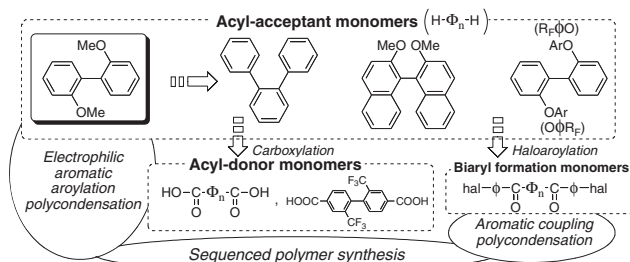


REVIEW ARTICLE

Synthesis of Wholly Aromatic Polyketones

Synthetic approaches for wholly aromatic polyketones with the aid of designing aromatic ring assembly molecules such as 2,2'-dioxybiphenyls and the related molecules having electronically equivalent structures or sterical analogy as activated and tolerable acyl-acceptant precursor substances for wholly aromatic polyketones are discussed. The construction of the copolymer structure composed of aromatic rings and ketonic carbonyl groups were performed utilizing regioselective and consecutive electrophilic aromatic arylation in polymer enchainment steps and/or monomer preparation.



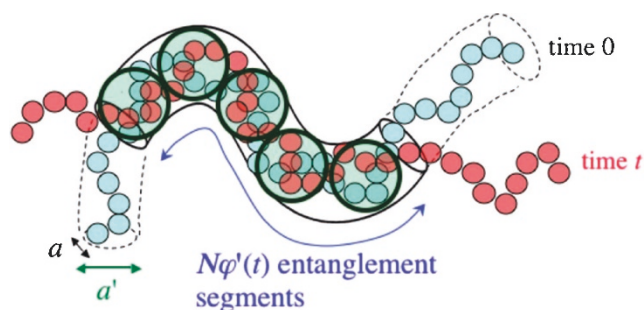
N. YONEZAWA and A. OKAMOTO
Vol. 41, No. 11, pp 899–928 (2009)

AWARD ACCOUNTS

SPSJ Award Accounts

Slow Dynamics in Homopolymer Liquids

For slow viscoelastic relaxation of flexible polymers, the stress-sustaining unit can be arbitrary chosen given that the monomeric segments therein are mutually equilibrated in the given time scale. This fact gives a basis for a molecular picture of dynamic tube dilation in which the *effective* entanglement segment dilates (from a to $a'(t)$) on an increase of the time scale. Comparison of dielectric and viscoelastic data of type-A chains enables an experimental test of this picture.

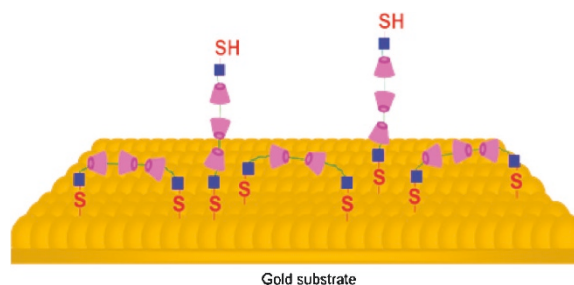


H. WATANABE
Vol. 41, No. 11, pp 929–950 (2009)

SHORT COMMUNICATION

Immobilization of Polyrotaxane on a Solid Substrate as the Design of Dynamic Surface

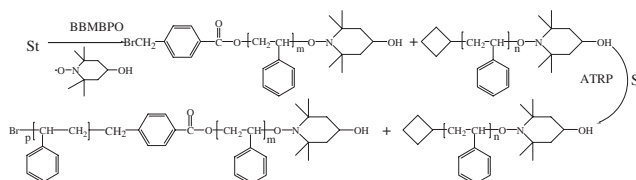
This figure depicts a dynamic surface based on polyrotaxanes on a gold substrate. The thiol group at both terminals of the polyrotaxane plays a meaningful role in immobilizing on the substrate through Au-S bond formation.



D. H. YANG, R. KATOONO, J. YAMAGUCHI, Y. MIURA, and N. YUI
Vol. 41, No. 11, pp 952–953 (2009)

Thermal Self-Initiation in Stable Free-Radical Polymerization of Styrene

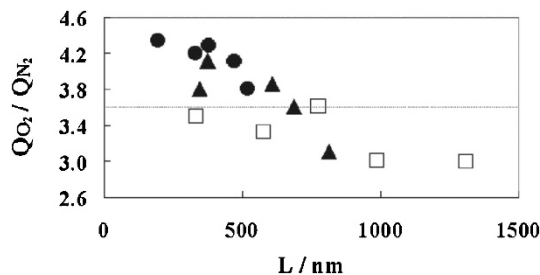
Two initiators with initiating groups for atom transfer radical polymerization (ATRP), bis(4-bromomethylbenzoyl)peroxide (BBMBPO) and 4,4'-azobis(4-cyanopentyl)- α -bromoisobutyrate (ABCBIB), were used in stable free radical polymerization (SFRP) of styrene in the presence of 4-hydroxy-2,2,6,6-tetramethyl-1-piperidinyloxy (HTEMPO). The molecular weights of polystyrenes were controlled by the concentration of HTEMPO. The thermal initiation was investigated quantitatively by gel permeation chromatography through ATRP of styrene initiated by the resulted polystyrene. The polystyrene with ATRP initiating groups grew to higher molecular weights, while those originated by thermal initiation remain constant.



Y. SUN, Y. WU, L. CHEN, Z. FU, and Y. SHI
Vol. 41, No. 11, pp 954–960 (2009)

Gas Transport Properties of Asymmetric Block Copolyimide Membranes

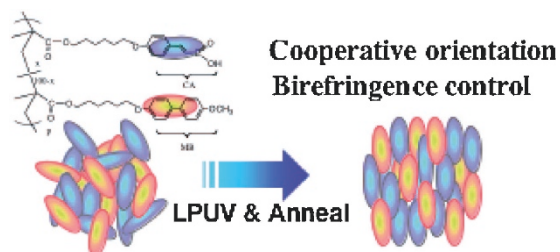
We have synthesized fluorinated block copolyimides with different block chain lengths by chemical imidization and prepared the asymmetric copolyimide membranes using the dry-wet phase inversion process. The phase separation in the block copolyimide solution instantaneously occurred so that the skin layer of the asymmetric block copolyimide membrane became thinner than that of the asymmetric random copolyimide membrane and the gas permeance of the asymmetric block copolyimide membrane had a high value.



Y. KASHIMURA, S. AOYAMA, and H. KAWAKAMI
Vol. 41, No. 11, pp 961–967 (2009)

Photoinduced Orientation of Photo-Cross-Linkable Liquid Crystalline Copolymer Films Comprised of H-Bonded and Non-H-Bonded Mesogenic Side Groups

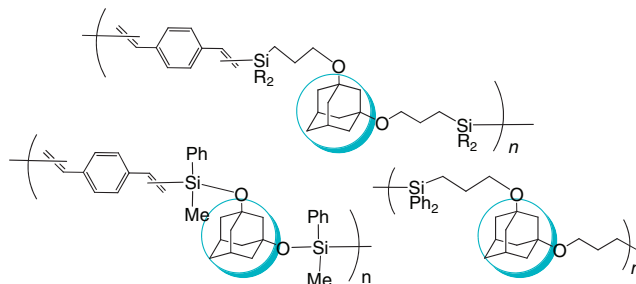
The cooperative molecular reorientation in methacrylate copolymer films with photoreactive H-bonded CA and photoinactive MB side groups was achieved. A thermally enhanced reorientation of both CA and MB side groups was obtained when films were annealed in the LC temperature range of both mesogenic side groups. Birefringence control of the reoriented was available by adjusting the copolymerization ratio.



N. KAWATSUKI, M. NOBUHITANI, and M. KONDO
Vol. 41, No. 11, pp 968–972 (2009)

Hydrosilylation Polymerization for the Synthesis of Organosilicon Polymers Containing Adamantane Units

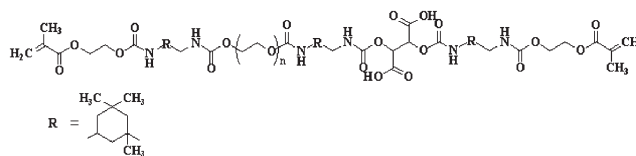
Hydrosilylation of diethynylbenzene with bis(hydrosilylpropoxy)- and bis(methylphenylsiloxy)adamantanes afforded the corresponding adamantane unit-containing polymers. A similar reaction of bis(allyloxy)adamantane also gave a polymer with repeating units of adamantanediyl-propylene-silanyl-ene-propylene. Heat-resistance of the resulting polymers was examined by the thermogravimetric analysis. Cross-linking hydrosilylation of a vinylsiloxane polymer with bis(methylphenylsiloxy)adamantane was also studied.



T. MAEHARA, J. OHSHITA, R. TAKETSUGU, K. HINO, and A. KUNAI
Vol. 41, No. 11, pp 973–977 (2009)

Urethane Dimethacrylates with Carboxylic Groups as Potential Dental Monomers. Synthesis and Properties

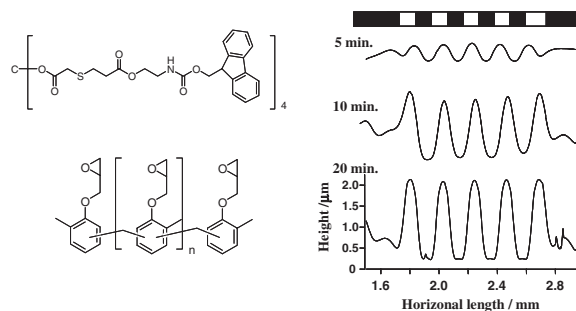
A series of poly(ethylene oxide) urethane dimethacrylates with two carboxylic groups were prepared and characterized comparatively to low molecular monomer. Especially, we focus on the obtaining of dental formulations to establish a correlation between the structure and behavior to photopolymerization, as well as the properties of the crosslinked polymeric networks. Because of the incorporation of such dual dimethacrylates besides other typically dental monomers and 70 wt % filler, the experimental composites exhibited good polymerization shrinkage and mechanical properties (DTS and CS).



T. BURUIANA, V. MELINTE, L. STROEA, and E. C. BURUIANA
Vol. 41, No. 11, pp 978–987 (2009)

Self-Developable Surface Relief Photoimaging Generated by Anionic UV-Curing of Epoxy Resins

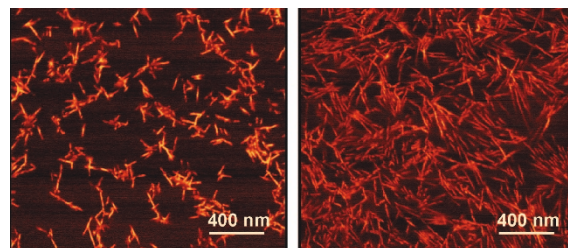
This report deals with anionically UV-curable materials consisting of a photobase generator, a branched base amplifier and an epoxy resin to achieve the surface relief formation. A pattern-wise exposure causing the amine generation triggers the self-catalytic fragmentation of a base amplifier, giving branched molecules with ω -amino groups, which reacted with an epoxy resin during post-exposure baking (PEB). The consumption of ingredients during PEB led to the mass transfer from unexposed areas to exposed ones to give surface relief structures.



K. AOKI and K. ICHIMURA
Vol. 41, No. 11, pp 988–992 (2009)

Nucleation and Crystallization of Low Isotactic Polypropylenes with Statistically Distributed Stereoerrors

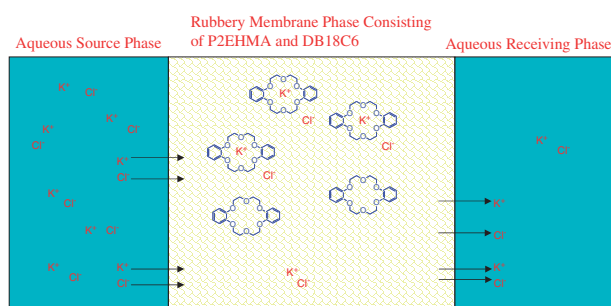
The nucleation and growth processes of crystallization in thin polypropylene films were visualized with nanometer resolution by using SFM at variable temperature. During the isothermal crystallization from the melt initially crystals of the α -form were developed. These lamellae act as nuclei for the crystallization γ -form lamellae, which can be observed at longer crystallization times. Time dependent SFM and WAXS experiments give strong evidence that due to the low amount of regular sequences only slow crystallization rates can be observed.



S. HILD, A. BOGER, C. TROLL, and B. RIEGER
Vol. 41, No. 11, pp 993–1004 (2009)

Polymeric Pseudo-Liquid Membranes from Poly(2-ethylhexyl methacrylate)

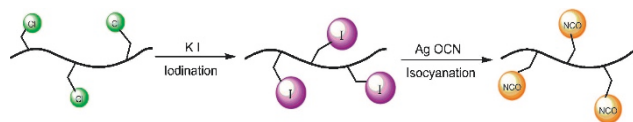
The polymeric pseudo-liquid membrane, consisting of rubbery poly(2-ethylhexyl methacrylate) (P2EHMA) and dibenzo-18-crown-6 (DB18C6), transported KCl. The flux was linearly increased with the increase in DB18C6 content in the membrane. The membrane performance was greatly dependent on both molecular weight of membrane matrix, P2EHMA, and the operation temperature. The results obtained in the present study suggested that polymeric pseudo-liquid membranes are applicable to membrane separation as one of liquid membrane transport systems.



D. NAITO, M. YOSHIKAWA, S. MAEDA, and H. OKUSHITA
Vol. 41, No. 11, pp 1005–1010 (2009)

Facile Synthetic Route Toward High Conversion Primary Aliphatic Poly(vinyl benzyl isocyanate) via Iodination

A non-toxic route to the synthesis of aliphatic isocyanato polymers through iodination and isocyanation has been developed. In this approach, the iodide ion is not only a good nucleophile for iodination but also a leaving group for following isocyanation. Without the addition of catalyst and yielding of trimer or dimer byproducts, the strategy to synthesize high conversion isocyanato polymers from the chlorinated polymers is achieved.



W.-H. TING, S. A. DAI, H.-T. LEE, F. M. C. CHEN,
W.-C. SU, and R.-J. JENG
Vol. 41, No. 11, pp 1011–1017 (2009)