CHEMICAL ABSTRACTS

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35—SYNTHETIC HIGH POLYMERS

H. K. LIVINGSTON

2089x **Glycol vinyl ethers.** Mikhant'ev, V. B. (Voronezh. ., Voronezh, USSR). *Tr. Voronezh. Gos. Univ.* 1969, 73(2), 5. The methods used in the synthesis of glycol vinyl ethers are ussed, without refs. The reactivity of glycols in vinylation tions increases in series: ethylene glycol vinyl ether < diethe glycol vinyl ether < triethylene glycol vinyl ether. Ethylvinyl ethylene glycol ether copolymer absorbs more moisture, is better printability than polyethylene, and it may be of in-t to the textile and printing industries.

2090r **Introduction [to macromolecular chemistry].** mpetier, G. (Fac. Sci. Paris, Paris, Fr.). *Chim. Macromol.*), 1, 9-39 (Fr). Edited by Champetier, Georges. Hermann: s, Fr. A review with no refs. of the bonding, interactions, s, stereoregularity, and nomenclature of macromols.

2091s **New photosensitive polymers.** Kato, Masao (Ind. h. Res. Inst., Tokyo, Japan). *Sen-i To Kogyo* 1971, 4(3), 7 (Japan). The synthesis of vinyl monomers contg. photoitive groups and photosensitive polymers was reviewed with eferences. Y. Kikuchi

52092t **Photochemical reactions of macromolecules.** ulz, R. C.; Boessler, H. H. (Inst. Makromol. Chem., Tech. hsch., Darmstadt, Ger.). *Umschau* 1971, 71(18), 673 (Ger). discussion of photochem. reactions in polymers including in lengthening, crosslinking, and reversible and irreversible rangements.

52093u **Texture of crystalline polymers. Brief review.** s, D. V.; Bassett, D. C. (J. J. Thomson Phys. Lab., Univ. ding, Reading, Engl.). *J. Mater. Sci* 1971, 6(7), 1021-35 g). A review with 138 refs. on cryst. polymer texture includ-ariation of chain fold length with crystn. temp., lamellar ning, polymer crystn. theories, morphol. of cryst. polymers, crystd. polymers, fold surface structure, extended-chain stals, and flow, stress, and high pressure crystn.

52094v **Polymers derived from hydrazine.** Imai, Yoshio okyo Inst. Technol., Tokyo, Japan). *Yuki Gosei Kagaku Kyo-Shi* 1971, 29(2), 97-113 (Japan). A review is given on the syn-sis of polymers derived by condensation between N_2H_4, dihy-azides, diamidrazones, dialdehydes, diketones, dicarboxylic ds (and their derivs.), tetracarboxylic dianhydrides, diisocy-ates, and diisothiocyanates. 75 refs. K. Sempuku

52095w **Radiation-induced chain reactions in polymeric stems. I. Homopolymerization of vinyl compounds.** Ka-a, Tsutomu; Hagiwara, Miyuki (Fac. Eng., Kyoto Univ., oto, Japan). *Kagaku (Kyoto)* 1971, 26(1), 73-86 (Japan). A view with 51 refs. discusses ethylene polymn. kinetics including tiation, effects of fluorinated compds., and irradn. T. Okada

52096x **Origins of the concept of high polymers. I.** Kauf-an, Morris (Rubber Plast. Process. Ind. Train. Board, Brent-d/Middlesex, Engl.). *Educ. Chem* 1971, 8(1), 26-7 (Eng). A view with no refs. Colloids and natural products are discussed th emphasis on the contributions of H. Staudinger.

52097y **Recent trends in organic reactions under high pres-res.** Terasawa, Seiji; Itsuki, Hidenori (Dep. Synth. Chem., okyo Inst. Technol., Tokyo, Japan). *Yuki Gosei Kagaku Kyo-i Shi* 1971, 29(6), 567-76 (Japan). A review with 76 refs. on the fect of pressure on rate consts., solvent dependency of the acti-tion vol., pressure dependency of polymn., and phys. properties polymer under high pressures. T. Hayakawa

52098z **Polymers with high heat stability. I. Polyimides.** abe, S. G.; De Abajo, F. J. (Inst. Plast. Caucho, Madrid, pain). *Rev. Plast. Mod.* 1971, 22(177), 382-7 (Span). A review ith 23 refs. discusses the prepn. and properties of heat resistant olyimides.

52099a **Formation of polymer crystals during polymeriza-on.** Iguchi, M.; Kanetsuna, H.; Kawai, T. (Res. Inst. Polym. ext., Yokohama, Japan). *Brit Polym J.* 1971, 3(4), 177-85 ng). A review with 54 refs. Solid-state polymn., polymn. ki-cs of polymer-precipitating systems, and the crystal formation ng the prepn. of polymethylene, polyethylene, nylon, and ytoxymethylene) are discussed.

52100u **Reactive polymers.** Imoto, Minoru (Kansai Univ., saka, Japan). *Kobunshi Kako* 1971, 20(4), 179-92 (Japan). A view with about 50 refs.

52101v **Chemical changes in polyolefins during extrusion nd their control.** Burch, G. M. (Shell Chem. (U.K.) Ltd., Carrington/Urmston/Manchester, Engl.). *Chem. Eng. (London)* 1971, No. 251, 264-9 (Eng). A review with 21 refs. The topic of the title is discussed for high- and low-d. polyethylene and polypropylene.

52102w **Thermal degradation of poly(vinyl chloride).** Braun, D. (Dtsch. Kunstst.-Inst., Darmstadt, Ger.). *Pure Appl. Chem.* 1971, 26(2), 173-92 (Eng). A review with 70 refs. Initiation sites for the thermal degradation of poly(vinyl chloride), the dehydrochlorination mechanism, polymer heat discoloration, and the effect of plasticizers on the degradation rate are discussed.

52103x **1,3-Dipolar cycloaddition and related polymerization reactions.** Marquez, C. (Cent. Nac. Quim. Organica, Spain). *Rev. Plast. Mod.* 1971, 22(179), 706-14, 716-20 (Span). A review of the cyclopolymn. of dipolar aromatic nitriliminés, nitrile oxides, sydnones, nitrones, diazo alkanes, and azides to give polyimidazoles, polytriazoles, polyoxazoles and polyoxadiazoles.

52104v **Anionic telomerizations.** Asahara, Teruzo; Seno, Manabu; Tanaka, Sadayoshi (Inst. Ind. Sci., Univ. Tokyo, Tokyo, Japan). *Yukagaku* 1971, 20(7), 385-94 (Japan). A review with 65 refs.

52105z **Optically active polyamides.** Parker, G. M. (Italy). *Nuova Chim.* 1971, 47(6), 89-94 (Ital). The prepn. and polymn. of methyl substituted hexahydro-2*H*-azepin-2-ones in an attempt to obtain optically active polyamides is reviewed with 18 refs.

52106a **Organic peroxides.** Nakashio, Y. (Sanken Chem. Co., Japan). *Enka Binüru To Porima* 1971, 11(7), 27-32 (Japan). A review on polymn. initiators with 24 refs.

52107b **Practical azo-type polymerization initiators.** Nagaoka, J.; Minamii, N. (Wako Pure Chem. Ind. Ltd., Japan). *Enka Binüru To Porima* 1971, 11(7), 17-26 (Japan). A review with 29 refs.

52108c **Structure and reactivity in copolymerization. I. Limits of the classical composition equation.** Solomon, O. F.; Vasilescu, D. S. (Rom.). *Mater. Plast. (Bucharest)* 1971, 8(7), 348-55 (Rom). A review with 72 refs. on the applicability of the Mayo-Lewis equation (1944) on the compn. of a binary copolymer.

52109d **Synthesis and properties of polyphenyls and polyphenylenes.** Speight, James G.; Kovacic, Peter; Koch, Fred W. (Prod. Res. Dev., Res. Counc. Alberta, Edmonton, Alberta). *J. Macromol. Sci., Rev. Macromol. Chem.* 1971, 5(2), 295-386 (Eng). The synthesis and properties of polyphenyls and polyphenylenes were reviewed with 410 refs.

52110x **Dependence of flow properties of polystyrene on molecular weight, temperature, and shear.** Casale, Antonio; Porter, Roger S.; Johnson, Julian F. (Polym. Sci. Eng., Univ. Massachusetts, Amherst, Mass.). *J Macromol. Sci., Rev. Macromol. Chem.* 1971, 5(2), 387-408 (Eng). The flow properties of polystyrene and their dependence on rheol., mol. wt., intrinsic viscosity, temp. and shear were reviewed with 49 refs.

52111y **Synthesis methods and properties of polyazoles.** Korshak, V. V.; Teplyakov, M. M. (Inst. Elem.-Org. Compounds, Moscow, USSR). *J. Macromol. Sci., Rev. Macromol. Chem.* 1971, 5(2), 409-50 (Eng). The synthesis, properties, and types of polyazole structural units were reviewed with 267 refs.

52112z **Evolution of long-range order in disordered systems by accumulation of small random disturbances.** Fleming, R. J. (Dep. Phys., Monash Univ., Clayton, Aust.). *J. Polym. Sci., Part B* 1971, 9(8), 573-7 (Eng). Calcns. utilizing 1-dimensional models of disordered systems indicated that long-range order in these systems, e.g. polymeric materials, was probably not derived from accumulated random disturbances of the equil. at. or mol. sepns. The calcns. did not indicate that the spatial extent of long-range order increased as positional uncertainty decreased.

52113a **Unique organosilicon polymers: design-synthesis-testing. Derivatives of eleostearic acid; synthesis-uses-potentials.** Evans, James Marcus (Univ. South. Mississippi, Hattisburg, Miss.). 1970, 161 pp. (Eng). Avail. Univ. Microfilms, Ann Arbor, Mich., Order No. 71-13,569. From *Diss. Abstr. Int. B* 1971, 31(12)(Pt. I), 7183.

52114b **Desorption method for removal of low molecular compounds from molten nylon 6.** Strek, F., Zaborowska, A.; Nastaj, J. (Politech. Szczecinska., Szczecin, Pol.). *Chem Stosow.* 1971, 15(1), 29-37 (Pol). Hot nitrogen gas was bubbled

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mineral filler. Dicumyl peroxide was used as the structure-forming agent. The polymer filler content was 30 vol. % in all cases. Max. reinforcement, heat resistance, and aging resistance of crosslinked polymer systems was established in carbon black-loaded polyethylene. Partial replacement of carbon black with chalk during polyethylene loading decreased the structure-formation effect of the compns. However, compns. contg. 20 vol. % carbon black and 10 vol. % chalk still have adequately high operational properties. Max. deformability of crosslinked polyethylene loaded with carbon black and its combination with pptd. chalk was achieved with 3–5% by wt. peroxide.

77584z Chromatographic analysis of the alcohol components of alkyd and polyester resins. Lushchik, V. I.; Zlobina, V. R.; Gomozova, V. G. (USSR). *Lakokrasoch. Mater. Ikh Primen.* 1971, (3), 41–3 (Russ). The polyol fraction of alkyd and polyester resins was analyzed quant. by aminolysis of the resin with $HO(CH_2)_2NH_2$ and acetylation of the free C_2–C_5 glycols, diethylene glycol, glycerol, trimethylolpropane, and pentaerythritol with Ac_2O; the resulting polyol acetates were analyzed with <10% error by gas-liq. chromatog. using 5% polyethylene glycol adipate on Chromosorb at 100–220° with N carrier and a flame-ionization detector.

77585a Oxidation-reduction polymers based on halomethylated polystyrenes. Ergozhin, E. E.; Rafikov, S. R.; Mukhitdinova, B. A. (Inst. Khim. Nauk, Alma-Ata, USSR). *Kinet. Mech. Polyreactions, Int. Symp. Macromol. Chem., Prepr.* 1969, 5, 71–4 (Russ). Akad. Kiado: Budapest, Hung. The exchange of Cl atom for I or Br in chloromethylated styrene-divinylbenzene copolymer (I) increased their reactivity towards quinones, trihydric phenols, alcs., or ethers. Ion exchange resins, obtained from iodomethylated or bromomethylated I, had increased ion exchange capacity due to the greater extent of halogen group replacement by redox groups. The optimum temps. and I-reactant ratios were detd.

77586b Effect of preirradiation conditions on the grafting of acrylonitrile to radiochemically peroxidized poly(vinyl chloride) films. Foex, Michele; Jendrychowska-Bonamour, Anna M. (Lab. Chim. Radiat., CNRS, Bellevue, Fr.). *Kinet. Mech. Polyreactions, Int. Symp. Macromol. Chem., Prepr.* 1969, 4, 247–9 (Fr). Akad. Kiado: Budapest, Hung. The radiochem. peroxidn. of nonplasticized PVC does not give a chain reaction, while extn. of the films with $CHCl_3$ followed by peroxidn. and grafting gives relatively short chain copolymers, possibly due to the presence of com. PVC stabilizers which inhibit peroxidn. Lucoflex and Armodour PVC films were irradiated using a Co^{60} source, plasticized with $CHCl_3$, and grafted to give acrylonitrile-peroxidized PVC graft copolymers.

77587c Thermal degradation of graft copolymers of PVC prepared by mastication with styrene and methyl methacrylate, and of further PVC mixtures and vinyl chloride copolymers. McNeill, I. C.; Neil, D.; Guyot, A.; Bert, M.; Michel, A. (Chem. Dep., Univ. Glasgow, Glasgow, Scot.). *Eur. Polym. J.* 1971, 7(5), 453–69 (Eng). Poly(vinyl chloride)-methyl methacrylate-styrene graft copolymer and poly(vinyl chloride)-styrene graft copolymer on thermal degradation showed a retardation of the dehydrochlorination reaction and gave chain fragments and no monomer during HCl production. The graft copolymers were prepd. by the mastication of poly(vinyl chloride) (I) with the corresponding monomers. Thermogravimetry, HCl titrn., thermal volatilization anal., and flash pyrolysis were used for studying degradation comparisons. Polystyrene-I mixt. behaved similarly to the corresponding graft copolymers, but vinyl chloride-styrene copolymer showed reduced stability towards dehydrochlorination and monomer production, compared with the homopolymers. Poly(α-methylstyrene)-I mixts. gave, on degradation, the monomer concurrently with HCl loss. Cl atoms are involved as chain carriers in the thermal dehydrochlorination of I.

77588d Thermal degradation of graft copolymers of PVC with methacrylates, and comparisons with the behavior of random copolymers and polymer mixtures. Guyot, A.; Bert, M.; Michel, A.; McNeill, I. C. (Inst. Rech. Catal., CNRS, Villeurbanne, Fr.). *Eur. Polym. J.* 1971, 7(5), 471–87 (Eng). The thermal degradation behavior of poly(vinyl chloride)-methacrylate graft copolymers, prepd. by the mastication of poly(vinyl chloride) (I) with a methacrylate, is more similar to that of the corresponding homopolymers mixt. than that of the corresponding random copolymers. Thermogravimetry, HCl titrn., thermal volatilization anal., and flash pyrolysis were used for studying the degradation differences. The I component in the graft copolymers showed, as in the mixed polymer systems, a retardation of HCl loss. In methacrylate-rich copolymers, a destabilization of I and the methacrylate components was obsd. The dehydrochlorination in I proceeds by a radical mechanism. The different behavior of random copolymers was caused by the reaction between adjacent methacrylate and vinyl chloride segments with the formation of lactone rings in the copolymer.

77589e Pyrolysis of poly(vinyl acetate) supported on silica. Seymour, R. C.; Westwood, A. R. (Phys. Chem. Dep., Bristol Univ., Bristol, Engl.). *Eur. Polym. J.* 1971, 7(5), 419–32 (Eng). Poly(vinyl acetate) (I) bonds to silica support bonding mechanism and on pyrolysis of the supported p AcOH was eliminated and a polycyclic aromatic com formed. A soln. of I in Me_2CO was mixed with SiO_2, the pressed into a disk, and ir measurement was made in va the pyrolyzed samples. SiO_2 had a slight stabilizing ef the polymer towards pyrolysis.

77590y Infrared spectroscopic study of the structural fication of AVKh-8P and AVI-8P anion exchangers ionizing radiation. Khasanova, V. M.; Kiseleva, I Chmumov, K. V. (Inst. Fiz. Khim., Moscow, USSR). *Z Khim.* 1971, 45(5), 1277–9 (Russ). The irradn. of AVKh AVI-8P (prepd. by treating chloromethylated divinylbe styrene copolymer with quinoline or isoquinoline resp. (B V. M.; Chupikhin, O. N., 1968)] with γ-rays in vacuu or water does not alter their ir spectra significantly. The i of these anion exchangers in 7 *N* HNO_3 causes the decr the intensity of the ir bands corresponding to NO_3^- and groups (which indicates the decrease in the no. of the i changing groups) and an increase in the CO absorption cating oxidn).

77591z Determination of the acid number of carboxy taining alkylphenol-formaldehyde oligomers. Kuz'miche I.; Filippychev, G. F. (USSR). *Lakokrasoch. Mater Primen.* 1971, (3), 44–5 (Russ). The acid no. of low-m *p-tert*-butylphenol-formaldehyde-salicylic acid copolymer detd. with <7% error either by titrn. of a dioxane soln methanolic KOH in the presence of bromophenol blue, measurement of the 1660 cm^{-1} peak in the ir spectrum.

77592a Apparatus for studying the gas permeabili polymer materials. Manusadzhyan, V. G.; Sorochishin, (USSR). *Plast. Massy* 1971, (6), 66–7 (Russ). A dif cell device is described for detg. the gas permeability of po materials under const. pressure conditions of 2–3 atm. to 1 Hg; such detn. on epoxy resin films or plates took 10–20 m

77593b Dielectric relaxation of an alkyd resin and its tions. Kaverinskii, V. S.; Yakunina, G. V.; Ermilov, (USSR). *Lakokrasoch. Mater. Ikh Primen.* 1971, (3), (Russ). The dielec. const. and the frequency of the dielec factor max. of glyptal resin and its fractions at 50 and 150 decreased with increasing mol. wt.; the former increased temp., and the latter showed 1 max. in the range 20–60°. obsd. variation in the orientational dielec. properties and cond. at 40–50° corresponded to a breakdown in seco structure and changes in intra- and intermol. interactions.

77594c Degree of curing of unsaturated polyester resin glass-fiber reinforced plastics made from them. Klaba (Vyzk. Ustav Synt. Pryskyric Laku, Pardubice, Cz *Plast. Hmoty Kauc.* 1971, 8(5), 129–31 (Czech). The deg crosslinking of cured polyester resins is characterized b concn. of unreacted styrene, the amt. of extractable ma and the content of polystyrene and unreacted double bor the extd. resin. The unreacted styrene was detd. p graphically as the pseudonitrosite. The resins were extd. $CHCl_3$ and the amt. of sol. material detd. by wt. loss or spectrometry of the ext. at 276 nm. Unreacted double and styrene units were detd. from ir spectrometry. The c of sol. material was correlated with the concn. of unre double bonds. Resins prepd. using phthalic anhydride cont some sol. material, presumably a phthalate polyester, even full crosslinking.

77595d Joint effect of fillers and plasticizers on the t strength and electrical conductivity of poly(vinyl chlo Skorospelova, E. V.; Fedoseeva, E. G.; Fel'dman, (Tsent. Nauchno-Issled. Inst. Svyazi, Moscow, USSR). *K Zh.* 1971, 33(3), 436–9 (Russ). Compn.-property diagra poly(vinyl chloride) (I) filled with carbon black, contg. cizers (tricresyl phosphate, dioctyl sebacate, or mixed phth esters), and stabilized with Pb silicate or Ca stearate, show only the optimum amts. of filler (47–8%) ensure the max. t strength at break (σ). Lower than optimum carbon black cause structural defects; too large amts. cause structure homogeneity. The elec.-vol. resistance changes with the c of filler ordering and it can be correlated with σ of I.

77596e Degradation of voidless fiber-reinforced plastic their breakdown voltage. Kadoya, Kenzo; Kasahara, toshi (Hitachi Res. Inst., Hitachi Manuf. Co., Tokyo, Ja *Kyoka Purasuchikkusu* 1971, 17(2), 49–55 (Japan). The e of thermal degradation, moisture content, and heat cycle (pe heat treatment) on rupture voltage lowering of voidless fiber reinforced epoxy resin laminates were shown graphi The thermal degradation may be prevented by coverin laminate edges with the resin impregnated glass cloth coating the edges with heat resistant paint to retard the diff of O.

77597f Diffusive and hydraulic permeabilities of wat water-swollen polymer membranes. Yasuda, H.; La C. E.; Peterlin, A. (Camille Dreyfus Lab., Res. Triangle Research Triangle Park, N.C.). *J. Polym. Sci., Part A-2* 9(6), 1117–31 (Eng). The diffusive and hydraulic permea

phys. Reinstmet., Dtsch. Akad. Wiss. Berlin, Berlin, Ger.). *Kinet. Mech. Polyreactions, Int. Symp. Macromol. Chem., Prepr.* 1969, 4, 257–63 (Ger). Akad. Kiado: Budapest, Hung. The grafting velocity of gaseous tetrafluoroethylene onto irradiated low d. polyethylene film at −10 to 80° is directly proportional to monomer concn. and increases with radical concn. to a max. at $\sim 6 \times 10^{-7}$ mole^{-1}. The initial velocity increases with temp. to a max. at ~40° and is detd. mainly by the CF_2:CF_2 permeation velocity. The initiation activation energy is 7.9 kcal/mole and for the CF_2:CF_2 permeation is 7.7 kcal/mole. Overall grafting velocity increases with temp. in the 20–60° range.

64532f Pyrolysis of plastics. V. Polypropylene. Le Moan, G.; Chaigneau, M. (Lab. Toxicol., Fac. Pharm., Paris, Fr.). *Ann. Pharm. Fr.* 1971, 29(4), 259–62 (Fr). The pyrolysis of polypropylene (I) in atms. contg. O or oxygenated compds. at 300–500° gave CO_2, CO, H, C_{1-5} satd. aliphatic hydrocarbons, polycyclic and aromatic hydrocarbons. Nonene and trimethylnonene or dodecene were detected in the degradation of I at 500° in air. Condensable degradation products were independent on the type of pyrolysis atm.

64533g Competition during charge capture by additives in γ-irradiated poly(vinyl chloride). Kotov, B. V.; Pravednikov, A. N. (Fiz.-Khim. Inst. im. Karpova, Moscow, USSR). *Dokl. Akad. Nauk SSSR* 1971, 198(1), 134–7 [Phys Chem] (Russ). The effectiveness of electron donors tri-*p*-tolylamine (I), *N,N,N',N'*-tetramethyldiaminodiphenylmethane, anthracene, and terphenyl in PVC film during charge capture competition under γ-irradn. decreased in the stated order; that of the electron acceptors 7,7,8,8-tetracyanoquinodimethan (II), tetracyanoethylene, *p*-bromoaniline, *p*-chloroaniline, duroquinone, and 1,3,5-trinitrobenzene under similar conditions decreased in the stated order. Donor-acceptor competition between I and II in PVC was approx. equal under γ-irradn., but the I radical-cation concentration exceeded the II radical-anion concn. under photoionization. Three mechanisms are proposed.

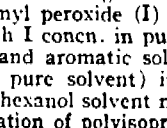
64534h Thermal degradation of polymers from lactones. Jaacks, V.; Iwabuchi, S.; Galil, F. (Inst. Org. Chem., Univ. Mainz, Mainz, Ger.). *Kinet. Mech. Polyreactions, Int. Symp. Macromol. Chem., Prepr.* 1969, 5, 375–8 (Eng). Akad. Kiado: Budapest, Hung. Kinetics of poly(propiolactone) thermal degradn. indicated that the random chain cleavage due to formation of 1 unsatd. and 1 acidic chain-end and subsequent acrylic acid cleavage from the acidic chain-end are reversible processes and that the acrylic acid polyaddn. occurs to form a polyester.

64535j Kinetic investigation of thermal degradation of polymers by dynamic thermogravimetry. Szekely, T.; Till, F.; Borossay, Gy. (Lab. Inorg. Chem., Hung. Acad. Sci., Budapest, Hung.). *Kinet. Mech. Polyreactions, Int. Symp. Macromol. Chem., Prepr.* 1969, 5, 403–7 (Eng). Akad. Kiado: Budapest, Hung. Requirements for reliable evaluation of polymer thermal degradation kinetics by dynamic thermogravimetry were discussed with 8 refs. and illustrated with SE 30, poly(dimethylsiloxane), and Teflon.

64536k Temperature dependence in the degradation of poly(vinyl chloride). Kelen, T.; Balint, G.; Tudos, F.; Galambos, G. (Cent. Res. Inst. Chem., Hung. Acad. Sci., Budapest, Hung.). *Kinet. Mech. Polyreactions, Int. Symp. Macromol. Chem., Prepr.* 1969, 5, 193–7 (Eng). Akad. Kiado: Budapest, Hung. Kinetics of the degradation of poly(vinyl chloride) (I) at 170–240° showed the formation of 2 kinds of cyclic transitional complexes having different energy content, depending on degradation temp. During the degradation, argon was bubbled through I soln. in dioctyl adipate, the dehydrochlorination was obsd. by cond. measurements and the formation of polyenes was detected photometrically.

64537m Degradation of polyisobutylene produced by dicumyl peroxide in a binary mixture of solvents. Mikulova, Z.; Lazar, M. (Polym. Inst., Slovak Akad. Sci., Bratislava, Czech.). *Kinet. Mech. Polyreactions, Int. Symp. Macromol. Chem., Prepr.* 1969, 5, 335–40 (Eng). Akad. Kiado: Budapest, Hung. Thermal degradation of polyisobutylene in the presence of dicumyl peroxide (I) in various solvent mixts. increased linearly with I concn. in pure solvents, exhibited additivity in aliphatic and aromatic solvent mixts., but was reduced (compared to pure solvent) in cyclohexane (II)-alkylaromatic and II-cyclohexanol solvent mixts.

64538n Hydroboration of polyisoprenes and polybutadienes. Levesque, Guy; Pinazzi, Christian (Lab. Chim. Org. Macromol., Le Mans, Fr.). *Bull. Soc. Chim. Fr.* 1971, (3), 1008–10 (Fr). 3,4-Polyisoprene and polybutadiene reacted quant.



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with dicyclohexylborane and H_2O_2-NaOH to give 3-dimensional sol. satd. polyols by anti-Markovnikov hydration. *cis*-1,4-Polyisoprene was treated similarly with 1,1,2-trimethylpropylborane and H_2O_2-NaOH to give (I).

64539p Interaction between polyions and counterions. Potentiometric study of poly(acrylic acid) neutralized with ; line earth metal hydroxides in dilute aqueous solutions. V czak, Zbigniew (Univ. Torun, Torun, Pol.). *Rocz. Chem.* 45(2), 237–45 (Eng). A shift toward lower pH values, v increases in the order $Ba(OH)_2$ < NaOH < $Ca(OH)_2$, o during the neutralization of poly(acrylic acid) with the 3 b as obsd. by potentiometry. A conformational transition o polymer causes inflections in the potentiometric curves obta with $Ba(OH)_2$ and NaOH.

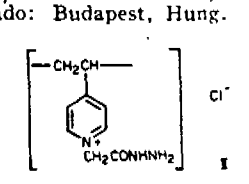
64540g Analysis with a pyrolysis-gas chromatograph-r spectrometer system. Polyimides. Butt, P. I.; Cotter L. (R. Aircr. Establ., Farnborough, Engl.). *U.S. Clea house Fed. Sci. Tech. Inform., AD* 1970, No. 717860, 23 (Eng). Avail. NTIS. From *Govt. Rep. Announce.* (U 1971, 71(6), 53. CO, CO_2, and SiF_4 were identified as the m pyrolysis products of a polyimide and perfluoroalkylene-li polyimides using a gas chromatograph-mass spectrometer tem. Thermal decompn. schemes were developed and re obtained with model compds. suggested that perfluoroalky groups had a greater effect on the electron-impact behavic the imide ring than on its thermal breakdown.

64541h Effect of substituents on chain transfer reactivi III. Effect of aromatic nitro compounds on the retardatio polymerization of styrene. Ota, Tadatoshi; Masuka, S Aoyama, Chiyoko (Fac. Eng., Tokushima Univ., Tokush Japan). *Kogyo Kagaku Zasshi* 1971, 74(5), 998–1001 (Jap Radical polymn. of styrene at 60° was inhibited by the pres of 0.1 mole/l. *p*- and *m*-substituted nitrobenzene, such as *p*-thoxynitrobenzene, or *m*-methylnitrobenzene. The polarit the substituents contributed to the chain transfer reactivitic the substituted nitrobenzenes toward polystyrene radical.

64542j Effect of ultraviolet irradiation on polyethylene sistance to partial discharge action. Il'chenko, N. S.; I lenko, V. M. (USSR). *Vestn. Kiev. Politekh. Inst. Ser. Ra elektron* 1969, No. 6, 110–15 (Russ). From *Ref. Zh., Kh* 1970, Abstr. No. 11S408. The stability of polyethylene to tial discharge increased after prior uv irradn. Polyethy film 100 μ thick was studied; the irradn. time of film by a PR tube in the air was 0, 1, 6, 15, and 60 hr. Polyethylene stab was evaluated with time to breakdown during same inter partial discharge action. Irradn. of polyethylene incre the service life 50% times during tests. The effectiveness creased with greater irradn. time. A possible explanation the process is a free-radical mechanism of degradation of p ethylene by partial discharge.

64543k Thermal degradation of styrene block copolyr and dibasic aliphatic acid polymer peroxides. Tsvetkov, S.; Markovskaya, R. F. (USSR). *Khim. Khim. Tekh* 1969, No. 2, 111–13 (Russ). From *Ref. Zh., Khim.* 1 Abstr. No. 11S367. Thermal degradation of styrene b copolymers and sebacic acid polymer peroxides in the solid p at 60–80° occurred by a unimol. mechanism. Thermal degr tion rate consts. at 60, 65, 70 and 75° were 1.14, 2.32, 4.35, 8.28 × 10^{-5} sec^{-1}, resp.; the total activation energy is kcal/mole. A styrene block copolymer and a nonanedicarbox acid polymer peroxide decompd. by a monomol. mechanis the same reaction rate. Degradation of peroxide bonds in s polymers did not affect the d.p. A similar process in PhM the presence of free-radical deactivator decreased the mol. of the polymer.

64544m Preparation and reactions of polymeric Gi reagents. Greber, G.; Merchant, S. (Inst. Makromol. Ch Univ. Freiburg/Br., Freiburg/Br., Ger.). *Kinet. Mech. I reactions, Int. Symp. Macromol. Chem., Prepr.* 1969, 5, 1 (Ger). Akad. Kiado: Budapest, Hung. Treatment of p



I

(4-vinylpyridine) or a 4-vinylpyridine-styrene copolymer $BrCH_2CO_2Et$ or $ClCH_2CO_2Et$ and then with hydrazine hyd gives polymers contg. Girard's P reagent units, e.g., carb methylpyridinium chloride hydrazide units (I), that have reactivity of nonpolymeric units even if the polymer is c linked with divinylbenzene.

64545n Radical kinetics in vacuum-irradiated poly(v chloride) (PVC). Bartl, A. (Inst. Metallphys., Reinstm Dresden, Ger.). *Kinet. Mech. Polyreactions, Int. Symp. Ma mol. Chem., Prepr.* 1969, 5, 209–14 (Ger). Akad. Kiado: Bu pest, Hung. The radical kinetics detd. by EPR for vacu irradiated PVC at 20–90° correspond to literature values, the radical decay curve at 40–90° is explained by a cage m for radical recombination.

64546p Kinetics of the thermal degradation of polystyre Vasile, Cornelia; Cascaval, C. N.; Schneider, Ioan Adam (