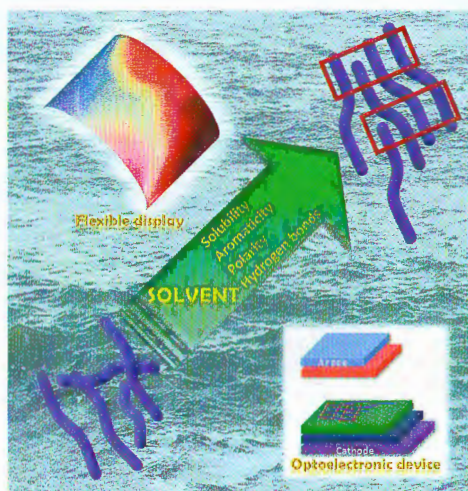


Cover Image

Effect and Mechanism of Solvent Properties on Solution Behavior and Films Condensed State Structure for the Semi-rigid Conjugated Polymers

Hao Zhang, Tao Li, Bin Liu, Teng-Ning Ma, Long Huang, Ze-Ming Bai, and Dan Lu

The effect of solvent properties including solubility of solvent, aromaticity, polarity and hydrogen bonds on solution behavior and film condensed state structure for semi-rigid conjugated polymer up till to apply for optoelectronic device was studied.



Chinese Journal of Polymer Science, 2021, 39(7), 796–814

<https://doi.org/10.1007/s10118-021-2555-6>

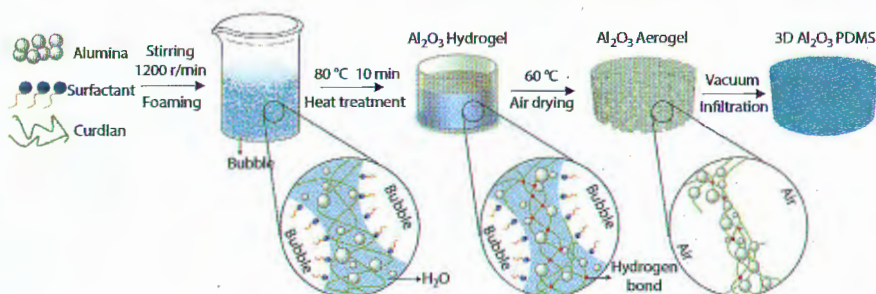
Contents

Rapid Communications

Bubble-templated Construction of Three-dimensional Ceramic Network for Enhanced Thermal Conductivity of Silicone Rubber Composites

Shou-Jun Li, Jing-Chao Li, Pei-Zhi Ji, Wen-Feng Zhang, Yong-Lai Lu, and Li-Qun Zhang

The suspension of Al_2O_3 and curdlan was first foamed to construct a bubble-templated continuous ceramic framework. Owing to the rapid gelation property of curdlan, we can easily remove moisture by hot air drying. Finally, the high thermally conductive composites are prepared by vacuum impregnation of silicone rubber.



Chinese Journal of Polymer Science, 2021, 39(7), 789–795

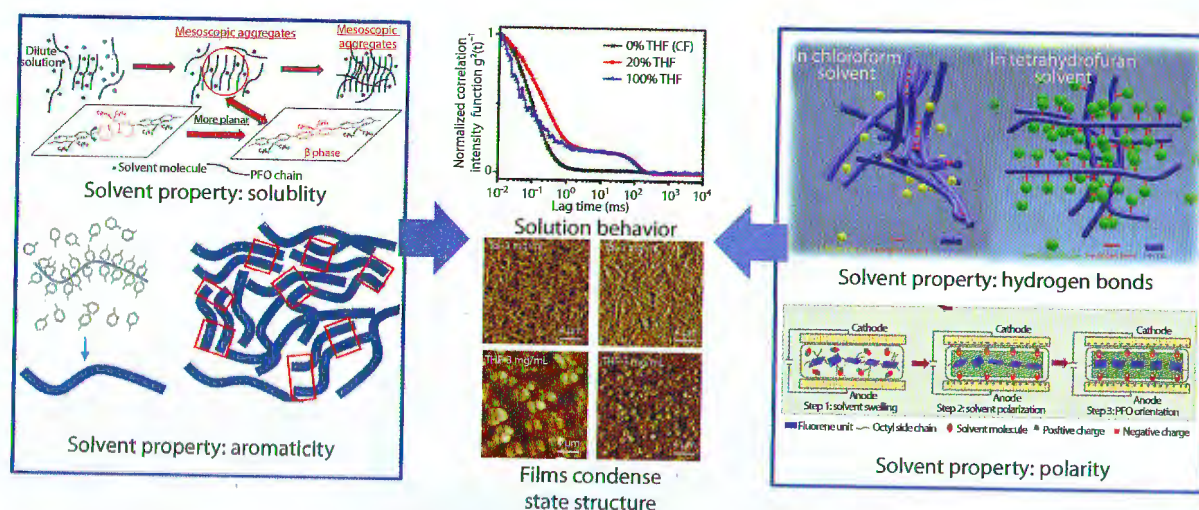
<https://doi.org/10.1007/s10118-021-2581-4>

Feature Articles

Effect and Mechanism of Solvent Properties on Solution Behavior and Films Condensed State Structure for the Semi-rigid Conjugated Polymers

Hao Zhang, Tao Li, Bin Liu, Teng-Ning Ma, Long Huang, Ze-Ming Bai, and Dan Lu

In this paper, the influence and mechanism of solvent properties from the different perspectives, such as solvent solubility, aromaticity, polarity and hydrogen bonding to explore solution behavior and films condensed state structure for the semi-rigid conjugated polymers were reviewed.



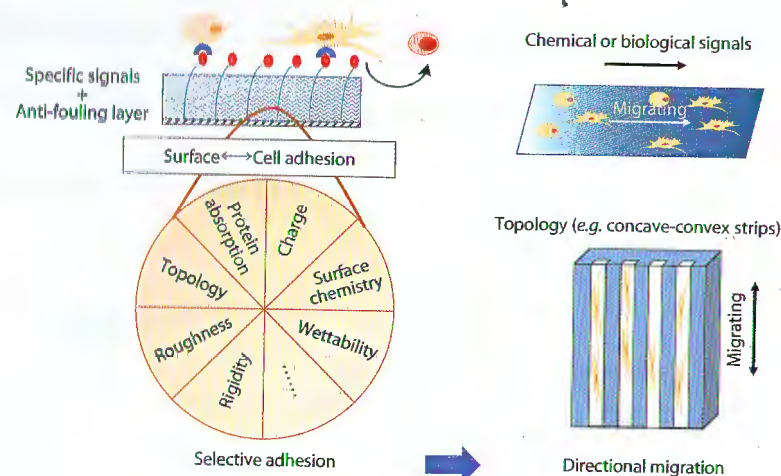
Chinese Journal of Polymer Science, 2021, 39(7), 796–814
<https://doi.org/10.1007/s10118-021-2555-6>

Reviews

Recent Advances on Surface-modified Biomaterials Promoting Selective Adhesion and Directional Migration of Cells

Chen-Xi Tu and Chang-You Gao

This review summarizes the surface modification methods for achieving selective cell adhesion through changing the surface physicochemical and biological properties. When these surfaces are cooperated with gradient cell-affinitive signals and/or specific topology, the directional migration of targeted cells can be realized by mimicking the microenvironments of extracellular matrix.



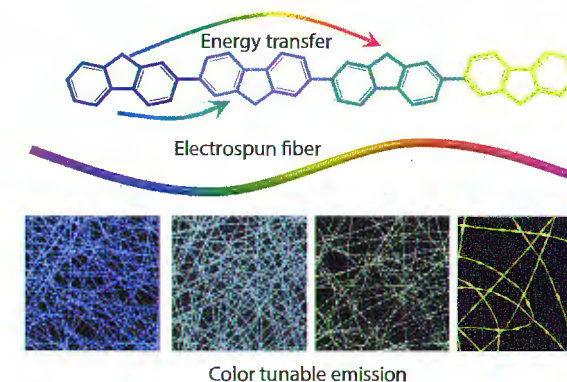
Chinese Journal of Polymer Science, 2021, 39(7), 815–823
<https://doi.org/10.1007/s10118-021-2564-5>

Articles

Electrospun Supramolecular Hybrid Microfibers from Conjugated Polymers: Color Transformation and Conductivity Evolution

Wei Xue, Man Xu, Meng-Na Yu, Hua-Min Sun, Jin-Yi Lin, Rong-Cui Jiang, Ling-Hai Xie, Nai-En Shi, and Wei Huang

A type of novel electrospun supramolecular hybrid microfibers comprising poly(9-(4-(octyloxy)-phenyl)-2,7-fluoren-9-ol) (PPFOH) and poly(*N*-vinylcarbazole) (PVK) with multicolor emission of blue, sky blue, nearly white, cyan, green and yellow were reported. Besides, a conductive behavior was demonstrated in accompany with the increment of the doping ratio of PPFOH to PVK.

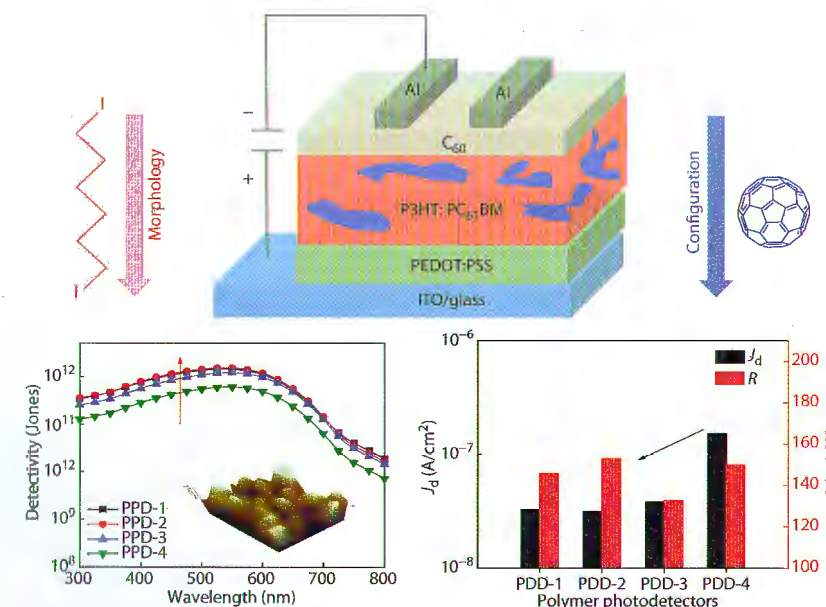


Chinese Journal of Polymer Science, 2021, 39(7), 824–830
<https://doi.org/10.1007/s10118-021-2542-y>

Effect of 1,8-Diiodooctane Content on the Performance of P3HT:PC61BM Bulk Heterojunction Photodetectors

Xin Wang, Shi-Jia Gao, Jin-Feng Han, Yu-Lin Zhang, Sai Zhang, Wen-Qiang Qiao, and Zhi-Yuan Wang

This work describes the performance of the bulk heterojunction photodetector based on P3HT:PC₆₁BM can be greatly improved by regulating the content of 1, 8-diiodooctane as a processing additive and employing C₆₀ as the hole blocking layer.

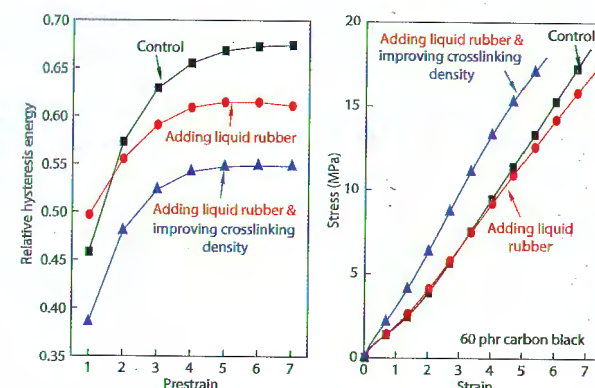


Chinese Journal of Polymer Science, 2021, 39(7), 831–837
<https://doi.org/10.1007/s10118-021-2548-5>

Influence of Liquid Isoprene Rubber on Strain Softening of Carbon Black Filled Isoprene Rubber Nanocomposites

Feng-Yi Hou, Yi-Hu Song, and Qiang Zheng

Liquid rubber (LR) reduces mechanical hysteresis accompanying Mullins effect and is used to balance hysteresis and reinforcement of filled vulcanizates without affecting the mechanisms of Payne effect filled vulcanizates.

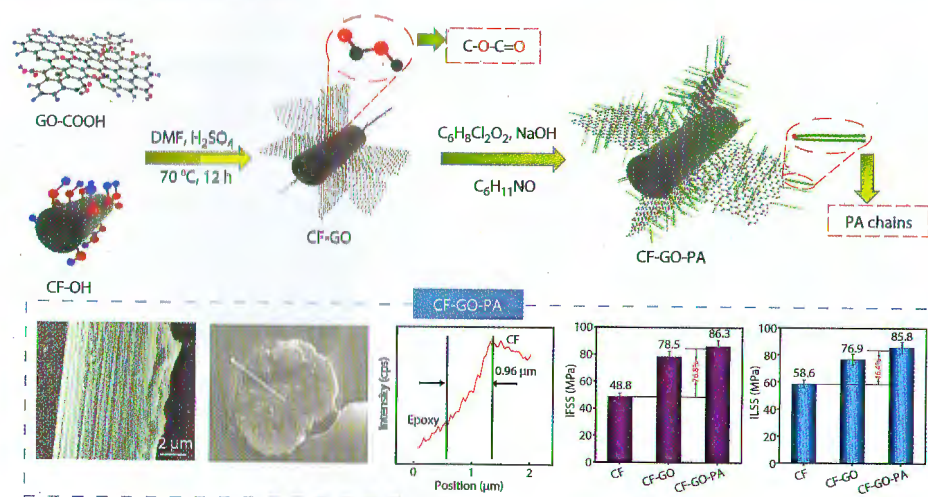


Chinese Journal of Polymer Science, 2021, 39(7), 887–895
<https://doi.org/10.1007/s10118-021-2550-y>

Interfacial Improvement of Carbon Fiber/Epoxy Composites by Incorporating Superior and Versatile Multiscale Gradient Modulus Intermediate Layer with Rigid-flexible Hierarchical Structure

Pei-Feng Feng, Guo-Jun Song, Wen-Jian Zhang, Hao Zheng, Bo-Wen Li, Shao-Feng Zhou, Ya-Qing Liu, Guang-Shun Wu, and Li-Chun Ma

A multiscale gradient modulus intermediate layer with rigid-flexible (GO-PA) hierarchical structure of 0.96 μm was designed and fabricated between CFs and matrix by simple and efficient esterification reaction and caprolactam anionic polymerization. The IFSS and ILSS of CF composites increased by 76.8%, 46.4%, respectively.

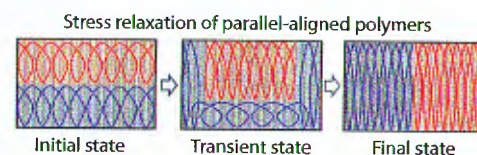


Chinese Journal of Polymer Science, 2021, 39(7), 896–905
<https://doi.org/10.1007/s10118-021-2549-4>

Local Transient Jamming in Stress Relaxation of Bulk Amorphous Polymers

Ji-Ping Wang, Yi-Huan Yu, Ya-Qian Guo, Wen Luo, and Wen-Bing Hu

Dynamic Monte Carlo simulations of stress relaxation revealed a transient jamming state of local stretch-coil coexistence among relaxing polymers, which raises a barrier for intermolecular cooperation to slow down the stress relaxation process in bulk amorphous polymers. The simulations set up a platform of molecular modeling of polymer stress relaxation and pave the way towards a better understanding of polymer dynamics and the related mechanical/rheological properties.

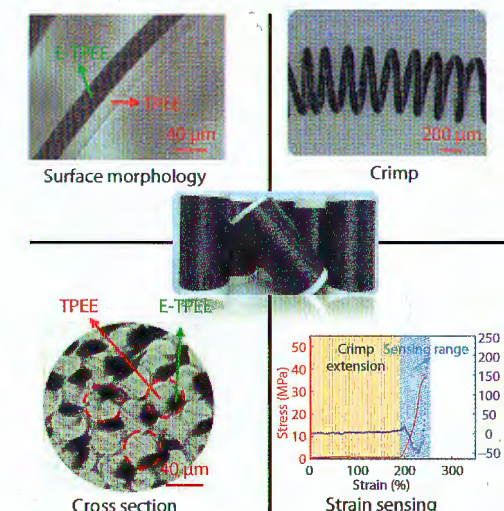


Chinese Journal of Polymer Science, 2021, 39(7), 906–913
<https://doi.org/10.1007/s10118-021-2570-7>

Facile and Large-scale Fabrication of Self-crimping Elastic Fibers for Large Strain Sensors

Jin-Chao Yu, Kang Chen, Hong Ji, Yang Zhang, Yu-Mei Zhang, and Zhi-Juan Pan

A facile approach for highly stretchable self-crimping fiber strain sensors was presented through a scalable bicomponent melt-spinning process. The bicomponent fibers exhibit intrinsic elasticity from polymer matrix and from elasticity from the self-crimping structure. The polyether-ester component serves as a highly elastic mechanical support layer, while the conductive component works as a strain-sensitive layer.

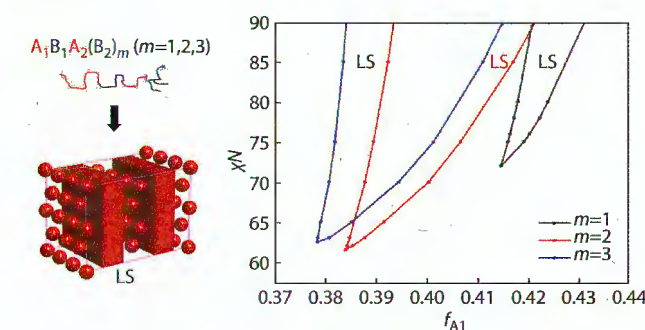


Chinese Journal of Polymer Science, 2021, 39(7), 914–924
<https://doi.org/10.1007/s10118-021-2560-1>

Enlarged Stable Phase Region of Hybrid Lamella-sphere Phase Enabled by $A_1B_1A_2(B_2)_m$ Branched Tetrablock Copolymer

Bin Zhao, Mei-Jiao Liu, Chao Wang, Ying-Cai Chen, and Yu-Ci Xu

In the study, a branched $A_1B_1A_2(B_2)_m$ ($m=1, 2, 3$) multiblock copolymer to increase the phase region of hybrid lamella-sphere (LS) structure was proposed. Encouragingly, it was found that the LS region is significantly expanded in $m=2$ and 3 compared with that of the linear polymer ($m=1$).



Chinese Journal of Polymer Science, 2021, 39(7), 925–933
<https://doi.org/10.1007/s10118-021-2554-7>

Errata

Correction to “Nanocrystallization-locked Network of Poly(styrene-*b*-isobutylene-*b*-styrene)-*g*-Polytetrahydrofuran Block Graft Copolymer”

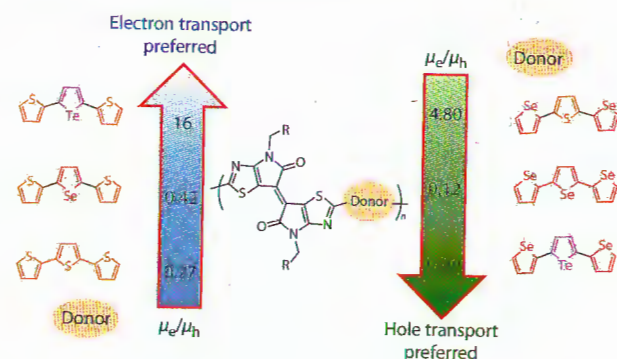
Hang-Tian Zhang, Zhi-Tao Wei, Fang Zhang, Tian Yang, and Yi-Xian Wu

Chinese Journal of Polymer Science, 2021, 39(7), 934
<https://doi.org/10.1007/s10118-021-2604-1>

Finely Tuned Electron/Hole Transport Preference of Thiazoloisoindigo-based Conjugated Polymers by Incorporation of Heavy Chalcogenophenes

Chen-Chen Li, Miao Xiong, Jia-Wei Peng, Jie-Yu Wang, Huan-Rui Zhang, You-Bing Mu, Jian Pei, and Xiao-Bo Wan

Thiazoloisoindigo (TzII) with different chalcogenophene trimers were synthesized to systematically investigate the chalcogen effect on their charge transport properties. This phenomenon is well-explained by the balance between the aromatic resonance energy of the chalcogenophenes and the electronegativity of the chalcogens.

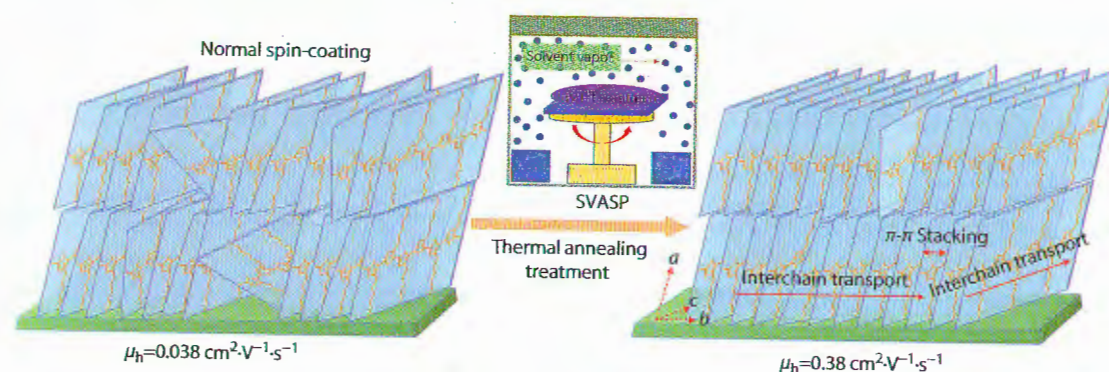


Chinese Journal of Polymer Science, 2021, 39(7), 838–848
<https://doi.org/10.1007/s10118-021-2552-9>

Synergistic Effects of Solvent Vapor Assisted Spin-coating and Thermal Annealing on Enhancing the Carrier Mobility of Poly(3-hexylthiophene) Field-effect Transistors

Xiao-Lan Qiao, Jie Yang, Lian-He Han, Ji-Dong Zhang, and Mei-Fang Zhu

Poly(3-hexylthiophene) (P3HT) transistors, based on the films obtained by solvent vapor assisted spin-coating (SVASP) and thermal annealing treatment, exhibit a mobility of $0.38 \text{ cm}^2 \text{ V}^{-1} \text{ s}^{-1}$. It is 10 times higher than that of the normal spin-coating films-based ones. The microstructure-property relationship is finely explored.

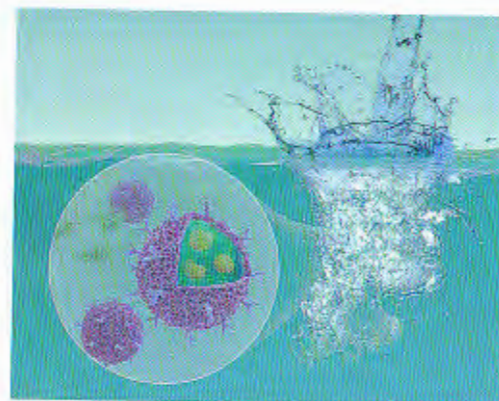


Chinese Journal of Polymer Science, 2021, 39(7), 849–855
<https://doi.org/10.1007/s10118-021-2577-0>

Feasible Fabrication of Hollow Micro-vesicles by Non-amphiphilic Macromolecules Based on Interfacial Cononsolvency

Jing-Hong Wang, Rui Chen, Zi-Qing Zhao, Jie Shen, He Yang, Yan Luo, Gao-Jian Chen, Hong Chen, and John L. Brash

A brand-new concept "interfacial cononsolvency" is proposed in this work to explain the instantaneous formation of hollow micro-vesicles when PNIPAm methanol solution is added to water. We successfully use this mechanism to fabricate the "sweet" protocells which can be involved in the recognition of bacteria.

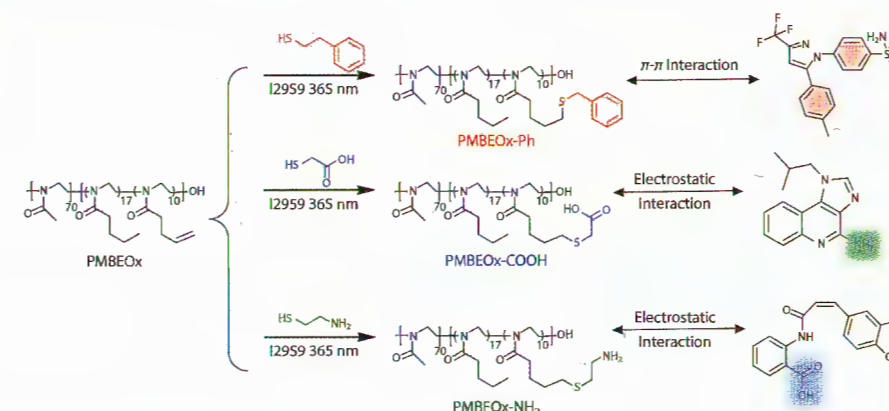


Chinese Journal of Polymer Science, 2021, 39(7), 856–864
<https://doi.org/10.1007/s10118-021-2541-z>

Functional Amphiphilic Poly(2-oxazoline) Block Copolymers as Drug Carriers: the Relationship between Structure and Drug Loading Capacity

Si Dong, Sheng Ma, Zhi-Lin Liu, Li-Li Ma, Yu Zhang, Zhao-Hui Tang, Ming-Xiao Deng, and Wan-Tong Song

A series of amphiphilic poly(2-oxazoline) (POx) block copolymers with various functional groups were prepared for drug loading. A drug loading capacity over 10% was obtained in all selected drugs when matching the proper functional POxs, suggesting the importance of functional groups in drug carriers for physical drug encapsulation.

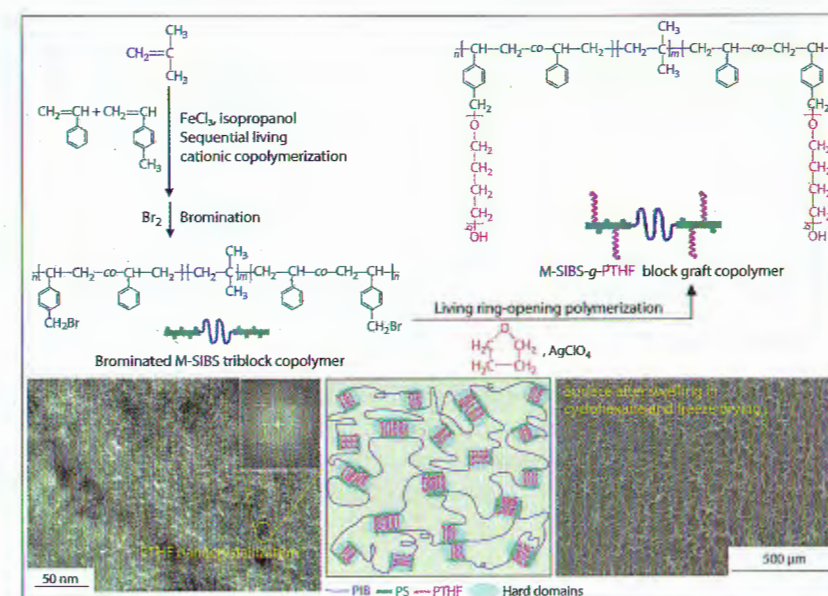


Chinese Journal of Polymer Science, 2021, 39(7), 865–873
<https://doi.org/10.1007/s10118-021-2547-6>

Nanocrystallization-locked Network of Poly(styrene-*b*-isobutylene-*b*-styrene)-*g*-Polytetrahydrofuran Block Graft Copolymer

Hang-Tian Zhang, Zhi-Tao Wei, Fang Zhang, Tian Yang, and Yi-Xian Wu

The M-SIBS-*g*-PTHF block graft copolymers containing nanocrystallization-locked network have been synthesized via sequential living cationic copolymerization, nucleophilic substitution and cationic ring-opening polymerization of tetrahydrofuran by using brominated M-SIBS/AgClO₄ Initiating system. The melting temperature and enthalpy of PTHF nanocrystallization locked in hard domains increased remarkably, improving the service temperature of SIBS.



Chinese Journal of Polymer Science, 2021, 39(7), 874–886
<https://doi.org/10.1007/s10118-021-2536-9>