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Ultrathin 2D Conjugated Polymer Nanosheets for Solar Fuel Generation

Xin-Lei Zhang, Lei Wang, Liang Chen, Xiao-Yu Ma, and Hang-Xun Xu

2D conjugated polymers have emerged as a novel class of materials for converting solar energy into chemical fuels due to their highly tunable optoelectronic properties. The 2D conjugated framework with in-plane periodicity provides a simple yet powerful platform for studying structure-property relationships from the molecular level. This article highlights recent progresses in developing various ultrathin 2D polymer nanosheets for solar fuel generation.



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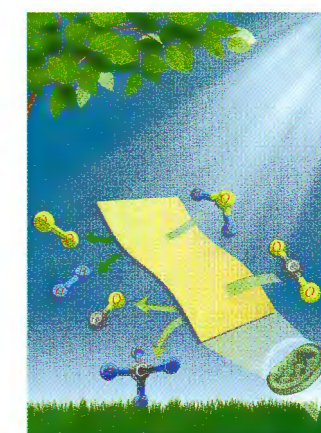
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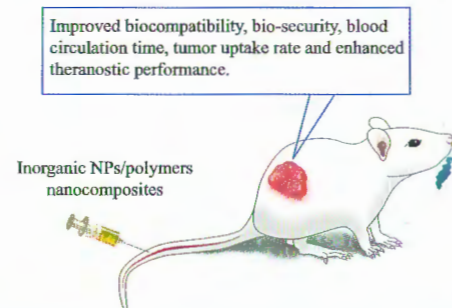
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Tumor Photothermal Therapy Employing Photothermal Inorganic Nanoparticles/Polymers Nanocomposites

Shu-Wei Liu, Lu Wang, Min Lin, Yi Liu, Le-Ning Zhang, and Hao Zhang

Inorganic nanoparticles and polymers are the most competitive photothermal reagents considering high photothermal performance and good biocompatibility. Their combination can effectively integrate their advantages to play a great role and fulfill the requirements of high photothermal performance and good bio-security, making it possible to achieve complete ablation of tumors.



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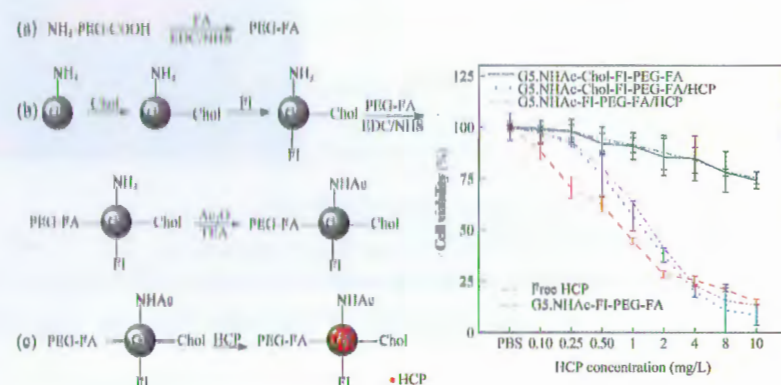
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Articles

Multifunctional Cholesterol-modified Dendrimers for Targeted Drug Delivery to Cancer Cells Expressing Folate Receptors

Fan-Fan Fu, Ben-Qing Zhou, Zhi-Jun Ouyang, Yi-Lun Wu, Jing-Yi Zhu, Ming-Wu Shen, Jin-Dong Xia, and Xiang-Yang Shi

Cholesterol-modified multifunctional dendrimers can be used as effective nanocarriers to encapsulate 10-hydroxycamptothecin, a hydrophobic anticancer drug. By modifying the folic acid ligand onto the dendrimer surface via a polyethylene glycol spacer, the developed dendrimer-based system enables targeted delivery to cancer cells over-expressing folate receptors.



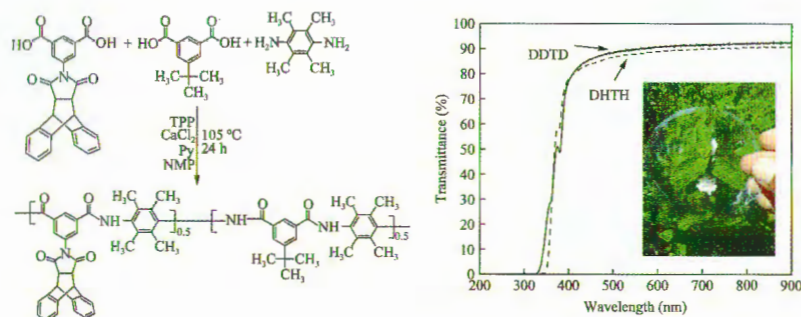
Chinese Journal of Polymer Science, 2019, 37(3), 129–135

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Preparation and Characterization of Flexible, Transparent and Thermally Stable Aromatic Co-polyamides

José Antonio Tec-Sánchez, Andrés Iván Oliva Arias, Manuel Aguilar-Vega, Juan Valerio Cauch-Rodríguez, and José Luis Santiago-García

Aromatic co-polyamides were synthesized by combining two diacid monomers containing bulky pendant groups, having high transmittance, flexibility, and thermal stability for applications in solar cells.



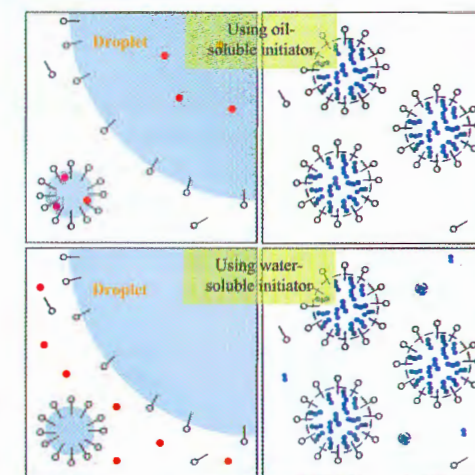
Chinese Journal of Polymer Science, 2019, 37(2), 136–141

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A Comparative Study on Emulsion Polymerization Processes of Styrene Initiated by Water-soluble and Oil-soluble Initiators

Xiao-Jing Liu, Yu-He Tian, and Yang-Cheng Lu

Through comparative study on the emulsion polymerizations initiated by water-soluble and oil-soluble initiators, evidences are provided to the generation of free radicals in micelles when using oil-soluble initiator. Advantages of using oil-soluble initiator in emulsifier adaptability and product control are also revealed.



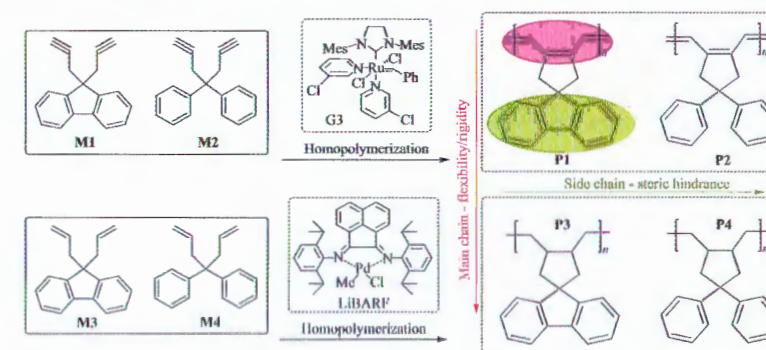
Chinese Journal of Polymer Science, 2019, 37(2), 142–148

<https://doi.org/10.1007/s10118-019-2186-3>

Comparative Studies on Properties of Polymers with Bulky Side Groups Synthesized by Cyclopolymerization of α,ω -Dienes and α,ω -Diynes

Shao-Fei Song, Xiao-Yu Liu, Hao Zhang, Zhi-Sheng Fu, Jun-Ting Xu, and Zhi-Qiang Fan

Four polymers containing five-membered rings in the backbone, with or without conjugation in the backbone or the pendent groups were synthesized by cyclopolymerizations of substituted 1,6-heptadiynes and 1,6-heptadienes, and their chain stacking behaviors were compared. The polymers with conjugated backbone need more space for chain stacking.



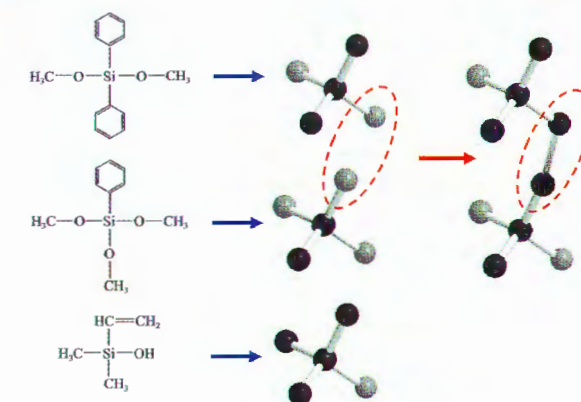
Chinese Journal of Polymer Science, 2019, 37(2), 149–156

<https://doi.org/10.1007/s10118-019-2183-6>

Dynamic Monte Carlo Simulation on Polymerization of Encapsulant

Jin Chen and Jiong-Hua Xiang

Three kinds of monomers are simplified into the corresponding coarse-grained models with different numbers of functional groups. When an unreacted bead approaches another unreacted one, a reaction takes place between those beads under certain conditions.



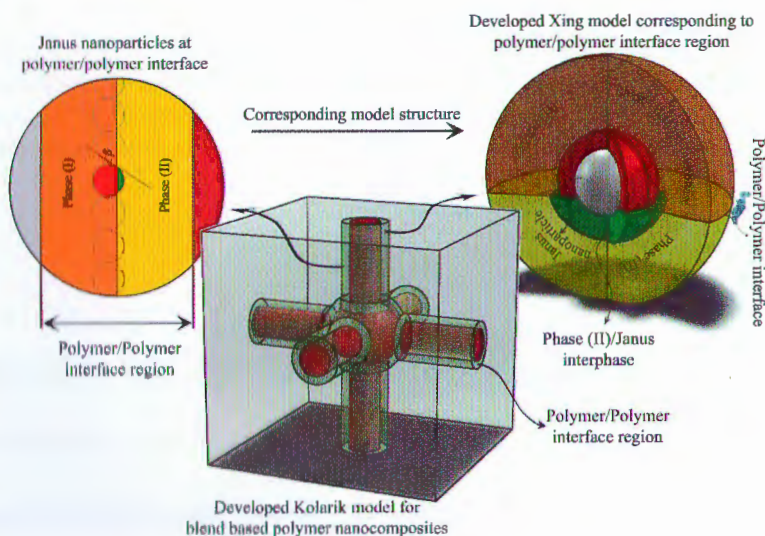
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Modeling of the Mechanical Properties of Blend Based Polymer Nanocomposites Considering the Effects of Janus Nanoparticles on Polymer/Polymer Interface

Esmail Sharifzadeh

Blend based polymer nanocomposites comprising nanoparticles at their interface can be considered as a system of three parts: phase (I), phase (II), and polymer/polymer interface region. Consequently, the interface region is modeled separately and then combined with the main developed Kolarik model to predict the mechanical properties of the system.

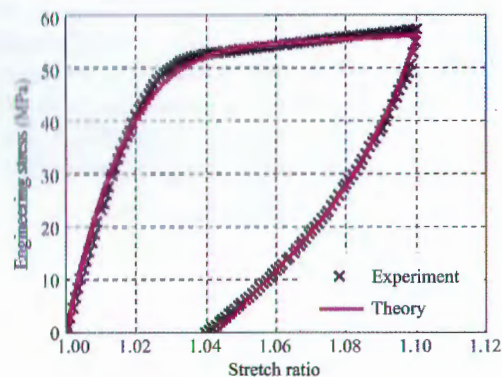


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Rheological Properties of Polyamide: Experimental Studies and Constitutive Modeling

Cyprian Suchocki and Rafał Molak

A newly developed constitutive law is applied to capture the inelastic mechanical behavior of polyamide PA66 subjected to moderate and large strains. The model describes such effects as hysteresis loop, strain rate dependency, and stress relaxation. The identification of material constants and the finite element implementation are discussed.

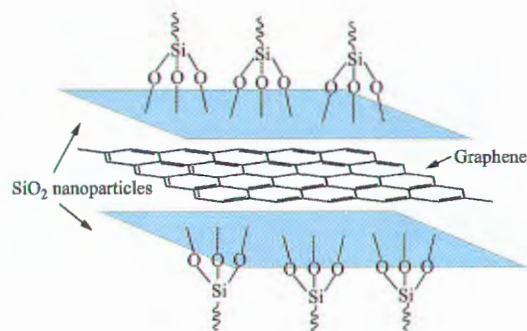


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Improving the Thermal Conductivity and Mechanical Properties of Two-component Room Temperature Vulcanized Silicone Rubber by Filling with Hydrophobically Modified SiO₂-Graphene Nanohybrids

Bo Yang, Shuang-Hong Zhang, Yi-Feng Zou, Wen-Shi Ma, Guo-Jia Huang, and Mao-Dong Li

SiO₂ nanoparticles were coated on the surface of graphene oxide to get the SiO₂-G compound. The SiO₂-G was restored and oleophilic modified to prepare hydrophobic modified SiO₂-G (HM-SiO₂-G).



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