

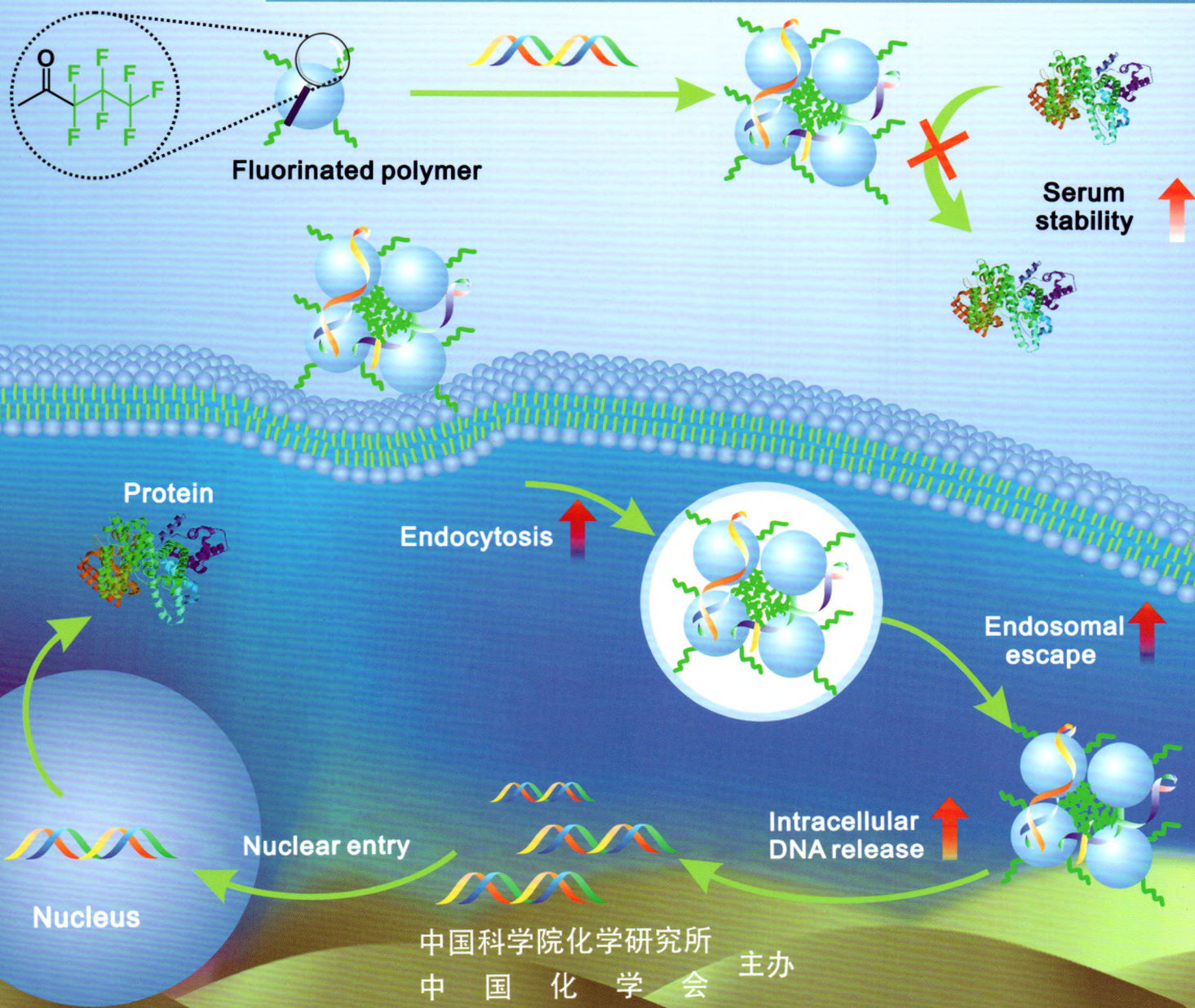


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Contents

Rapid Communications

- PVDF/CF Conductive Composites with High Sensitivity and Stable Reproducibility of Positive Temperature Coefficient Effect *Hui-zhao Zou, Xi Zhang, Shao-di Zheng, Wei Yang, Zheng-ying Liu, Ming-bo Yang, Jian-ming Feng* (1215)

Feature Articles

- Dynamics of Ion-containing Polymers *Quan Chen* (1220)
Fluorinated Polymers in Gene Delivery *Yi-yun Cheng* (1234)
Multilevel Investigation of Charge Transport in Conjugated Polymers — New Opportunities in Polymer Electronics *Huan-li Dong, Qing-qing Yan, Wen-ping Hu* (1246)

Reviews

- Research Progress on Confined Assembly of Block Copolymers in China *Lian-bin Zhang, Ke Wang, Jin-tao Zhu* (1261)

Papers

- Synthesis and Properties of a Multi-functional Luminescent Material with Carbazolyl and Tetraphenylethylene Moiety *Hai-yuan Luo, Jie-huan Chen, Cong Liu, Guang Shi, Guo-ming Li, Zhen-guo Chi* (1277)
Synthesis and Aggregation-enhanced Emission of Polymethacrylate with Pentaphenylpyrrole Side Group *Pei-pei Yang, Li-chao Dong, Yuan-yuan Li, Long-long Zhang, Jian-bing Shi, Jun-ge Zhi, Bin Tong, Yu-ping Dong* (1285)
Half-titanocenes Catalysts Based on Titanium-phosphinimide for Producing Atactic Elastomeric Polypropylenes with High Molecular Weight *Jian-jun Chen, Tie-shi Wang, Zheng-wei Tang, Yi-bing Xu, Lin Xu, Mao-sheng Cao, Zeng-guo Feng* (1294)
Synthesis of Hyperbranched Poly(ester amide)s and Their Application in Polycarbonate as Rheological Modification Agent *Yu-ling Wang, Wu-song Li, Cong-cong Liu, Wei Huang, De-yue Yan, Hong-qiang Kang* (1304)
Preparation and Characterization of Poly(ethylene-oxide)/Kaolinite Composite Electrolyte *Ran Zhen, Qian-wen Chi, Xing-yuan Wang, Kuo Yang, Yin-shan Jiang, Fang-fei Li, Bing Xue* (1312)
Synthesis and Characterization of Matched Double-chain and Loose-fit Single-chain Stranded γ -CD-based Polypseudorotaxane Containing Block Copolymers *Jie You, Lin Ye, Ai-ying Zhang, Zeng-guo Feng* (1320)
Improving Cellular Structure of Microcellular Poly(butylene succinate) via Adding Low Content of Poly(lactic acid) *Xiang-hui Chen, Han-xiong Huang* (1331)
Melt Branching of High Density Polyethylene and Influences on Its Performances *Le Yang, Jiang-tao Wei, Zhu Luo, Qiang Zheng, Xiao-kun Liang* (1339)
Preparation and Properties of Epoxided Hydroxyl-terminated Polybutadiene Based Polyurethane Elastomers *Zhe Cao, Su-yun Jie, Bo-geng Li* (1350)
Synthesis of Flame Retardant Based on Phosphaphenanthrene and Flame Retardancy Study of Epoxy Resin Modified by Intumescent Flame Retardant System Composed of Ammonium Polyphosphate *Shi-mei Chen, Fang Lai, Pei Li, Wei Gong, Hai Fu, Xiao-gang Yin, Da-ming Ban* (1358)
Structure and Properties of Isosorbide-type Polycarbonate/ABS Blend *Shi-heng Wang, Wen Zhang, Sasaki Haruo, Zhao-xia Guo, Jian Yu* (1366)
Color and Molecular Structure Changes of Natural Aged Rigid PVC *Wen-wen Xu, Ying Xiong, Shao-yun Guo* (1374)
Modeling the Early-stage Aging Behavior of Ballistic Gelatin *Xiao-lin Ma, Yu-run Fan* (1382)



高分子学报 2017 年 8 月 第 8 期

(GAOFENZI XUEBAO)



目 次

快报

- 具有高灵敏性且稳定可重复的正温度系数效应的PVDF/CF导电复合材料.....
.....邹会昭 张 习 郑少笛 杨 伟 刘正英 杨鸣波 冯建明 (1215)

专论

- 含离子聚合物体系的动力学.....陈 全 (1220)
含氟高分子基因载体.....程义云 (1234)
共轭高分子光电功能材料的多尺度性能研究——聚合物电子学领域中的新机遇.....董焕丽 燕青青 胡文平 (1246)

综述

- 中国嵌段共聚物受限自组装的研究进展.....张连斌 王 珂 朱锦涛 (1261)

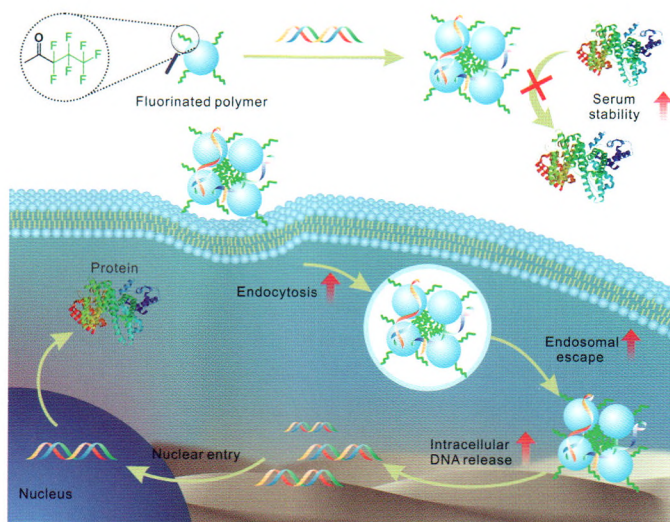
论文

- 咔唑基四苯乙烯多功能发光材料的合成与性能.....罗海媛 陈介焕 刘 聪 石 光 李国明 池振国 (1277)
含五苯基吡咯侧基聚丙烯酸酯的制备及其聚集诱导发光增强性能.....
.....杨佩佩 董立超 李园园 张龙龙 石建兵 支俊格 佟 斌 董宇平 (1285)
膦亚胺半茂钛催化体系合成无规聚丙烯弹性体的研究.....
.....陈建军 王铁石 唐正伟 徐一兵 徐 林 曹茂盛 冯增国 (1294)
超支化聚酯酰胺的合成及在聚碳酸酯加工中的应用.....
.....汪羽翎 李武松 刘聪聪 黄 卫 颜德岳 康宏强 (1304)
聚氧化乙烯/高岭石聚合物电解质的制备与表征.....
.....甄 冉 迟茜文 王星元 杨 阔 蒋引珊 李芳菲 薛 兵 (1312)
适配双链与非适配单链包结 γ -CD聚准轮烷嵌段共聚物合成与表征.....尤 劼 叶 霖 张爱英 冯增国 (1320)
低含量聚乳酸对微孔发泡聚丁二酸丁二醇酯泡孔结构的改善.....陈祥辉 黄汉雄 (1331)
高密度聚乙烯的熔融支化及其对性能的影响.....杨 乐 魏江涛 罗 筑 郑 强 梁晓坤 (1339)
环氧丁羟型聚氨酯弹性体的制备与性能.....曹 哲 介素云 李伯耿 (1350)
磷杂菲类阻燃剂的合成及其与聚磷酸铵复合膨胀体系对环氧树脂的阻燃性能研究.....
.....陈仕梅 来 方 李 霏 龚 维 付 海 尹晓刚 班大明 (1358)
异山梨醇型聚碳酸酯与ABS树脂共混体系的结构与性能研究.....
.....王世恒 张 雯 佐佐木一雄 郭朝霞 于 建 (1366)
硬质聚氯乙烯自然老化的变色行为与分子结构变化.....徐文文 熊 英 郭少云 (1374)
弹道明胶老化初级阶段的模型.....马小林 范毓润 (1382)

Fluorinated Polymers in Gene Delivery

Yi-yun Cheng

Fluorinated polymers are a new class of non-viral gene carriers with unique physicochemical properties. Fluorous ligands such as fluoroalkyls are beneficial for improved serum stability, cellular uptake, endosomal escape, and intracellular nucleic acid release, endowing the fluorinated polymers with a specific fluorous effect in gene delivery.



Acta Polymerica Sinica, 2017, No.8, p.1234 – 1245

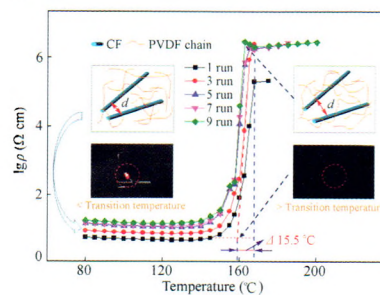
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Rapid Communications

PVDF/CF Conductive Composites with High Sensitivity and Stable Reproducibility of Positive Temperature Coefficient Effect

Hui-zhao Zou, Xi Zhang, Shao-di Zheng, Wei Yang, Zheng-ying Liu, Ming-bo Yang, Jian-ming Feng

Polyvinylidene fluoride/carbon fiber composites with high sensitivity and excellent PTC repeatability was obtained by melt-mixing method. The increase rate of volume resistivity was $1.3 \times 10^5 \Omega \text{ cm K}^{-1}$ in the transition temperature range (155.5 – 171.0 °C), which was attributed to a larger gap length (d) between carbon fiber particles with rising temperature.



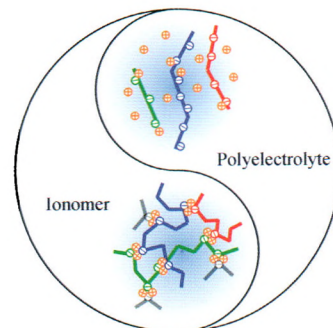
Acta Polymerica Sinica, 2017, No.8, p.1215 – 1219

doi: 10.11777/j.issn1000-3304.2017.17090

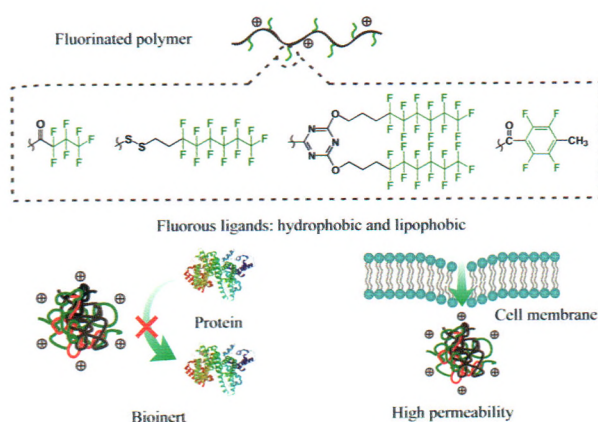
Feature Articles

Dynamics of Ion-containing Polymers*Quan Chen*

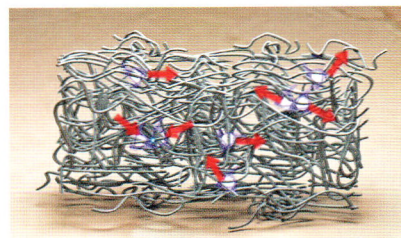
Ionomer and polyelectrolyte can be classified on a basis of ion association status: The ions are mostly associated in ionomer while dissociated in polyelectrolyte. Therefore, a transition between ionomer and polyelectrolyte can be realized through tuning the ion-interaction energy.

*Acta Polymerica Sinica, No.8, p.1220 – 1233**doi: 10.11777/j.issn1000-3304.2017.17093***Fluorinated Polymers in Gene Delivery***Yi-yun Cheng*

Fluorous ligands such as fluoroalkyls are both hydrophobic and lipophobic. Grafting of fluoroalkyls to cationic polymers yields a class of fluorinated polymers with dramatic efficacy in gene delivery. The polymers have excellent serum stability and high permeability through cell membranes and solid tissues.

*Acta Polymerica Sinica, 2017, No.8, p.1234 – 1245**doi: 10.11777/j.issn1000-3304.2017.17095***Multilevel Investigation of Charge Transport in Conjugated Polymers — New Opportunities in Polymer Electronics***Huan-li Dong, Qing-qing Yan, Wen-ping Hu*

It is a great challenge to investigate charge transport in conjugated polymers due to their naturally disordered structures in solid state. In this article, we summarize our recent advances on the multilevel charge transport investigation in conjugated polymers, with an emphasis on conjugated polymer micro/nano crystals and related studies, opening some new opportunities for conjugated polymers.

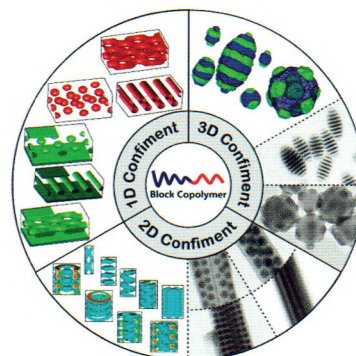
*Acta Polymerica Sinica, 2017, No.8, p.1246 – 1260**doi: 10.11777/j.issn1000-3304.2017.17127*

Reviews

Research Progress on Confined Assembly of Block Copolymers in China

Lian-bin Zhang, Ke Wang, Jin-tao Zhu

Confined self-assembly of block copolymers (BCPs) has gained increasing interests in scientific communities in China. Here, recent progress in confined BCP assembly of simulative and experimental study in China is summarized. Moreover, potential applications for the confined assemblies have been discussed, followed by perspective and outlook of this field.



Acta Polymerica Sinica, 2017, No.8, p.1261 – 1276

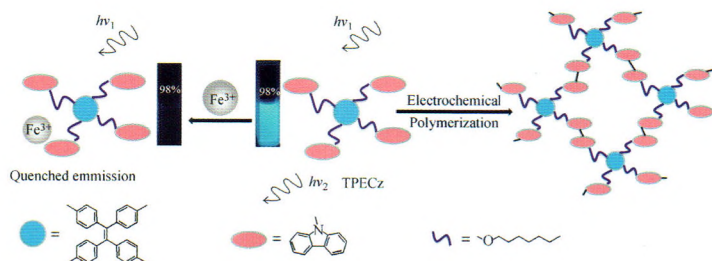
doi: 10.11777/j.issn1000-3304.2017.17126

Papers

Synthesis and Properties of a Multi-functional Luminescent Material with Carbazolyl and Tetraphenylethylene Moiety

Hai-yuan Luo, Jie-huan Chen, Cong Liu, Guang Shi, Guo-ming Li, Zhen-guo Chi

A new tetraphenylethylene derivative with AIE property was synthesized, and expected to work as an effective luminescent indicator for detection of Fe^{3+} ions. It could be also used as a precursor to prepare the luminescent network film by electrochemical polymerization, the potential material for fabrication of OLED devices.



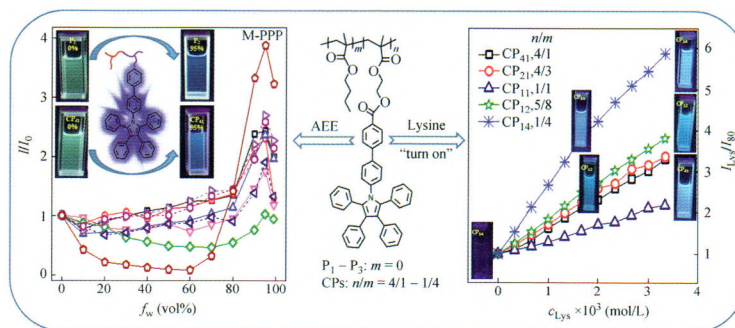
Acta Polymerica Sinica, 2017, No.8, p.1277 – 1284

doi: 10.11777/j.issn1000-3304.2017.16356

Synthesis and Aggregation-enhanced Emission of Polymethacrylate with Pentaphenylpyrrole Side Group

Pei-pei Yang, Li-chao Dong, Yuan-yuan Li, Long-long Zhang, Jian-bing Shi, Jun-ge Zhi, Bin Tong, Yu-ping Dong

A series of polymethacrylates with conjugated pentaphenylpyrrole side-chain are synthesized, shown to possess aggregation-enhanced emission, and can be used to “turn-on” for detecting lysine in THF/H₂O mixtures.



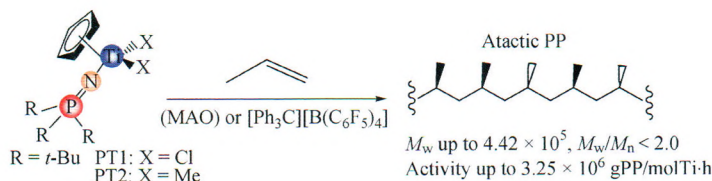
Acta Polymerica Sinica, 2017, No.8, p.1285 – 1293

doi: 10.11777/j.issn1000-3304.2017.17001

Half-titanocenes Catalysts Based on Titanium-phosphinimide for Producing Atactic Elastomeric Polypropylenes with High Molecular Weight

Jian-jun Chen, Tie-shi Wang, Zheng-wei Tang, Yi-bing Xu, Lin Xu, Mao-sheng Cao, Zeng-guo Feng

Atactic elastomeric polypropylenes with high molecular weight are produced using $[(t\text{-Bu})_3\text{P}=\text{N}]\text{CpTiCl}_2$ or $[(t\text{-Bu})_3\text{P}=\text{N}]\text{CpTiMe}_2$ as the catalyst and MAO or $[\text{Ph}_3\text{C}][\text{B}(\text{C}_6\text{F}_5)_4]$ as the cocatalyst.



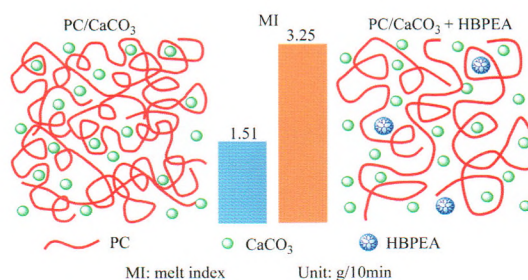
Acta Polymerica Sinica, 2017, No.8, p.1294 – 1303

doi: 10.11777/j.issn1000-3304.2017.16331

Synthesis of Hyperbranched Poly(ester amide)s and Their Application in Polycarbonate as Rheological Modification Agent

Yu-ling Wang, Wu-song Li, Cong-cong Liu, Wei Huang, De-yue Yan, Hong-qiang Kang

Hyperbranched poly(ester amide)s (HBPEAs) are prepared via two-step and one-step melt polycondensation and used as modification agents to improve the processability, the mechanical properties and the surface roughness of PC or PC/CaCO₃.



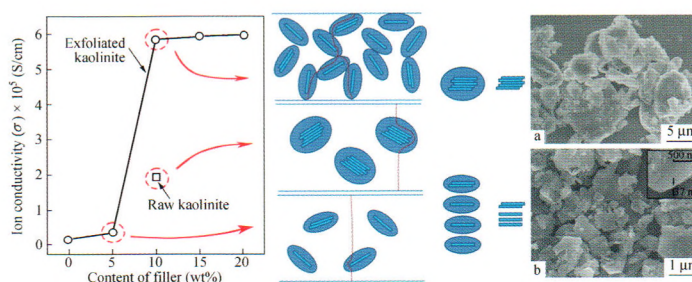
Acta Polymerica Sinica, 2017, No.8, p.1304 – 1311

doi: 10.11777/j.issn1000-3304.2017.16355

Preparation and Characterization of Poly(ethylene-oxide)/Kaolinite Composite Electrolyte

Ran Zhen, Qian-wen Chi, Xing-yuan Wang, Kuo Yang, Yin-shan Jiang, Fang-fei Li, Bing Xue

Amorphous region around the kaolinite filler is beneficial for the Li⁺ ion conduction in PEO matrix. When the exfoliated kaolinite content reaches 10 wt%, the amorphous regions are connected to each other to form a network for the transport of Li⁺, leading to a sharp increase in ion conductivity.



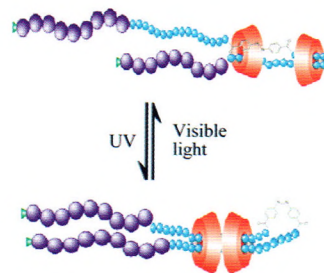
Acta Polymerica Sinica, 2017, No.8, p.1312 – 1319

doi: 10.11777/j.issn1000-3304.2017.16332

Synthesis and Characterization of Matched Double-chain and Loose-fit Single-chain Stranded γ -CD-based Polypseudorotaxane Containing Block Copolymers

Jie You, Lin Ye, Ai-ying Zhang, Zeng-guo Feng

The matched double chain stranded inclusion complexing structure was constructed by an azobenzene and a folded tetraethylene glycol chain jointing to enter the cavity of γ -CD, showing that a relatively higher stability with a reversible transformation into the double tetraethylene glycol chain stranded inclusion complexing structure in the process of cis-isomerization of the azobenzene.



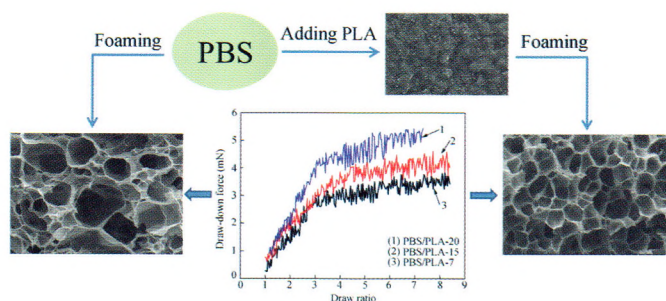
Acta Polymerica Sinica, 2017, No.8, p.1320 – 1330

doi: 10.11777/j.issn1000-3304.2017.16357

Improving Cellular Structure of Microcellular Poly(butylene succinate) *via* Adding Low Content of Poly(lactic acid)

Xiang-hui Chen, Han-xiong Huang

Microcells were developed with more uniform distribution, more regular shape, and smaller diameter (with a mean value of about 10 μm) from foaming biodegradable PBS/PLA blends with low PLA content using supercritical carbon dioxide as physical foaming agent. The cell diameters for the foamed blends followed Gaussian distribution, resulting from good dispersion of the PLA microdomains.



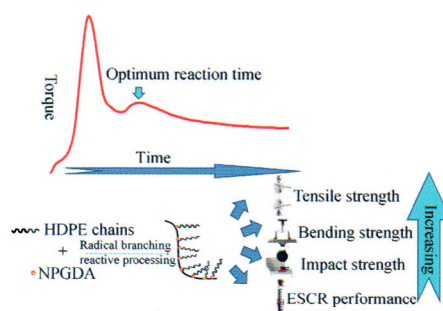
Acta Polymerica Sinica, 2017, No.8, p.1331 – 1338

doi: 10.11777/j.issn1000-3304.2017.17003

Melt Branching of High Density Polyethylene and Influences on Its Performances

Le Yang, Jiang-tao Wei, Zhu Luo, Qiang Zheng, Xiao-kun Liang

Under optimal reaction time determined in the torque curve, a long chain branched polyethylene with low gel content was prepared in a torque rheometer. The long chain branched structure reduced the spherulite size, and the environmental stress cracking resistance. Mechanical strength, modulus and impact toughness were improved significantly at the same time.



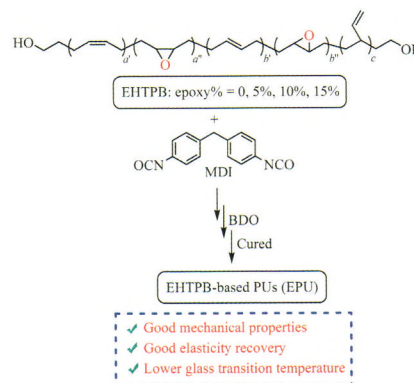
Acta Polymerica Sinica, 2017, No.8, p.1339 – 1349

doi: 10.11777/j.issn1000-3304.2017.16342

Preparation and Properties of Epoxidized Hydroxyl-terminated Polybutadiene Based Polyurethane Elastomers

Zhe Cao, Su-yun Jie, Bo-geng Li

A series of polyurethane elastomers (EPU), based on epoxidized hydroxyl-terminated polybutadienes with different epoxy percent (5%, 10% and 15%), are prepared, which are shown to have good mechanical properties and low glass transition temperature.



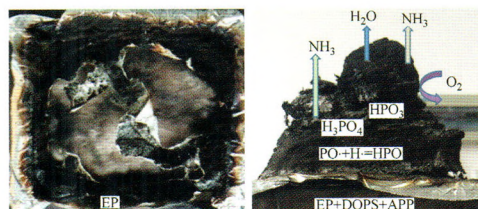
Acta Polymerica Sinica, 2017, No.8, p.1350 – 1357

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Synthesis of Flame Retardant Based on Phosphaphenanthrene and Flame Retardancy Study of Epoxy Resin Modified by Intumescent Flame Retardant System Composed of Ammonium Polyphosphate

Shi-mei Chen, Fang Lai, Pei Li, Wei Gong, Hai Fu, Xiao-gang Yin, Da-ming Ban

The flame retardants showed excellent flame retardancy for epoxy resin. By incorporation of flame retardant with epoxy resin with the intumescent flame retardant content at 30 wt%, TGA data indicated that the amount of the char residue at 700 °C could achieve 49.33%.



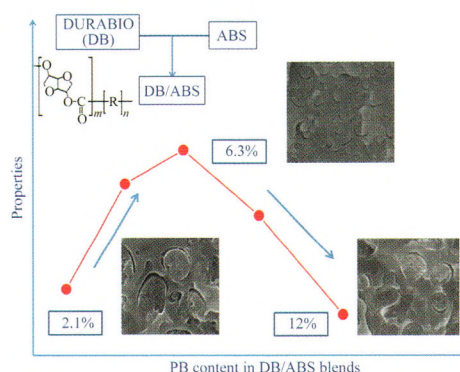
Acta Polymerica Sinica, 2017, No.8, p.1358 – 1365

doi: 10.11777/j.issn1000-3304.2017.16350

Structure and Properties of Isosorbide-type Polycarbonate/ABS Blend

Shi-heng Wang, Wen Zhang, Sasaki Haruo, Zhao-xia Guo, Jian Yu

Samples of DB/blend-type ABS (70/30) blends with 6.3 wt% of PB show always the best tensile properties when AN content in SAN is fixed.



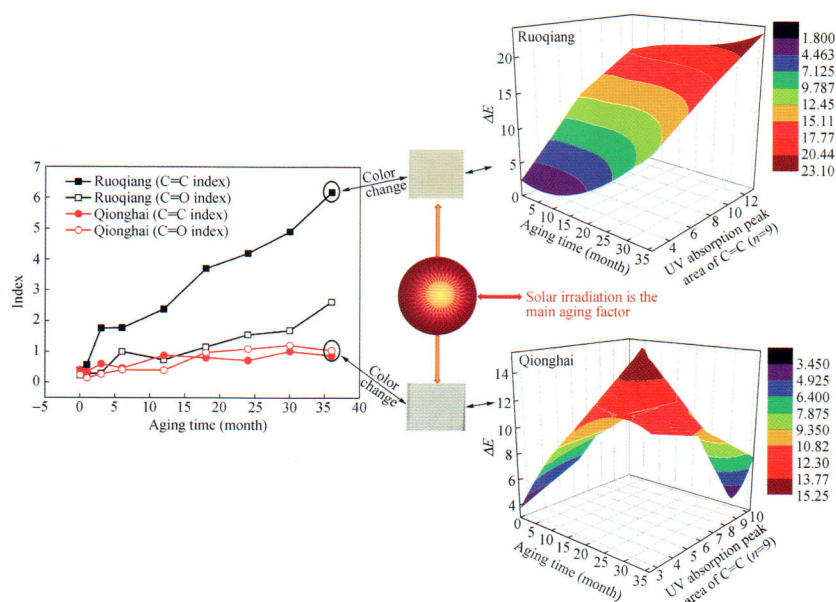
Acta Polymerica Sinica, 2017, No.8, p.1366 – 1373

doi: 10.11777/j.issn1000-3304.2017.16364

Color and Molecular Structure Changes of Natural Aged Rigid PVC

Wen-wen Xu, Ying Xiong, Shao-yun Guo

PVC aged in Ruqiang County underwent more remarkable color change and molecular structure change. Solar radiation was the main environmental factor in rigid PVC natural aging. There is a good correlation between the color change and C=C long conjugated sequence (conjugation length ≥ 8), but C=O groups contributed little to color change.



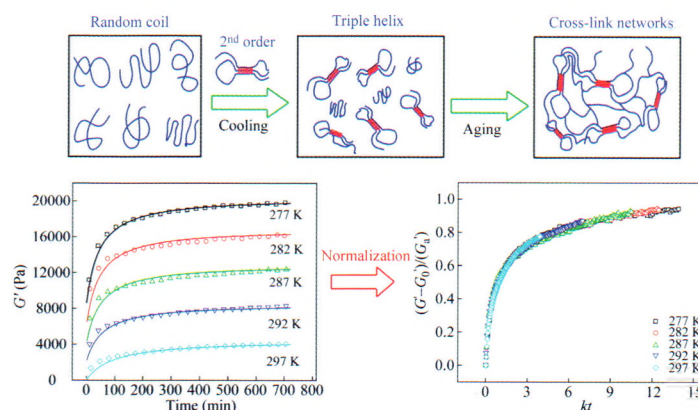
Acta Polymerica Sinica, 2017, No.8, p.1374 – 1381

doi: 10.11777/j.issn1000-3304.2017.16345

Modeling the Early-stage Aging Behavior of Ballistic Gelatin

Xiao-lin Ma, Yu-run Fan

The modulus-time curves of 10 wt% ballistic gelatin are self-similar in shape for different temperature and modeled by a second-order aging kinetics model. A dimensionless master curve is obtained by normalizing the elastic modulus and the aging time at different temperature.



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