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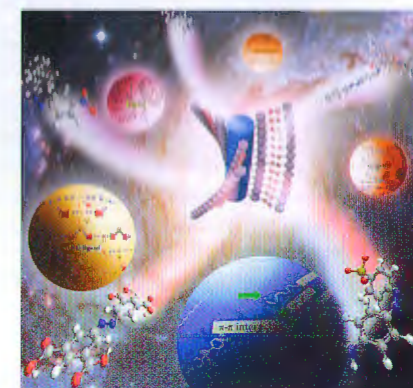
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Cover Image

Structural Design and Application of Azo-based Supramolecular Polymer Systems

Hui-Tao Yu, Jun-Wen Tang, Yi-Yu Feng, and Wei Feng

This review mainly summarizes the interaction, molecular structure, and design of azo supramolecular system in detail. Then the representative applications of materials are evaluated and prospected.



Chinese Journal of Polymer Science, 2019, 37(12), 1183–1199
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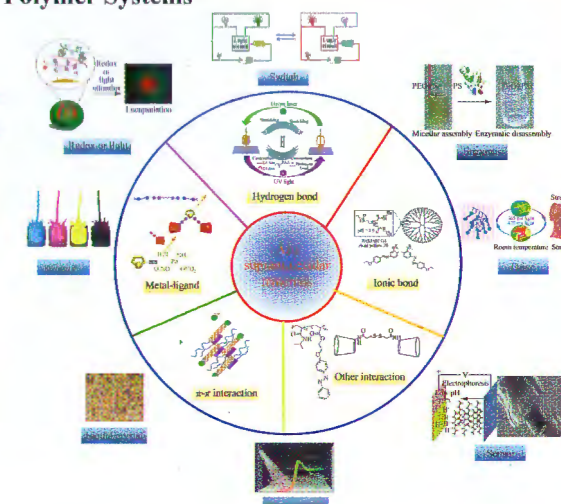
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Structural Design and Application of Azo-based Supramolecular Polymer Systems

Hui-Tao Yu, Jun-Wen Tang, Yi-Yu Feng, and Wei Feng

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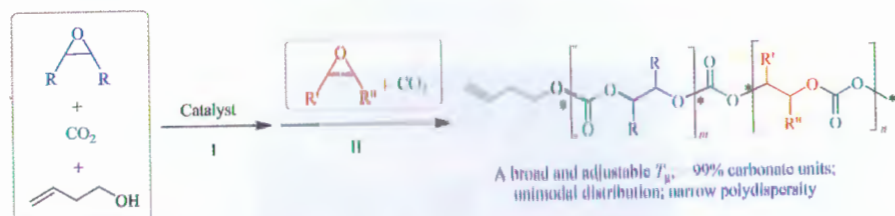


Chinese Journal of Polymer Science, 2019, 37(12), 1183–1199
<https://doi.org/10.1007/s10118-019-2331-z>

Synthesis of Polycarbonate Block Terpolymers Using Robust Cobalt Catalyst Systems

Ying-Jie Jiang, Wei-Min Ren, Ye Liu, and Xiao-Bing Lu

Polycarbonate block terpolymers with >99% carbonate units, unimodal distribution, and narrow polydispersity were prepared *via* immortal stepwise copolymerization of CO₂ and different epoxides with enol chain transfer mediated by robust cobalt catalyst systems. They all possessed only one broad T_g, being adjusted by the proportion of different polycarbonate segments.

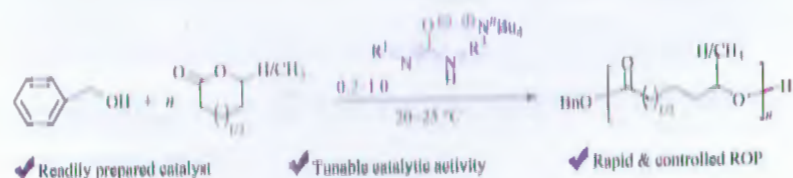


Chinese Journal of Polymer Science, 2019, 37(12), 1200–1204
<https://doi.org/10.1007/s10118-019-2270-8>

Readily Prepared and Tunable Ionic Organocatalysts for Ring-opening Polymerization of Lactones

Zhuo-Lun Jiang, Jun-Peng Zhao, and Guang-Zhao Zhang

Bifunctional ionic organocatalyst consisting of a urea anion and a tetra-*n*-butyl ammonium cation can be easily prepared and used in cooperation with a hydroxy initiator to afford ring-opening polymerization of lactones at room temperature. Provided with proper *N*-substituents, the catalyst allows both efficient and well controlled polymerization.

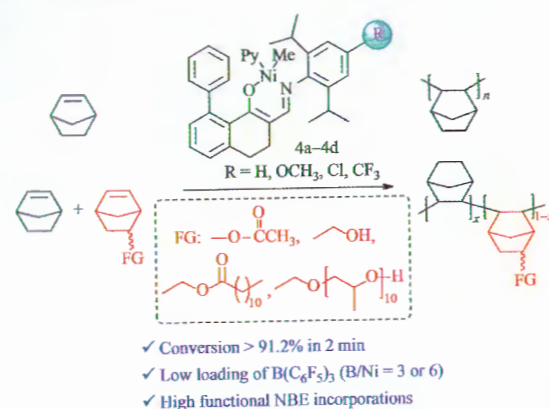


Chinese Journal of Polymer Science, 2019, 37(12), 1205–1214
<https://doi.org/10.1007/s10118-019-2285-1>

Efficient Addition Polymerization of Norbornene with Polar Norbornene Derivatives by Neutral Nickel(II) Catalysts

Ling Guo, Yan-Ping Zhang, Hong-Liang Mu, Li Pan, Kai-Ti Wang, Huan Gao, Bin Wang, Zhe Ma, and Yue-Sheng Li

Nickel complexes based on β -ketiminato ligands bearing various electron-donating or electron-withdrawing substituents were synthesized. All catalysts could efficiently promote norbornene homopolymerization and copolymerization of norbornene with its polar derivatives, giving high molecular weight (co)polymers with high functional comonomer incorporations.

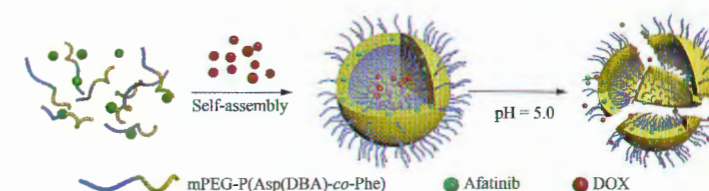


Chinese Journal of Polymer Science, 2019, 37(12), 1215–1223
<https://doi.org/10.1007/s10118-019-2292-2>

Co-delivery of Doxorubicin and Afatinib with pH-responsive Polymeric Nanovesicle for Enhanced Lung Cancer Therapy

Heng-Ye Gong, Yan-Gui Chen, Xing-Su Yu, Hong Xiao, Jin-Peng Xiao, Yong Wang, and Xin-Tao Shuai

A pH-sensitive vesicle co-encapsulated with DOX and afatinib was developed for combination therapy of cancer. *In vivo* studies demonstrated the enhanced anti-cancer effect of the co-delivery nanovesicles.

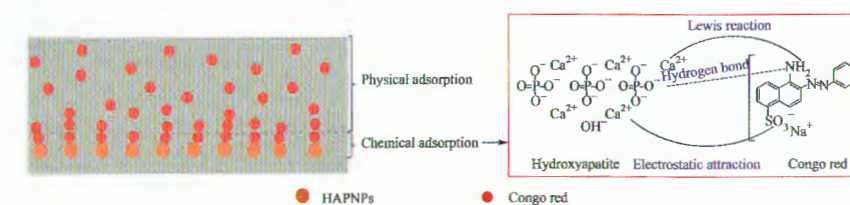


Chinese Journal of Polymer Science, 2019, 37(12), 1224–1233
<https://doi.org/10.1007/s10118-019-2272-6>

Preparation of Three Dimensional Hydroxyapatite Nanoparticles/Poly(vinylidene fluoride) Blend Membranes with Excellent Dye Removal Efficiency and Investigation of Adsorption Mechanism

Jian-Hua Li, Hui Zheng, Hua-Xiang Lin, Bo-Xin Zhang, Jia-Bin Wang, Tong-Lei Li, and Qi-Qing Zhang

The possible mechanism of CR molecules adsorbed on the HAPNPs of HAPNPs/PVDF blend membrane is proposed as follows. HAPNPs interacted with CR *via* Lewis reaction, hydrogen bond interaction, as well as electrostatic attraction to achieve adsorption process.

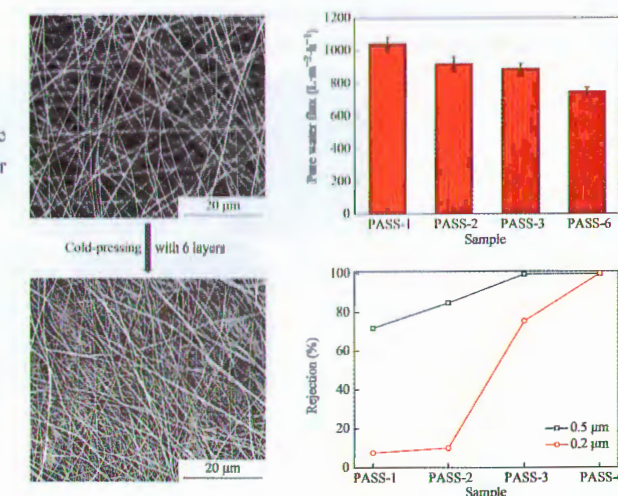


Chinese Journal of Polymer Science, 2019, 37(12), 1234–1247
<https://doi.org/10.1007/s10118-019-2271-7>

Preparation and Characterization of Multi-layer Poly(arylene sulfide sulfone) Nanofibers Membranes for Liquid Filtration

Zhen-Yan Liu, Zhi-Mei Wei, Xiao-Jun Wang, Gang Zhang, Sheng-Ru Long, and Jie Yang

The prepared PASS-6 nanofibers microfiltration membrane can completely reject the 0.2 and 0.5 μ m particles with high water flux, making it a promising candidate for microfilter.

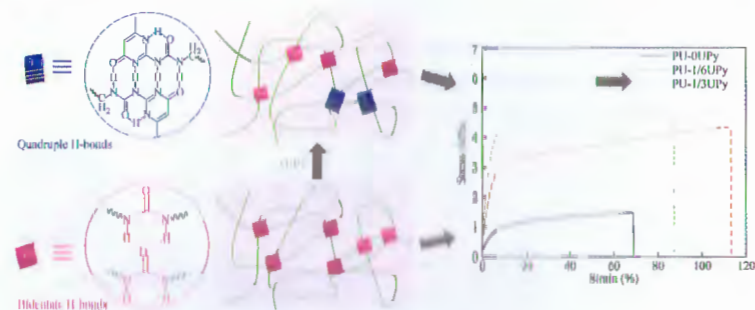


Chinese Journal of Polymer Science, 2019, 37(12), 1248–1256
<https://doi.org/10.1007/s10118-019-2280-6>

A Well-defined Hierarchical Hydrogen Bonding Strategy to Polyureas with Simultaneously Improved Strength and Toughness

Ting Li, Tian-Ze Zheng, Zhao-Xia Guo, Jun Xu, and Bao-Hua Guo

A well-defined quadruple hydrogen bonding strategy involving dimerization of 2-ureido-4[1H]-pyrimidone (UPy) units is innovatively introduced into polyureas, leading to simultaneous stiffening, strengthening, and toughening effects. The higher bonding energy of the quadruple hydrogen bonds of UPy dimers than bidentate hydrogen bonds is the predominant molecular mechanism.

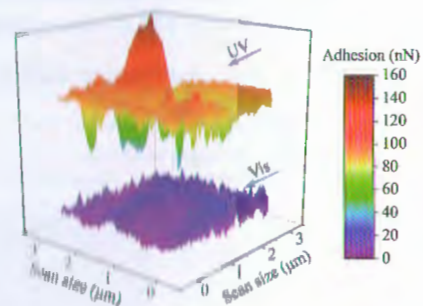


Chinese Journal of Polymer Science, 2019, 37(12), 1257–1266
<https://doi.org/10.1007/s10118-019-2275-3>

Investigation on Viscoelasticity of Waterborne Polyurethane with Azobenzene-containing Pendant Groups under Ultraviolet and Visible-light Irradiation

Yi-Jun Liu, Dong Liu, Si-Han Li, Hua-Qing Liang, and Fang-Ming Zhu

An efficient ultraviolet and visible light responsive polymer, abbreviated as azobenzene-containing waterborne polyurethane (azo-containing WPU), was synthesized using 10-(4-(phenyldiazenyl)phenoxy)decyl-3-hydroxy-2-(hydroxyl methyl)-2-methylpropanoate as the pendant group. Under the irradiation of UV light (365 nm), the viscoelasticity of azo-containing WPU changes a lot. AFM adhesion image suggests that the mean value of viscoelasticity is approximate 11 nN under the Vis irradiation (450 nm) while 82 nN under the UV irradiation.

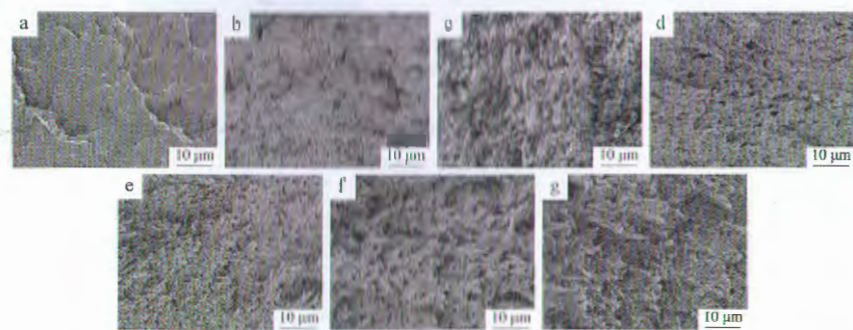


Chinese Journal of Polymer Science, 2019, 37(13), 1267–1272
<https://doi.org/10.1007/s10118-019-2289-x>

Studies on Rheological, Thermal, and Mechanical Properties of Polyacrylate/Methyl Methacrylate-Butadiene-Styrene Copolymer/Poly(propylene carbonate) Polyurethane Ternary Blends

Ji-Li Zhao, Hong-Wei Pan, Hui-Li Yang, Jun-Jia Bian, Hui Liang Zhang, Ge Gao, and Li-Song Dong

The impact fracture surface of neat PLA was relatively smooth, which indicated that the brittle fracture had occurred during the impact test. With the addition of MBS, rough surfaces and some cavities could be seen due to MBS debonding from the PLA matrix. With the addition of PPCU, many root-like whiskers and many long stretches of the ligaments structure can be clearly observed on the fracture surface PLA/MBS/PPCU blends.



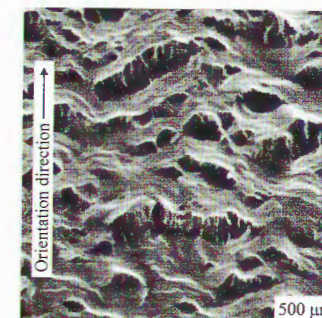
SEM images of the impact fracture surfaces of PLA/MBS/PPCU blends: (a) 100/0/0; (b) 90/10/0; (c) 85/10/5; (d) 80/10/10; (e) 70/10/20; (f) 60/10/30; (g) 50/10/40

Chinese Journal of Polymer Science, 2019, 37(12), 1273–1282
<https://doi.org/10.1007/s10118-019-2276-2>

Orientation Efforts as Regulatory Factor of Structure Formation in Permeable Porous Poly(vinylidene fluoride) Films

G. K. Elyashevich, I. S. Kuryndin, I. Yu. Dmitriev, V. K. Lavrentyev, N. N. Saprykina, and V. Bukořck

The structure of the presented PVDF porous films is regulated by orientation efforts at the stages of the film preparation process. Appearance of through flow channels initiates the formation of the strongly developed, relief-like surface, and scale of relief increases with orientation degree of the film.



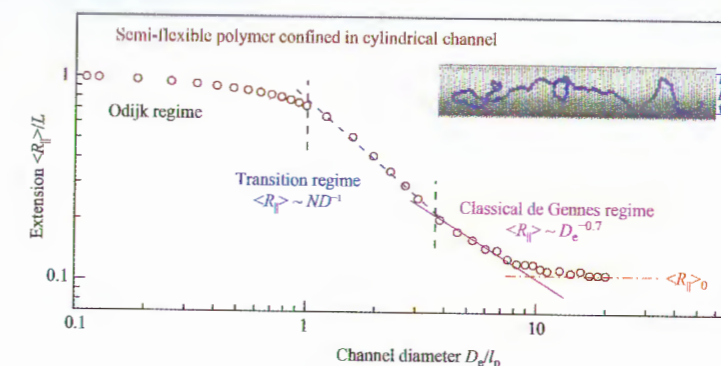
SEM image of PVDF porous film surface

Chinese Journal of Polymer Science, 2019, 37(13), 1283–1289
<https://doi.org/10.1007/s10118-019-2284-2>

Simulation Study on the Extension of Semi-flexible Polymer Chains in Cylindrical Channel

Yu Fu, Fan Wu, Jian-Hua Huang, Ying-Cai Chen, and Meng-Bo Luo

The scaling relation in the transition regime is different from that in the classic de Gennes regime for the semi-flexible polymer chains confined in the cylindrical channel. The exponent -1 is due to the local stiffness of the semi-flexible chain in the transition regime.

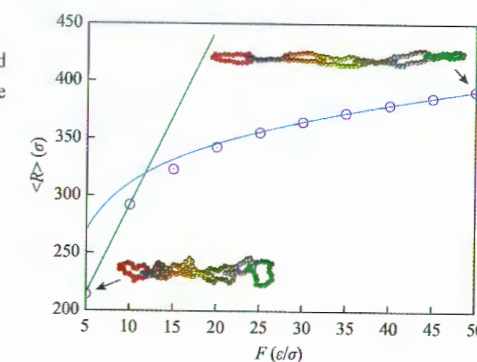


Chinese Journal of Polymer Science, 2019, 37(12), 1290–1297
<https://doi.org/10.1007/s10118-019-2291-3>

Mechanical Properties of Interlocked-ring Polymers: A Molecular Dynamics Simulation Study

Zheng-Tao Wu and Jia-Jia Zhou

The force-extension curve for single interlocked-ring polymer shows different behaviors at small and large external forces. In the small-force regime, each ring is only slightly stretched, while in the large-force regime, each ring is strongly elongated.



Chinese Journal of Polymer Science, 2019, 37(12), 1298–1304
<https://doi.org/10.1007/s10118-019-2279-z>

Computational Design and Fabrication of Enantioselective Recognition Sorbents for L-phenylalanine Benzyl Ester on Multiwalled Carbon Nanotubes Using Molecular Imprinting Technology

T Saniji, Renjith Thomas, and Beena Mathew

We theoretically designed and tailored a molecularly imprinted polymeric system supported on vinyl functionalized multiwalled carbon nanotubes which is capable of acting as an enantioselective sorbent for L-phenylalanine benzyl ester.

