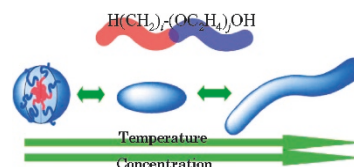


REVIEW ARTICLE

Wormlike Micelles of Polyoxyethylene Alkyl Ethers C_iE_j

Surfactant polyoxyethylene alkyl ether C_iE_j forms wormlike micelles in dilute aqueous solutions. It is demonstrated that the results by static and dynamic light scattering can be analyzed to yield structure and characteristic properties of the “isolated” micelles at specified surfactant (or micelle) concentration. The excess Rayleigh ratio as a function of surfactant concentration and radius of gyration, intrinsic viscosity, and hydrodynamic ratio as functions of molar mass of the micelle are quantitatively represented by the corresponding wormlike chain theory. Effects of mixing of different C_iE_j 's and uptake of *n*-alcohol and *n*-alkane into micelles on solution properties of the micelles are also discussed.

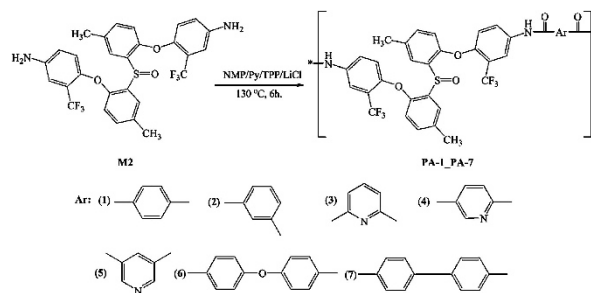


Y. EINAGA
Vol. 41, No. 3, pp 157–173 (2009)

REGULAR ARTICLE

Synthesis and Properties of Novel Fluorinated Polyamides Based on Noncoplanar Sulfoxide Containing Aromatic Bis(ether amine)

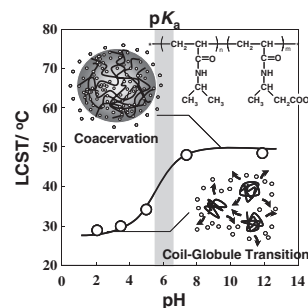
A novel fluorinated diamine monomer, 2,2'-sulfoxide-bis[4-methyl(2-trifluoromethyl)4-aminophenoxy] phenyl ether] (**M2**) was successfully synthesized in two steps route including the Williamson etherification reaction followed by catalytic reduction. A series of fluorine-containing polyamides were synthesized from such diamine with various aromatic dicarboxylic acids. These poly(sulfoxide ether amide)s were amorphous in nature, readily soluble in common polar organic solvents, and showed high thermal stability.



A. SHOCKRAVI, E. ABOUZARI-LOTF,
A. JAVADI, and S. TAHERI
Vol. 41, No. 3, pp 174–180 (2009)

Coil-Globule Transition and/or Coacervation of Temperature and pH Dual-Responsive Carboxylated Poly(*N*-isopropylacrylamide)

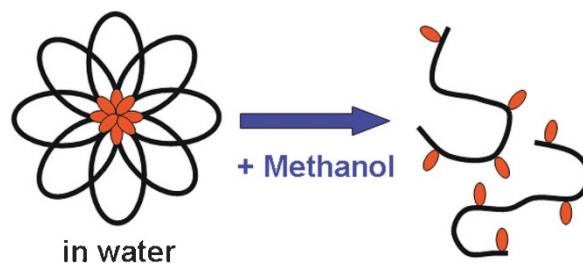
An ionic poly(*N*-isopropylacrylamide)-based functional polymer, poly(NIPAAm-*co*-CIPAAm), which has carboxyl groups, can show both a coil-globule transition and a coacervation in response to temperature and pH changes.



T. MAEDA, M. TAKENOCHI,
K. YAMAMOTO, and T. AOYAGI
Vol. 41, No. 3, pp 181–188 (2009)

Micellization Behavior of an Amphiphilic Statistical Copolymer in Water-Methanol Mixtures

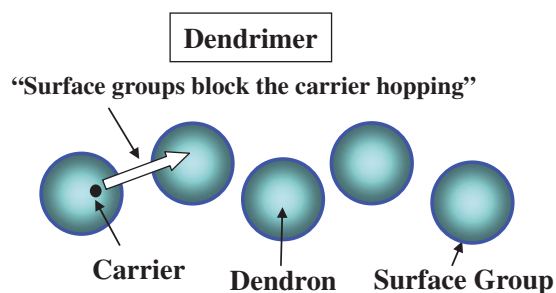
Sedimentation equilibrium measurements were made on an amphiphilic statistical copolymer p(AMPS/C6) made of sodium 2-(acrylamido)-2-methylpropanesulfonate (AMPS) and *n*-hexyl methacrylate (C6), dissolved in water-methanol mixtures with 0.2 M LiClO₄ and different methanol contents over a wide polymer concentration range. The experimental results were analyzed in terms of a micellar solution theory for amphiphilic polyelectrolytes to estimate the aggregation number of the micelle and the internal free energy change due to micellization.



T. MORI, A. HASHIZUME, and T. SATO
Vol. 41, No. 3, pp 189–194 (2009)

Photocarrier Transport Property of Phenylene-vinylene Dendrimer Studied by Time-of-Flight Method

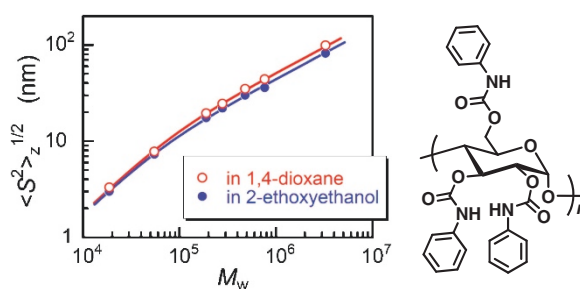
The carrier transport property of π -conjugated dendrimer surrounded by soluble surface groups was studied by time of flight method. The result shows the mobility increases with decreasing electric field, and the intrinsic mobility is same order as ladder-type π -conjugated polymers having alkyl chains as soluble groups. Therefore, the structure of the dendrimer we prepared would be a disk shape. The result indicates the soluble π -conjugated dendrimers have probability of applications toward organic electronic devices.



M. MIZUSAKI, M. YAMAHARA, Y. YAMADA,
S. OBARA, and K. TADA
Vol. 41, No. 3, pp 195–200 (2009)

Solution Properties of Amylose Tris(Phenylcarbamate): Local Conformation and Chain Stiffness in 1,4-Dioxane and 2-Ethoxyethanol

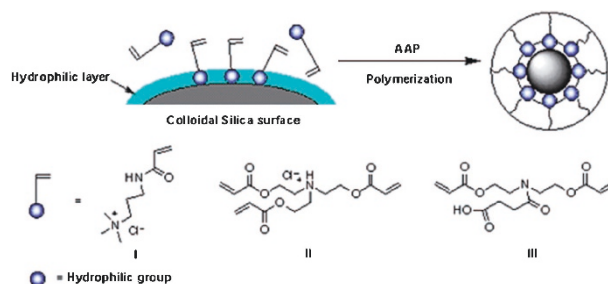
Light and small-angle X-ray scattering, sedimentation equilibrium, viscosity, circular dichroism, and infrared absorption measurements have been made on 1,4-dioxane and 2-ethoxyethanol solutions of seven amylose tris(phenylcarbamate) samples. Analyses of gyration radius, scattering function, and intrinsic viscosity data in terms of the wormlike chain model yield Kuhn segment lengths of 22 ± 2 nm and 16 ± 2 nm in 1,4-dioxane and 2-ethoxyethanol, respectively, and a contour length per residue of 0.33 ± 0.02 nm in both.



K. TERAO, T. FUJII, M. TSUDA,
S. KITAMURA, and T. NORISUYE
Vol. 41, No. 3, pp 201–207 (2009)

Modification of Monodisperse Colloidal Silica by Radical Copolymerization of Cationic Surface Active Vinyl Monomers

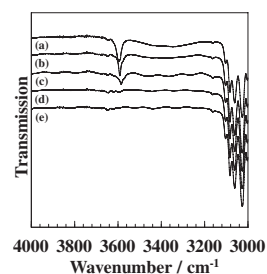
Adsorption and radical copolymerization of surface active monomers on colloidal silica were investigated. Silica composite homogeneously coated with cross-linked polymer was successfully prepared and their surface structure was investigated. Polymer modification of colloidal silica gave stable silica composite in organic solvents. Radical copolymerization of adsorbed monomer having carboxyl group on colloidal silica, which gave polymer-coated silica composite and exhibited a negative ξ -potential in water due to dissociation of carboxyl group.



J.-M. MOON, K.-T. LEE, B.-S. KIM, J.-O. LEE,
T. TANAKA, and K. YOSHINAGA
Vol. 41, No. 3, pp 208–213 (2009)

Selective Sorption and Desorption of Organic Solvent for δ -Syndiotactic Polystyrene

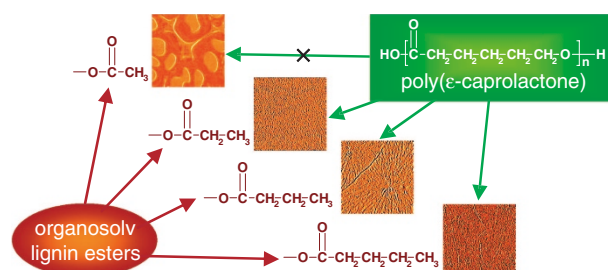
Sorption and desorption of organic solvent for δ -syndiotactic polystyrene (sPS) was investigated as a function of molar volume and shape of the solvent molecules. Solvents with large molar volume are tightly packed in the pores of δ -sPS; therefore, desorption from clathrate δ -sPS treated in $scCO_2$ is slow. The sorption process into the cavity of empty δ -sPS was investigated for various shaped alcohols. OH-branched alcohols were incorporated, but methyl branched alcohols were not, due to steric effects.



T. NAKAOKI, N. GOTO, and K. SAITO
Vol. 41, No. 3, pp 214–218 (2009)

Phase Structure and Mechanical Property of Blends of Organosolv Lignin Alkyl Esters with Poly(ϵ -caprolactone)

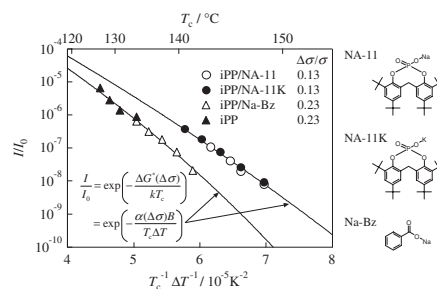
Miscibility of organosolv lignin (OSL) esters with poly(ϵ -caprolactone) (PCL) was investigated through DSC, morphological observation, and spectroscopy. DSC revealed a composition-dependent T_g shift in blends of OSL propionate, butyrate, and valerate with PCL. Therefore, these systems can be regarded as miscible on a T_g -detection scale. Thermal-molded sheets of the miscible blends attained $\geq 500\%$ of elongation at rupture, even at the composition containing 50 wt% of the respective esterified lignin components.



Y. TERAMOTO, S.-H. LEE, and T. ENDO
Vol. 41, No. 3, pp 219–227 (2009)

Acceleration Mechanism in Critical Nucleation of Polymers by Epitaxy of Nucleating Agent

Effect of epitaxy of nucleating agent (NA) on nucleation rate I of polymers was investigated based on kinetic study. I depends on free energy for forming critical nucleus $\Delta G^*(\Delta\sigma)$, where $\Delta\sigma$ is interfacial energy between NA and nucleus. $\Delta\sigma$ of isotactic polypropylene (iPP) mixed with three NAs was evaluated by the fit of theoretical equation to the experimental data of I . I increased significantly with decreasing $\Delta\sigma$. We concluded that $\Delta G^*(\Delta\sigma)$ is essentially important for acceleration of I .

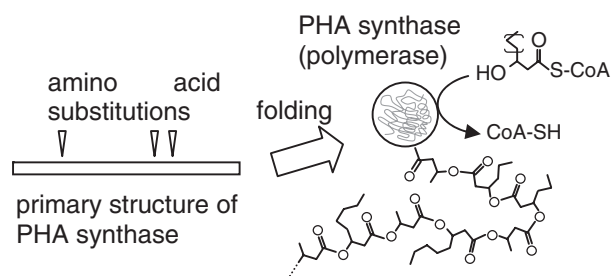


T. URUSHIHARA, K. OKADA, K. WATANABE,
A. TODA, N. KAWAMOTO, and M. HIKOSAKA
Vol. 41, No. 3, pp 228–236 (2009)

NOTE

Kinetic Analysis of Engineered Polyhydroxyalkanoate Synthases with Broad Substrate Specificity

Polyhydroxyalkanoate (PHA) synthase polymerizes hydroxyacyl-coenzyme A (CoA) with various carbon numbers as substrates, and produces homopolyester and copolyester. Relative polymerizing rate and affinity to substrates of PHA synthase determine monomer composition of the copolyesters. We previously created single or multiple mutants with amino acid substitution(s) occurred at beneficial positions related to enzyme activity and substrate specificity. Synergistic effects of beneficial mutations were obtained for increasing activities towards two substrates with different side-chain lengths, as revealed by *in vitro* kinetic analysis.



K. MATSUMOTO, F. SHOZUI, Y. SATOH, K. TAJIMA,
M. MUNEKATA, and S. TAGUCHI
Vol. 41, No. 3, pp 237–240 (2009)