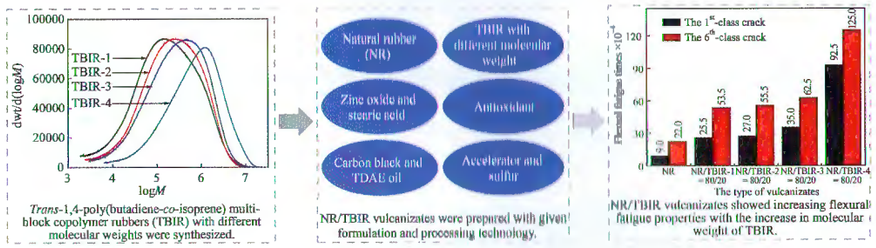


Chinese Journal of Polymer Science, 2019, 37(10), 959–965
https://doi.org/10.1007/s10118-019-2227-y

The Influence of *Trans*-1,4-poly(butadiene-*co*-isoprene) Copolymer Rubbers (TBIR) with Different Molecular Weights on the NR/TBIR Blends

Hao Wang, Ri-Guo Wang, Yun-Sheng Ma, Bo Luan, and Ai-Hua He

The NR/TBIR vulcanizates showed increasing tensile strength, hardness, modulus, rebound, abrasion resistance and flexural fatigue properties with the increase in molecular weight of TBIR. The NR/TBIR vulcanizates regardless of the molecular weight presented significantly improved flexural fatigue resistance when compared with NR vulcanizate.

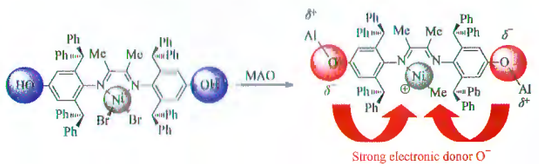


Chinese Journal of Polymer Science, 2019, 37(10), 966–973
https://doi.org/10.1007/s10118-019-2229-9

A Phenol-containing α-Diimine Ligand for Nickel- and Palladium-Catalyzed Ethylene Polymerization

Chen Tan, Wen-Min Pang, and Chang-Le Chen

The deprotonation of OH groups using MAO generates the strong electronic donor O^- groups on the α-diimine Ni catalyst, resulting in significantly increased polyethylene melting temperature (up to 123 °C) and greatly decreased branching density (33/1000C) versus the case of Ni catalyst bearing OMe group in ethylene polymerization.



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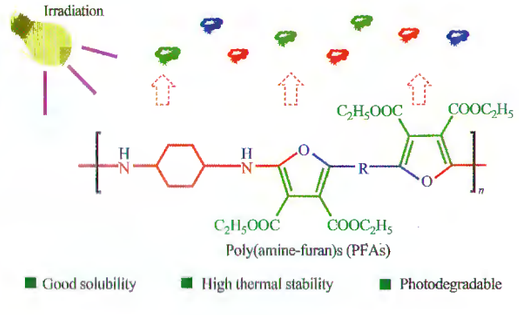
https://doi.org/10.1007/s10118-019-2232-1

Synthesis and Properties of Photodegradable Poly(furan-amine)s by a Catalyst-free Multicomponent Cyclopolymerization

Wei-Qiang Fu, Gui-Nan Zhu, Jian-Bing Shi, Bin Tong, Zheng-Xu Cai, and Yu-Ping Dong

A series of new photodegradable PFAs were synthesized by a one-pot, catalyst-free, multicomponent cyclopolymerization between diisocyanides, dialkylacetylene dicarboxylates, and aromatic dialdehydes. The PFAs were substantially degraded by UV irradiation due to the presence of furan rings and the film thickness reduction rate could be over 90%.



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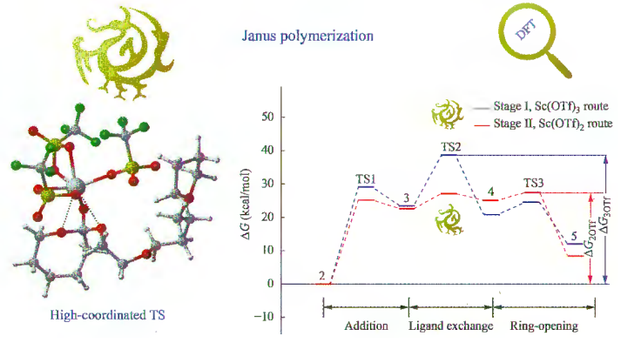
https://doi.org/10.1007/s10118-019-2281-5

Mechanism of Janus Polymerization: A DFT Study

Tian-Wen Bai, Xu-Feng Ni, Jun Ling, and Zhi-Quan Shen

In this work, density functional theory (DFT) calculation is employed to investigate the detailed mechanism in Janus polymerization, including anionic and cationic polymerizations. For anionic polymerization in stages I and II, a "tripedal crow" configuration was proposed to illustrate the unique high-coordinated ligand exchange configuration in molecular scale.

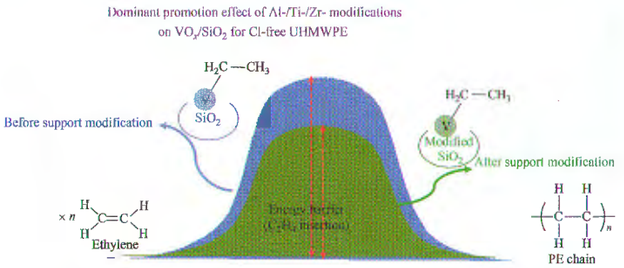


Chinese Journal of Polymer Science, 2019, 37(10), 990–994
https://doi.org/10.1007/s10118-019-2318-9

Mechanistic Study on the Dominant Promotion Effect of Al-/Ti-/Zr-modifications over the VO_x/SiO_2 UHMWPE Catalysts

Yu-Long Jin, Lin Liu, Yu-Jie Wang, Zhen Liu, and Bo-Ping Liu

Mechanistic study on the dominant promotion effect of Al-/Ti-/Zr-modifications over the VO_x/SiO_2 catalysts for Cl-free UHMWPE production was carried out by DFT method. It was illustrated in terms of reaction energies and the featured steric and electronic properties of various molecular models, which rationalized the experiment results perfectly.

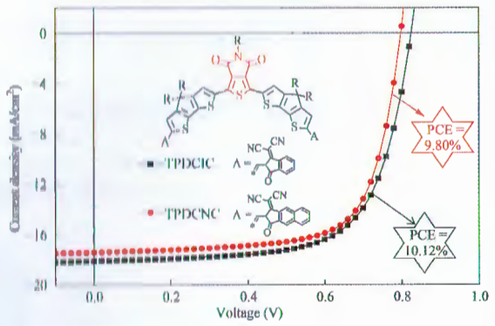


Chinese Journal of Polymer Science, 2019, 37(10), 995–1004
https://doi.org/10.1007/s10118-019-2295-z

Non-fullerene Acceptors with a Thieno[3,4-*c*]pyrrole-4,6-dione (TPD) Core for Efficient Organic Solar Cells

Shi-Zhe Geng, Wei-Tao Yang, Jian Gao, Shui-Xing Li, Min-Min Shi, Tsz-Ki Lau, Xin-Hui Lu, Chang-Zhi Li, and Hong-Zheng Chen

In this article, TPD is functioned as the core for the first time to design two new non-fullerene acceptors (NFAs), TPDCIC and TPDCNC. The two NFAs own red-shifted absorptions and appropriate energy levels, and the corresponding organic solar cells provide good photovoltaic performances with efficiencies of ~10%.



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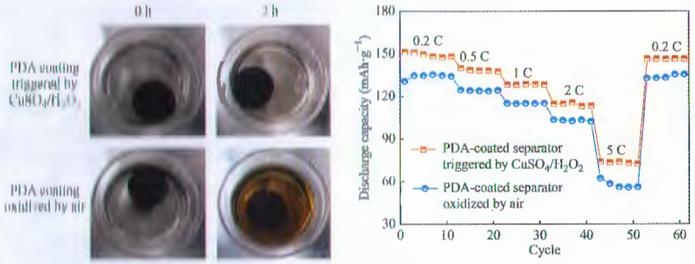
https://doi.org/10.1007/s10118-019-2309-x

Polypropylene Separators with Robust Mussel-inspired Coatings for High Lithium-ion Battery Performances

Chao Zhang, Hong-Qing Liang, Jun-Ke Pi, Guang-Peng Wu, and Zhi-Kang Xu

As a promising candidate to improve the performance of LIBs separators, a facile and versatile strategy was proposed to enhance the wettability and stability of commercialized polyolefin separators by constructing robust polydopamine (PDA) coatings triggered with $CuSO_4/H_2O_2$.



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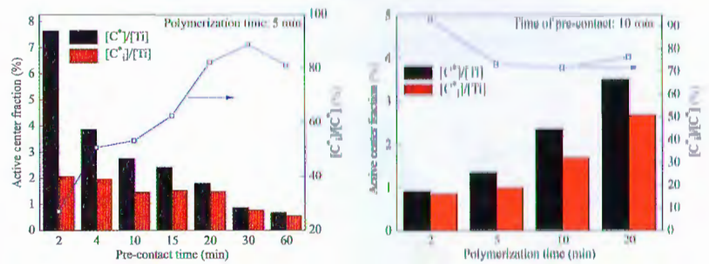
Deactivation Effect Caused by Catalyst-Cocatalyst Pre-contact in Propylene Polymerization with $MgCl_2$-supported Ziegler-Natta Catalyst

Zhen Zhang, Bai-Yu Jiang, Biao Zhang, Zhi-Sheng Fu, and Zhi-Qiang Fan

Active center concentration of propylene polymerization with $MgCl_2$-supported Ziegler-Natta catalyst decreased with time of pre-contacting the catalyst with triethylaluminum. The non-stereoselective active centers were preferentially deactivated in pre-contact. Selective deactivation of non-stereoselective active centers also took place in propylene polymerization using the catalyst without pre-contacting with cocatalyst.



[C*]: Concentration of all active centers; [C*i]: Concentration of stereoselective active centers

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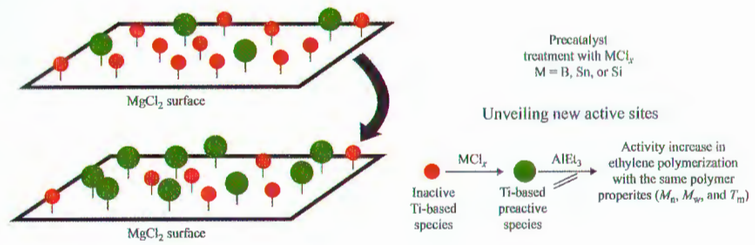
Activity Enhancement of $MgCl_2$-supported Ziegler-Natta Catalysts by Lewis-acid Pre-treatment for Ethylene Polymerization

Matthieu Humbert, Sébastien Norsic, Jean Raynaud, and Vincent Monteil

Adding a Lewis acid such as BCl_3, $SnCl_4$, or $SiCl_4$ to a Lewis-base-modified $MgCl_2/TiCl_4$ Ziegler-Natta precatalyst increases its activity in ethylene polymerization without any modification of the polymer properties. The Lewis-acid treatment of the precatalyst thus promotes an increase in the concentration of Ti-based active sites after alkylation.

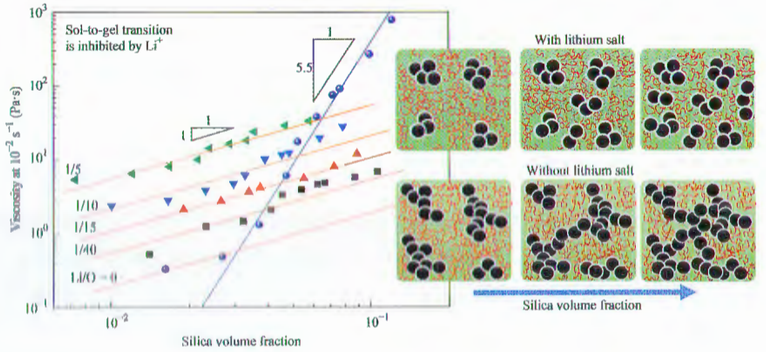


Chinese Journal of Polymer Science, 2019, 37(10), 1031–1038
https://doi.org/10.1007/s10118-019-2335-8

Rheological and Interfacial Properties of Colloidal Electrolytes

Hong-Peng Han, Yi-Hu Song, and Qiang Zheng

Silica causes polyethylene glycol oligomer to undergo sol-to-gel transition while this transition is inhibited by lithium bis(trifluoromethanesulfon) imide due to the improved silica dispersity and chain adsorption, and the greatly retarded segmental relaxation.



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