1P-6
Inversed Opal Modified with Thin Polydopamine-Inorganic Hybrid Layer as Separator for High-Performance Lithium Ion Batteries

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In this study, we propose a hybrid layer consisting of microencapsulated healing agents dispersed homogeneously in polymers. The microcapsule are damaged during the microcrack propagation, followed by the leakage of the healing agent. We explore the potential of a, α,ω-azide-capped crosslinkers with catalyst-free azide-alkyne cycloaddition capability as a healing agent and study the microcapsule-based self-healing materials is also investigated.

Keywords: Separator, Li-ion battery, Surface modification, Inverse Opal, Polydopamine

1P-7
Study on Microencapsulation of a, α,ω-Azide-Capped Crosslinkers with Catalyst-Free Azide-Alkyne Cycloaddition Capability for Self-Healing Applications

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Many concepts for developing self-healing polymers have recently been proposed. In this study, we have focused on a self-healing systems consisting of microencapsulated healing agents dispersed homogeneously in polymers. The microcapsule are damaged during the microcrack propagation, followed by the leakage of the healing agent. We explore the potential of a, α,ω-azide-capped crosslinkers with catalyst-free azide-alkyne cycloaddition capability as a healing agent and study the microencapsulation of this healing agent. The healing behavior of microcapsule-based self-healing materials is also investigated.

Keywords: Azide-alkyne cycloaddition, microencapsulation, Self-healing polymer

1P-8
A New Ambipolar Copolymer for Organic Thin Film Transistor with a New Donor Unit

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We synthesis and characterized a new copolymer of OTFT. We design the structure with a new donor unit for copolymer. And the electron acceptor unit is previously reported as a high efficiency electron transport unit. The new copolymer is design for obtain a perfect balance in electron and charge transport in order to improve the optical and electrochemical property. It also possessed appropriate HOMO and LUMO. Moreover the copolymer would be beneficial for increasing the oxidative stability of polymer. As the same time, the new copolymer performed a high resistance to thermal shocks.

Keywords: Polymer, Ambipolar copolymer, OTFT

1P-9
Rheological behavior of rice bran carbon/nitrile butadiene rubber composites: Effect of mercapto-terminated silane treatment

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The surface morphology and structure of novel rice bran carbon (RBC) were characterized by X-ray diffraction, thermogravimetric analysis, high-resolution scanning electron microscopy (HR-SEM), Raman spectroscopy, and adsorption analysis. The RBC/nitrile butadiene rubber (NBR) polymer-matrix composites were fabricated by using the latex compounding technique, based on the superior hydrophilic characteristics of RBC. The covalent bonding process was conducted by in situ interfacial modification technique. The dispersion of RBC and the interfacial morphologies between the RBC and NBR matrix were confirmed by HR-SEM. The bonding mechanism was analyzed in detail by mechanical and dynamic rheological determinations.

Keywords: polymer-matrix composites (PMCs), rubber, rice bran carbon, rheological behaviors

1P-10
Preparation and characterizations of poly(vinyl alcohol)/sulfonated polyaniline blend hydrogels

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Smart hydrogels which can respond to various stimuli such as temperature, light, pH or electric field have been paid great attention for their various biomedical applications. In this study, we prepared a hydrogel based on a blend of poly(vinyl alcohol) (PVA) and water soluble sulfonated polyaniline (sPANI). The water soluble sPANI was synthesized by oxidative polymerization of 3-aminobenzensulfonic acid in a pyridine aqueous solution at 10 °C using ammonium persulfate as an oxidant. The PVA/sPANI blend hydrogel was prepared via solution blending of PVA and sPANI in water and using glutaraldehyde and HCl as a crosslinker and catalyst. Structure of the hydrogel was analyzed by FTIR. And, effect of sPANI content on the degree of swelling, mechanical properties, and electroresponsive properties of the PVA/sPANI blend hydrogels were investigated.

Keywords: poly(vinyl alcohol), sulfonated polyaniline, blend, hydrogel, electroresponsive properties

1P-11
Thermal and mechanical behaviors on blend ratio of polyetherimide-modified epoxy blends

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Epoxy/polyetherimide (PEI) blends were prepared by melt blending. The contents of PEI were varied from 0 to 4 wt.%. The influences on thermal and mechanical behaviors of the blends were studied. The thermal behaviors of the blends were investigated by differential scanning calorimeter (DSC) and thermogravimetric analyzer (TGA). The mechanical behaviors of the blends were measured using universal testing machine (UTM) for fracture toughness and the morphologies of fracture surface of the blends were observed by scanning electron microscopy (SEM). These results indicated that PEI showed an important role in improving the thermal and mechanical behaviors of epoxy blends.

Keywords: Epoxy, Polyetherimide, Composites, Fracture toughness, Thermal stability

1P-12
Highly Efficient Emitters using Side Group Control for Organic Light Emitting Diodes

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In this study, we developed several new highly efficient emitters using side group control for organic light emitting diodes (OLEDs). The chromophores we used were anthracene, pyrene, and chrysene, and we optimized their emission properties by controlling the side groups. We observed that the incorporation of bulky side groups led to enhanced emission efficiency. The results indicated that the side group control is an effective strategy for improving the performance of OLEDs.

Keywords: OLED, Side group control, Emitter, Efficiency, Bulky side group