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Group IV halogenoaluminum complexes bearing bidentate pyridine–alkoxide ligands and ethylene polymerizations thereby

Lithium aggregates promoted efficient activation of phenyldienes and thus stabilized phenylpyridinium were used for the halogen free A-star of pyridine-alkoxide ligands. Selective pyridine ring utilization of 2-phenylpyridinium, a to nitrogen, across a straightforward access to synthesize their derivatives as pyCAOH type pyridine alcohol ligands of the type pyCAOH. This reaction with Cp-MCp generated metal complexes of the type (PyCAOH)(M(CO)5), where M = Ti and Zr. The complexes were found active towards ethylene polymerization giving very linear polyethylene when they were activated with methylaluminoxane. Zirconium complexes were found more active than the titanium counterparts under the conditions studied.

Preparation of composite particles for microcapsule-type electrophoretic display

TiO2 and CoO2 particles were coated with PMMA for the improvement of dispersion stability in a defect free medium for microcapsule-type electrophoretic display application. TiO2 composite particles showed positive charge and CoO2 composite particles had negative charge by treating with those with appropriate charged monomer solution. These particles were used as white and black particles respectively in microcapsules. The modified particles were characterized by FT-IR, SEM, and TGA. Particle size and zeta potential were characterized by electrophoretic light scattering (ELS). The encapsulation of white or black particles were performed by in situ–polymerization utilizing ultraviolet and metaldehyde resins. Electrohydrod failure of the particles in the microcapsule was examined by applying electric field.

Synthesis and characterization of Poly(vinylidene fluoride) (PVDF) containing sulfone group in the polymer chain

PVDF is a well-known material for fuel cell, but it has some problem at hot water, on other hand, the sPVDF was separated operated in high humidity and high temperature. For this reason, in order to reduce the separated sPVDF membrane, sPVDF was blended with base polymer, crosslinked with polymer and earth metals such as strontium, barium because the earth metals connect with sulfone of sPVDF polymer make membrane stable in hot water. The crosslinked sPVDF(75%) membrane is stable with amount strontium 10% at 80 °C. However, the contents of strontium increase the membrane more stable the ion conductivity and methanol permeability decrease. In this report, there are three kinds of sPVDF (95, 70, 75%) were crosslinked with strontium metal and this crosslinked membranes were determined same characteristics: ion conductivity, methanol permeability, special water uptake at high temperature, TGA, and IR.

Synthesis of New Red–Red Amphi Block Copolymer Poly(furfuryl isocyanate)–b–Poly(methyl acrylate) by Anionic Polymerization

There has been considerable amount of research on the synthesis of A-B rod-coil amphiphilic block copolymers with various synthetic routes because these polymers have shown interesting properties such as phase separation behavior and self-assembly phenomena in different volume fractions and selective solvents. However, the research about rod–rod block copolymer of synthesis and self-assembly is still a pristine area in the polymer chemistry field. Well-defined rod–rod block copolymer of poly(furfuryl isocyanate)–b–poly(methyl acrylate) was synthesized with quantitative yields and controlled molecular weights by anionic polymerization in tetrahydrofuran (THF) at ~98 °C. Synthesized block copolymers were characterized with SEC, NMR, and IR, which showed the proof of well-controlled rod–rod block copolymers. Synthesized polymers demonstrated the self-assembly, phase separation behavior and micelle formation in selective solvent of one block was verified using TEM and AFM.

Dispersion Polymerization of Methyl methacrylate–Methyl acrylate Copolymer in Supercritical Carbon Dioxide

Dispersion copolymerization of MMA and MA was carried out in a carbon dioxide medium with 2,2-azoisobutyronitrile (AIBN) as initiator at 30 °C. To enhance the compatibility of the produced copolymer to carbon dioxide, methyl methacrylate linked poly(dimethylsiloxane) reactive stabilizer was used. Regardless of the MA content in the feed (0, 5, 30, 60, 100 mol% MA), the copolymer products were obtained in high yield as a fine powder form. The copolymer yield decreased with increasing MA content in the feed. Changes in the copolymer composition versus the monomer composition in the feed were investigated using FT-IR and NMR data. The copolymer morphology such as the particle size and particle size distribution was characterized with scanning electron microscope. The molecular weight and molecular weight distribution of the copolymer were measured with gel permeation chromatography. The thermal properties of the copolymer were also measured using differential scanning calorimetry.

Synthesis of poly(methyl methacrylate)/silver composite in supercritical carbon dioxide

Polymerization of MMA and silver was carried out in supercritical CO2. GMA linked PCMs was used as a stabilizer to enhance the affinity of the produced PMMA to CO2 medium. In order to incorporate silver into the growing PMMA, silver–dimercaptosuccinate was prepared. With the GMA–PCMs reactive stabilizer, the silver–dimercaptosuccinate, and AIBN initiator, MMA/PMMA composites with a variety of silver content were successfully synthesized from MMA in supercritical CO2. The PMMA/silver composites were obtained in powder form at high yield. FT-IR spectra of the composite were almost identical to those of standard PMMA. The silver content in the composite was determined using ICP and AA. The Tg of the PMMA/silver composites were higher than 20,000 and the DSC of the composites were less than 2.5. The structure and morphology of the PMMA/silver composites were characterized with TEM and SEM. The thermal properties of the composites were investigated using TGA and DSC.

Synthesis and Characterization of A Polyureas Containing Oligoaniline Blocks

The pentasiline discone whose internal NH groups were protected with benzilsulfonamide (Benzilsulfonamide) group was synthesized using p-benzoic anilide catalyzed aromatic amination of 4-hydrazole. The pentamer was polymerized with 1,6-dioxyaniline to produce a polycarbonate which had good solubility in common solvents. The morphology, and electrochemical properties were studied by using differential scanning calorimetry, small angle X-ray scattering and UV–Vis spectroscopy and cyclic voltammetry.

Hybrid Nano-Prisms of 3PMI coated Au nanowire: Enhancement of PL

Recently, a sheet of graphene having a structure of conductive sheet and highly reflecting surface plasmon resonance (SPR) plasmonic nanostructures has been employed as a SPR detector. The graphene has a SPR detector for surface plasmon resonance (SPR) plasmonic nanostructures has been employed as a SPR detector.