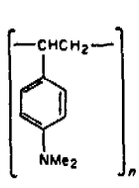
of a protonated nitroarom. radical anion ($ArNO_2H$) and, in the time, temp., and light dependence of the signal intensity, paralleled the elec. cond. of the system. The long-lived conductive state occurred via a bimol. reaction between the triplet state of I and a proton. Growth of the ESR signal over a large time was proportional to the square root of the light intensity, but at short times, the growth was faster. Decay of the signal in the dark followed a second-order rate law. Kinetic study of the system was useful in finding new photoelec. memory effects in org. polymeric solids.

85005p Studies on the formation of graft copolymer by coupling reaction. I. Effects of the dimension of backbone polymer in solution on the formation of graft copolymer. Ishizu, Koji; Fukutomi, Takashi; Kakurai, Toshio; Noguchi, Tatsuya (Tokyo Inst. Technol., Tokyo, Japan). *Polym. J.* 1973, 4(1), 105–10 (Eng). Graft copolymer having a backbone and only 1 branched chain was prepd. by reaction of *poly(Me methacrylate)* [9011-14-7] with *poly(α-methylstyryl) anion* [38720-80-8] in a mixt. of good THF and poor methylcyclohexane solvents at −78°. Pendant side groups on a backbone mol. did not react with equal probability even during the 1st stage of the reaction, when the dimensions of the backbone mol. were small.

85006q Effect of different technological parameters on the effectiveness of grafting methacrylic acid to cellulose acetate. Strizhakova, T. A.; Mikhailova, V. A.; Lozhkin, V. E. (USSR). *Khim. Tekhnol. Proizvod. Tsellyul.* 1971, 298–301 (Russ). From Ref. Zh., Khim. 1972, Abstr. No. 9S475. In the graft polymn. of *methacrylic acid* (I) [79-41-4] on *cellulose acetate* (II) [9004-35-7] at 56° under N at II–I ratio 1:0.25 to complete consumption of I, increasing the initiator *(dicyclohexyl percarbonate* [21620-58-6]) concn. from 0.5 to 8% (based on cellulose wt.) resulted in an insignificant decrease in yield of graft copolymer, but decreased grafting effectiveness from 76 to 50.1%, and changed the no. of graft poly(methacrylic acid) chains per cellulose acetate macromol. from 0.8 to 2.6. Addn. of Cu^{2+} or Fe^{2+} cations significantly retarded the copolymn. and decreased the grafting effectiveness. Addn. of Ni^{2+}, Cr^{3+}, or Na^{1+} cations did not significantly affect the polymn results.

85007r Entrance effects on capillary degradation of dilute polystyrene solutions. Culter, J. D.; Mayhan, K. G.; Patterson, G. K.; Sarmasti, A. A.; Zakin, J. L. (Chem. Eng. Dep., Univ. Missouri, Rolla, Mo.). *J. Appl. Polym. Sci.* 1972, 16(12), 3381–5 (Eng). The extent of degrdn. of *polystyrene* (I) [9003-53-6] by mech. shear in the dil. solns. passing through a capillary tube was a function of shear stress at the entrance of the capillary and independent of the length of the capillary tube. The extent of degrdn. was detd. by measuring the intrinsic viscosity of I before or after flow at 25° through capillary tubes having a wide range of length to diam. ratios, the I concn. in toluene being 0.1 wt.% and the shear stress at the wall being 800–1750 dynes/cm².

85008s Thermal degradation of polymers. V. Vacuum pyrolysis of poly(p-N,N-dimethylaminostyrene). Products volatile at pyrolysis temperature, liquid or gaseous at room temperature. Still, R. H.; Evans, M. B.; Whitehead, A. (Dep. Polym. Fiber Sci., Univ. Manchester Inst. Sci. Technol., Manchester, Engl.). *J. Appl. Polym. Sci.* 1972, 16(12), 3207–21 (Eng). Product anal. revealed significant differences between the

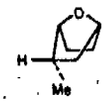


products obtained on degrdn. of *poly[p-(dimethylamino)styrene]* (I) [24936-45-6] and *polystyrene* [9003-53-6] in vacuo, and mechanisms involving methyl-group migration were proposed to account for the anomalous behavior of I. The effects of mol. wt. and pyrolysis temp. were discussed and the behavior compared with polystyrene. The liq. products of pyrolysis were sepd. and identified by gas-liq. chromatog., and anal. of the gaseous fraction by mass spectrometry was described.

85009t Thermal analysis of irradiated poly(vinyl chloride). Salovey, R.; Badger, R. G. (Hooker Chem. Corp., Niagara Falls, N. Y.). *J. Appl. Polym. Sci.* 1972, 16(12), 3265–74 (Eng). When *PVC* [9002-86-2] was irradiated with ionizing radiation, the cryst. order in PVC was destroyed, the resin became susceptible to thermal oxidn., and disposal of waste PVC was facilitated. The results of isothermal and temp.-programmed thermogravimetry, differential thermal anal., and effluent gas anal. in N and O of irradiated PVC were given.

85010m Mechanism of decay of alkyl radicals in irradiated polyethylene on exposure to air as studied by electron spin resonance. Seguchi, Tadao; Tamura, Naoyuki (Takasaki Res. Establ., Japan At. Energy Res. Inst., Takasaki, Japan). *J. Phys. Chem.* 1973, 77(1), 40–4 (Eng). A close relation was found between the decay rate of alkyl radicals and the size of crystallites in various kinds of irradiated *polyethylene* [9002-88-4], and it was suggested that the alkyl radicals trapped in the cryst. region migrate to the surfaces of the crystallites through hydrogen abstraction and decay by reaction with O at the surfaces. The kinetics of radical decay were well explained by the diffusion theory assuming that the decay rate is controlled by the rate of radical migration in the crystallites. The diffusion const. of alkyl radicals was estd. to be 2.0×10^{-16} cm²/sec at 20°. Alkyl radical migration was intermol. rather than intramol. and had activation energy 18 kcal/mol.

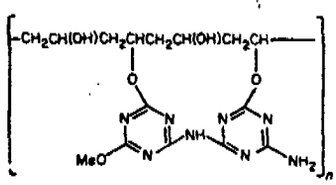
85011n Kinetic study of the polymerization of endo-2-methyl-7-oxabicyclo[2.2.1]heptane. Saegusa, T.; Motoi, M.; Matsumoto, S.; Fujii, H. (Fac. Eng., Kyoto Univ., Kyoto, Japan). *Macromolecules* 1972, 5(6), 815–16 (Eng). The



polymn. rate const. and the termination rate for *endo-2-methyl-7-oxabicyclo[2.2.1]heptane* (I) [16325-22-7] during polymn. at −10° to −40° was higher than that for the exo monomer. The difference in the kinetic reactivity of the isomers was due to the activation energy rather than to the frequency factor. The cyclic I oxonium ion was more strained in the ground state than that derived from the exo isomer, and the increased strain energy in the ground state decreased the activation energy.

85012p Metalation of poly(styrene-co-p-benzylstyrene) and graft copolymerization of methyl methacrylate using the metalated polymer as the initiator. Kikuchi, Mikio; Kakurai, Toshio (Dep. Polym. Technol., Tokyo Inst. Technol., Tokyo, Japan). *Kobunshi Kagaku* 1972, 29(12), 911–18 (Japan). *Styrene-p-benzylstyrene copolymer* [38783-46-9] was metalated with *amyllithium* [3525-31-3] in THF at −78° to room temp. to give a metalated copolymer soln. having the same intrinsic viscosity for the copolymer isolated after hydrolysis, suggesting no degrdn. or crosslinking during the metalation; the metalated copolyme had no polyelectrolyte effect in soln. *Me methacrylate* [80-62-6] was grafted onto the metalated copolymer using itself as initiator in THF at −78° for 2 hr; the conversion was 100% when the graft monomer to backbone polymer ratio was 1:1; when the metalated copolymer had >7 anions/molecule, no homopolymn. was obsd.

85013q Thermal behavior of poly(vinyl alcohol) derivatives with 2-methoxy-4-amino-6-chloro-s-triazine. Goto, Tomoko; Nagano, Masamitsu; Owaki, Masao (Dep. Fiber Polym. Technol., Nagoya Inst. Technol., Nagoya, Japan). *Kobunshi Kagaku* 1972, 29(12), 946–9 (Japan). Reaction product from



poly(vinyl alc.) [9002-89-5] and *2-methoxy-4-amino-6-chloro-s-triazine* [7254-11-7] showed exothermic peak (differential scanning calorimetry) at >200° (lower than melting or decompn. temp.), and glass transition temp., m.p., and exothermic value increased with increasing conversion. The exothermic peak was ascribed to the condensation of MeO and NH_2 groups in the triazine side chains to form ladder like structure (I) as shown by ir spectroscopy, elemental anal., and X-ray diffractometry; similar structural changes were also obsd. when *2,4-dimethoxy-6-amino-s-triazine* [16370-63-1] or *2-isopropoxy-4-methoxy-6-amino-s-triazine* [38775-27-8] was heated in vacuo.

85014r Effect of mixing on nonuniformly initiated polymerization by radiation. Kawakami, Waichiro; Machi, Sueo (Takasaki Radiat. Chem. Res. Establ., Japan At. Energy Res. Inst., Takasaki, Japan). *AIChE J.* 1973, 19(1), 94–101 (Eng). An anal. for detg. the title effect was based on the periodic irradn. of fluid elements circulating in a stirred-tank reactor having a dose-rate region and a very low dose-rate region. For eq. *acrylamide* [79-06-1] polymd. by an electron beam, the polymn. rate and no. -av. mol. wt. increased with mixing speed to give values obtained under uniform irradn. by the av. dose rate in the the reactor. Polymer bimodal mol. wt. distribution formed at low agitation speed moved to a unimodal distribution as the speed increased.

85015s Reaction of propylene sulfide with nitrogen-containing polymers. Lautenschlaeger, F.; Zeeman, P. (Dunlop Res.

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