

**The Papers Published by the Staff Members of the
Institute from July 1979 to June 1980**

Nuclear Chemistry

Electronic Relativistic Effects in Inner-Shell Ionization by Heavy Charged-Particle Impact. T. Mukoyama and L. Sarkadi. *Atomic Collision Research in Japan*, **5**, 33 (1979).

Localized Spin Fluctuations in 4d and 5d Transition Metals with Iron Impurities. T. Takabatake, H. Mazaki, and T. Shinjo. *Bull. Inst. Chem. Res., Kyoto Univ.*, **58**, 29 (1980).

Excess Quasiparticles in Sn-SnO₂-Sn Tunnel Junction by Charged Particles. M. Kurakado, H. Mazaki, and S. Tachi. *Bull. Inst. Chem. Res., Kyoto Univ.*, **58**, 45 (1980).

Gravitational Effect on Internal Conversion. T. Mukoyama and R. Katano. *Bull. Inst. Chem. Res., Kyoto Univ.*, **58**, 56 (1980).

A Computer Code for K- and L-Shell Ionization Cross Sections in the Plane-Wave Born Approximation. T. Mukoyama and L. Sarkadi. *Bull. Inst. Chem. Res., Kyoto Univ.*, **58**, 60 (1980).

Electronic Wave Functions for Helium-Like Atoms. T. Mukoyama. *Bull. Inst. Chem. Res., Kyoto Univ.*, **58**, 67 (1980).

Effect of Electronic Correlation on Atomic Excitation Probability Accompanying β Decay. T. Mukoyama. *Bull. Inst. Chem. Res., Kyoto Univ.*, **58**, 71 (1980).

Study of the Emission of Low-Energy Positrons from MgO. Y. Nakayama, T. Mizogawa, and T. Kawaratani. *Bull. Inst. Chem. Res., Kyoto Univ.*, **58**, 88 (1980).

Plane-Wave Born-Approximation Calculations of K- and L-Shell Ionization by Heavy Charged Particles. T. Mukoyama and L. Sarkadi. *Bull. Inst. Chem. Res., Kyoto Univ.*, **58**, 95 (1980).

Estimation of Chemical Effect on the Decay of ^{99m}Tc. T. Mukoyama, H. Mazaki, S. Kakiuchi, and M. Matsui. *Bull. Inst. Chem. Res., Kyoto Univ.*, **58**, 164 (1980).

Single-Quantum Annihilation of Positrons with K-Shell Electrons. T. Mukoyama, H. Mazaki, and S. Shimizu. *Phys. Rev. A*, **20**, 82 (1979).

Superconducting Transition of Electrodeposited Technetium. T. Ishida and H. Mazaki. *Phys. Rev. B*, **20**, 131 (1979).

Local Magnetization of Dilute Fe in Tc, Ru, and Ir from Mössbauer Measurements. T. Takabatake, H. Mazaki, and T. Shinjo. *Phys. Rev. B*, **21**, 2706 (1980).

Effect of Chemical State on the Decay Constant of ^{99m}Tc . H. Mazaki, S. Kakiuchi, T. Mukoyama, and M. Matsui. *Phys. Rev. C*, **21**, 344 (1980).

Nuclear Excitation of ^{111}Cd by Positron Annihilation. Y. Watanabe, T. Mukoyama, and S. Shimizu. *Phys. Rev. C*, **21**, 1753 (1980).

Electronic Relativistic Effects in L-Shell Ionization by Charged-Particle Impact. T. Mukoyama and L. Sarkadi. *Abst. XI Intern. Conf. on the Physics and Electronic Collisions, Kyoto*, 1979, 671 (1979).

K_{β}/K_{α} Intensity Ratios and Energy Shifts of K_{β} Rays Produced by N-Ion Impact. T. Mukoyama, L. Sarkadi, D. Berényi, and E. Koltay. *Abst. 6th Intern. Seminar on Ion-Atom Collisions, Tokai*, 16 (1979).

Static and Dynamic Characteristics in the Superconducting State. H. Mazaki. *Low Temp. Lab., Kyoto Univ., Geppo*, **41**, 1 (1980), Note, in Japanese.

Cross Assembler/Editor Program of HP2100 to Use INTEL 8085. T. Higo and Y. Iwashita. *Bull. Inst. Chem. Res., Kyoto Univ.*, **58**, 1 (1980).

Model Experiments for rf Structure of Kyoto University Superconducting Cyclotron. H. Takekoshi and T. Miyanaga. *Bull. Inst. Chem. Res. Kyoto Univ.*, **58**, 5 (1980).

PIXE Analysis Using Kyoto University Cyclotron. T. Igaki, T. Hanai, T. Nishidai, M. Abe, and H. Takekoshi. *Bull. Inst. Chem. Res. Kyoto Univ.*, **58**, 11 (1980).

Field Stability Improvement of the Kyoto University Cyclotron. Y. Iwashita. *Bull. Inst. Chem. Res., Kyoto Univ.*, **58**, 25 (1980).

Magnetic Field Trimming Effect of Saturated Ferromagnetic Rods. Y. Iwashita, T. Higo, and K. Kuroki. *Bull. Inst. Chem. Res., Kyoto Univ.* **58**, 78 (1980).

Excitation of 6^+ , 8^+ , 10^+ and 9^- States in ^{122}Sn by Reactions (p, t) and

(p, p'). I. Kumabe, M. Hyakutake, M. Inoue, K. Hosono, K. Yuasa, B. Saeki, T. Yamagata, S. Kishimoto, T. Yanabu, T. Higo, Y. Iwashita, K. Ogino, and N. Sakamoto. *J. Phys. Soc. Japan*, **47**, 673 (1979).

Excited States of ^4He Observed in the $^4\text{He}(\alpha, \alpha d)^2\text{H}$ Reaction at 119 MeV. S. Kakigi, K. Fukunaga, T. Ohsawa, S. Tanaka, A. Okihana, H. Nakamura-Yokota, T. Sekioka, and N. Fujiwara. *J. Phys. Soc. Japan*, **48**, 1797 (1980).

Average Neutron Capture Cross Sections of ^{151}Eu and ^{153}Eu from 3 to 100 keV. M. Mizumoto, A. Asami, Y. Nakajima, Y. Kawarasaki, T. Fuketa, and H. Takekoshi. *J. Nucl. Sci. Tech.*, **16**, 711 (1979).

Continuum Energy Spectra of ^3He Scattered by ^3He at 120 MeV. S. Tanaka, N. Fujiwara, K. Fukunaga, T. Higo, T. Ohsawa, A. Okihana, T. Sekioka, T. Miyanaga, and T. Yanabu. *Nucl. Phys.*, **A341**, 199 (1980).

Analytical Chemistry

The Solvent Extraction of Europium and Barium with 1-Aryl-3-Methyl-4-Aroyl-5-Pyrazolones. S. Umetani, M. Matsui, J. Tôei, and T. Shigematsu. *Anal. Chim. Acta*, **113**, 315 (1980).

Nonaqueous Liquid-Liquid Extraction. Extraction of Zinc from Methanol-Water Solution of Chloride by Trioctyl-phosphine Oxide in Decaline. M. Matsui, H. Doe, T. Hirade, and T. Shigematsu. *Anal. Lett.*, **12 (A13)**, 1385 (1979).

Thermodynamics of 1 : 1 Adduct-formation of Bis(trifluoroacetylacetonato)copper(II) with Lewis Bases. Y. Sasaki, M. Sakurada, M. Matsui, and T. Shigematsu. *Bull. Chem. Soc. Japan*, **52**, 2295 (1979).

4-Acyl-5-Pyrazolones as an Analytical Reagent (II). Applicability of Halogen Substituted 4-Acyl-5-Pyrazolones to the Solvent Extraction of Metals. M. Matsui, J. Tôei, S. Umetani, and T. Shigematsu. *Bull. Inst. Chem. Res., Kyoto Univ.*, **57**, 337 (1979).

Nonaqueous Liquid-Liquid Extraction: Solvent Extraction Studies of Zinc Chloride and Perchlorate Complexes in Glycols. H. Doe, M. Matsui, and T. Shigematsu. *Bull. Inst. Chem. Res., Kyoto Univ.*, **57**, 343 (1979).

Forced-Flow Chromatography of Alkali Earth Ions Detected by Photometric Method. T. Kumagai, M. Matsui, T. Aoki, A. Yamashita, and T. Shigematsu. *Bull. Inst. Chem. Res., Kyoto Univ.*, **57**, 349 (1979).

Effect of Chemical State on the Decay Constant of $^{99}\text{Tc}^m$. H. Mazaki, S.

Kakiuchi, T. Mukoyama, and M. Matsui. *Phys. Rev. C*, **21**, 344 (1980).

Investigation of Ionization Behavior of Europium in Nitrous Oxide-Acetylene Flame Using Atomic Absorption Method. T. Shigematsu, M. Matsui, and O. Fujino. *Bunseki Kagaku (Japan Analyst)*, **29**, 199 (1980), in Japanese

Physical Chemistry

Evaluation of the Relaxation Intensity from Dielectric Loss Data. Y. Kita and N. Koizumi. *Adv. Mol. Relax.*, **15**, 261 (1979).

Dielectric Theory of Concentrated Suspensions of Shell-Spheres in Particular Reference to the Analysis of Biological Cell Suspensions. T. Hanai, K. Asami, and N. Koizumi. *Bull. Inst. Chem. Res., Kyoto Univ.*, **57**, 297 (1979).

PIXE Analysis Using Kyoto University Cyclotron. T. Igaki, T. Hanai, T. Nishida, M. Abe, and H. Takekoshi. *Bull. Inst. Chem. Res., Kyoto Univ.*, **58**, 11 (1980).

Dielectric Approach to Suspensions of Ellipsoidal Particles Covered with a Shell in Particular Reference to Biological Cells. K. Asami, T. Hanai, and N. Koizumi. *Japanese J. Applied Phys.*, **19**, 359 (1980).

A Dielectric Theory of "Multi-Stratified Shell" Model with its Application to a Lymphoma Cell. A. Irimajiri, T. Hanai, and A. Inoue. *J. Theor. Biol.*, **78**, 251 (1979).

Dielectric Relaxation of Poly(trifluoroethylene). N. Koizumi, J. Hagino, and Y. Murata. *Rep. Prog. Polym. Phys. Japan*, **22**, 389 (1979).

Dielectric Relaxation of Poly(trifluoroethylene). Y. Murata, J. Hagino, and N. Koizumi. *Kobunshi Ronbunshu (The Society of Polymer Science, Japan)*, **36**, 697 (1979). in Japanese.

High Voltage Electron Microscopy for Image Discrimination of Constituent Atoms in Crystals and Molecules. N. Uyeda, T. Kobayashi, K. Ishizuka, and Y. Fujiyoshi. *Chemica Scripta*, **14**, 47 (1978-79).

Crystal Structure of Ag-TCNQ. N. Uyeda, T. Kobayashi, K. Ishizuka, and Y. Fujiyoshi. *Nature*, **285**, 95 (1980), Review.

Contrast Transfer of Crystal Images in TEM. K. Ishizuka. *Ultramicroscopy*, **5**, 55 (1980).

Introduction to Particle Size Measurements. M. Arakawa. *Funtai Kogaku*

Kai-shi (J. Soc. Powder Technology, Japan), **17**, 299 (1980). Review, in Japanese.

High Resolution CTEM and Image Processing. N. Uyeda, and T. Kobayashi. *Nihon Kessho Gakkai-shi (J. Cryst. Soc. Japan)*, **21**, 137 (1979). in Japanese.

High Resolution Electron Microscopy and Its Limitation. N. Uyeda. *Saibo (Cell)*, **11**, 536 (1979), in Japanese.

Limitations in High Resolution Electron Microscopy to Biological Materials. T. Kobayashi. *Saibo (Cell)*, **11**, 545 (1979), in Japanese.

Cohesion of Powder Particles with Water (Rheological Property of Powder-Water-Oil System). M. Nishino. *Zairyo (J. Soc. Materials Science, Japan)*, **28**, 778 (1979), in Japanese.

Application of Raman Spectroscopy to Studies of Surface Chemistry. T. Takenaka. *Advances in Colloid and Interface Science*. Ed. A.C. Zettlemoyer, Elsevier, **11**, 291 (1979), Review.

Resonance Raman Spectra of Thin Layers Adsorbed at the Solid-Liquid Interface. T. Takenaka and K. Yamasaki. *Proc. 7th Int. Conf. on Raman Spectrosc., Ottawa*, 428 (1980).

Structural Studies of Poly- γ -Benzyl-L-Glutamate Monolayers by Infrared ATR and Transmission Spectra. T. Takenaka, K. Harada, and M. Matsumoto. *J. Colloid Interface Sci.*, **73**, 569 (1980).

Infrared Spectra of Tetracyanothiophene Anion Radicals. J. Nakanishi, J. Umemura, and T. Takenaka. *Spectrochim. Acta*, **36A**, 109 (1980), Note.

Vibrational Spectra and Normal Vibrations of Tetracyanothiophene Anion Radicals. J. Nakanishi, J. Umemura, and T. Takenaka. *Bull. Inst. Chem. Res., Kyoto Univ.*, **57**, 329 (1979).

Raman Study of Relaxation Processes in Aqueous Thiocyanate Solutions. T. Katō and T. Takenaka. *Proc. 3rd Int. Congr. Quantum Chem., Kyoto*, 30-S-13 (1979).

The Correlation between O-H Stretching Frequencies and Hydrogen Bond Distances in a Crystalline Sugar Monohydrate. J. Umemura, G. I. Birnbaum, D. R. Bundle, W. F. Murphy, H. J. Bernstein, and H. H. Mantsch. *Can. J. Chem.*, **57**, 2640 (1979).

Fourier Transform Infrared Spectroscopy of Aqueous Systems: Applications to the Study of Biological Membranes. H. H. Mantsch, D. G.

Cameron, J. Umemura, and H. L. Casal. *J. Mol. Struct.*, **60**, 263 (1980).

FT-IR Studies of Phase Transitions: Soaps, Alkanes, Fatty Acids, Lipids and Charge Transfer Complexes. D. G. Cameron, H. H. Mantsch, H. L. Casal, and J. Umemura. *Digilab Users Conference June 1980, Digilab Inc., Cambridge, Mass.*, 134 (1980).

The Thin Film between Glass and Mercury Surfaces in an Aqueous Solution. M. Matsumoto and T. Takenaka. *Proc. 3rd Int. Conf. Surface and Colloid Sci., Stockholm*, 270 (1979).

The Adhesion, Wetting, Detergency and Intermolecular Interaction Energies. M. Matsumoto. *Auto-Chemicals*, **3**, 51, 99 (1979), Review, in Japanese.

Inorganic Chemistry

Preparation of $\text{Li}_2\text{O}\cdot 2\text{SiO}_2$ Ceramics with Oriented Microstructures by Unidirectional Solidification of Their Melts. T. Kokubo, M. Arioka, and M. Tashiro. *Bull. Inst. Chem. Res., Kyoto Univ.*, **57**, 355 (1979).

Glass Formation in the Systems (CdO or PbO)- Bi_2O_3 - Al_2O_3 and Infrared Transmissions of Their Glasses. T. Kokubo, S. Naito, and M. Tashiro. *Yogyo-Kyokai-Shi (Journal of the Ceramic Association, Japan)*, **87**, 453 (1979), in Japanese.

Fabrication of Oriented β -Spodumene Ceramics by Unidirectional Solidification of Their Melts. M. Arioka, T. Kokubo, and M. Tashiro. *Yogyo-Kyokai-Shi (Journal of the Ceramic Association, Japan)*, **88**, 128 (1980), in Japanese.

ENDOR Spectrum of Some Dihydro-1,4-dethiin Cation Radical. K. Watanabe, Y. Nagao, E. Fujita, and K. Ishizu. *Bull. Chem. Soc. Japan*, **52**, 2142 (1979), Note.

Electronic Structures of Purine Bases Studied by Electrochemical-ESR Techniques. Spin Distribution in Purine Anion Radical. H. Ohya-Nishiguchi, Y. Shimizu, N. Hirota, and K. Watanabe. *Bull. Chem. Soc. Japan*, **53**, 1252 (1980).

Transformation Products of Iron(III) Hydroxide by Hydrolysis at Elevated Temperatures between 50 and 90°C. M. Kiyama and T. Takada. *Bull. Inst. Chem. Res., Kyoto Univ.*, **58**, 193 (1980).

Interface Magnetism by Mössbauer Spectroscopy. T. Shinjo, S. Hine, N. Hosoi, and T. Takada. *J. Mag. Mag. Mat.*, **15-18**, 1105 (1980).

Mössbauer Effect of Amorphous Fe-Sb Thin Films. T. Shigematsu, T.

Shinjo, and T. Takada. *J. Mag. Mag. Mat.*, **15-18**, 1367 (1980).

Magnetic Hyperfine Field at ^{119}Sn in Fe_3O_4 and $\gamma\text{-Fe}_2\text{O}_3$. T. Shigematsu, H. Torii, M. Kiyama, T. Shinjo, and T. Takada. *J. Phys. Soc. Japan*, **48**, 689 (1980).

The Surface Magnetism of Thick Fe Films Coated by MgO , MgF_2 and Sb . S. Hine, T. Shinjo, and T. Takada. *J. Phys. Soc. Japan*, **47**, 767 (1979).

The Formation of the Ferromagnetic Precipitates of $\text{Fe}_{1-x}\text{Sn}_x\text{O}_{4/3}$ with $x \leq 0.110$ from Aqueous Suspensions. H. Torii, T. Shigematsu, M. Kiyama, T. Shinjo, and T. Takada. *Nippon Kagaku Kaishi (J. Chem. Soc. Japan, Chemistry and Industrial Chemistry)*, 24 (1980), in Japanese.

Cation Distribution and Some Properties of Brownmillerite Phase $\text{Ca}_2\text{Fe}_{2-2x}\text{Mn}_x\text{M}_x\text{O}_5$ ($\text{M}=\text{Mg}, \text{Ni}, \text{Zn}$). T. Akiyama, Y. Bando, and T. Takada. *Bull. Inst. Chem. Res., Kyoto Univ.*, **58**, 252 (1980).

Crystal Orientation of Spinel Type Ferrite during Solid-Solid Reaction. Y. Ikeda, Y. Bando, and T. Takada. *Bull. Inst. Chem. Res., Kyoto Univ.*, **58**, 260 (1980).

Mössbauer Effect of Amorphous Fe-Sb Thin Films. T. Shigematsu, T. Shinjo, Y. Bando, and T. Takada. *J. Mag. Mag. Mat.*, **15-18**, 1367 (1980).

Magnetic Properties of Amorphous Iron(III) Oxide Thin Films. T. Shigematsu, Y. Bando, and T. Takada. *Journal de Physique*, **40**, C2-52 (1979).

Embryo in Co-precipitation Reaction. Y. Bando. *Ceramics*, **14**, 886 (1979), Review, in Japanese.

Recent topics on Mixed Valence Compounds. Y. Bando and Y. Ueda. *Kagaku (Chemistry)*, **35**, 315 (1980), Review, in Japanese.

Organic Chemistry

Asymmetric Borohydride Reduction of Ketones in the Presence of Chiral Crown Ethers. Y. Shida, N. Ando, Y. Yamamoto, J. Oda, and Y. Inouye. *Agric. Biol. Chem.*, **43**, 1797 (1979), Communication.

Phase Transfer Catalysis; Nucleophilic Substitution of β -Bromohydrins with Anions in Solid-Liquid System. N. Uchida, Y. Nakajima, J. Oda, and Y. Inouye. *Agric. Biol. Chem.*, **43**, 2169 (1979).

Asymmetric Reduction of Ketones with Sodium Borohydride in the Presence of Phase Transfer Catalysts. R. Kinishi, N. Uchida, Y. Yamamoto, J. Oda, and Y. Inouye. *Agric. Biol. Chem.*, **44**, 643 (1980).

Effect of Complexation by Crown Ethers on Anisochrony of Diastereotopic Groups in NMR Spectra. N. Ando, Y. Yamamoto, J. Oda, and Y. Inouye. *Bull. Chem. Soc. Japan*, **52**, 2369 (1979).

Asymmetric Reduction of α , β -unsaturated Iminium Salts with 1,4-Dihydronicotinamide Sugar Pyranosides. N. Baba, T. Makino, J. Oda, and Y. Inouye. *Can. J. Chem.*, **58**, 387 (1980).

NADH Model Reaction. Importance of Hydroxy-groups in the Asymmetric Reduction of Ethyl Benzoylformate. T. Makino, T. Nunozawa, N. Baba, J. Oda, and Y. Inouye. *J. Chem. Soc., Perkin Trans. I*, **7** (1980).

ENDOR Spectrum of Some Dihydro-1,4-dithiin Cation Radical. K. Watanabe, Y. Nagao, E. Fujita, and K. Ishizu. *Bull. Chem. Soc. Japan*, **52**, 2141 (1979), Note.

The Chemistry on Diterpenoids in 1978. Part-II. E. Fujita, K. Fuji, Y. Nagao, and M. Node. *Bull. Inst. Chem. Res., Kyoto Univ.*, **57**, 385 (1979), Review.

A Versatile Synthesis of (\pm)-Solenopsin A. K. Fuji, K. Ichikawa, and E. Fujita. *Chem. Pharm. Bull.*, **27**, 3183 (1979), Note.

Utilization of Derivatives of Thiazolidine-2-thione: Esterification. Y. Nagao, M. Hayashi, and E. Fujita. *Chem. Pharm. Bull.*, **28**, 1245 (1980).

Monitored Aminolysis of 3-Acylthiazolidine-2-thione: A New Synthesis of Macrocyclic Amides. Y. Nagao, K. Seno, T. Miyasaka, and E. Fujita. *Chem. Lett.*, 159 (1980), Communication.

Structures of Shikoccin, a Unique 8,9-Seco-ent-kaurene Diterpenoid, and Shikoccidin (X-Ray Crystallography), a New Penta-oxygenated ent-Kaurene Diterpenoid. E. Fujita, N. Ito, I. Uchida, and K. Fuji. *J. Chem. Soc., Chem. Commun.*, 806 (1979), Communication.

Lythraceous Alkaloids. Part 11. Total Synthesis of (\pm)-Lythranidine. K. Fuji, K. Ichikawa, and E. Fujita. *J. Chem. Soc., Perkin Trans. I*, 1066 (1980).

Biosynthesis of Natural Products. Part 4. Biosynthesis of Enmein and Oridonin from Mono- or Di-oxygenated Kaurenoids. T. Fujita, S. Takao, and E. Fujita. *J. Chem. Soc., Perkin Trans. I*, 2468 (1979).

A New Convenient Synthesis of γ -Keto-sulfoxide. Y. Nagao, K. Seno, and E. Fujita. *Tetrahedron Lett.*, 3167 (1979), Communication.

A New General Method for Synthesis of Ketene Dithioacetal. Y. Nagao,

K. Seno, and E. Fujita. *Tetrahedron Lett.*, 4403 (1979), Communication.

Monitored Aminolysis of 3-Acylthiazolidine-2-thione: A New Convenient Synthesis of Amide. Y. Nagao, K. Seno, K. Kawabata, T. Miyasaka, S. Takao, and E. Fujita. *Tetrahedron Lett.*, **21**, 841 (1980), Communication.

The Protecting Group in Organic Synthesis — Its Recent Progress. E. Fujita. *Farumashia (Pharmacy)*, **16**, 324 (1980), Review, in Japanese.

Reactions and Syntheses of Kaurene and Its Related Diterpenes. E. Fujita, and M. Ochiai. *Kagaku no Ryoiki (J. Japanese Chemistry) Zokan, Tennenbutsu Kagaku '80A*, 135 (1980), Review, in Japanese.

Syntheses of Some Macrocyclic Alkaloids. E. Fujita. *Yuki Gosei Kagaku Kyokai-shi (Journal of Synthetic Organic Chem., Japan)*, **38**, 333 (1980), Review, in Japanese.

Reduction by a Model of NAD(P)H. XXIII. Kinetics for the Reduction of 2-Acylpyridines. A. Ohno, S. Yasui, R. A. Gase, S. Oka, and U. K. Pandit. *Bioorganic Chem.*, **9**, 199 (1980).

Photochemical Reduction of Di-*t*-butyl Thioketone. A. Ohno, M. Uohama, K. Nakamura, and S. Oka. *Bull. Chem. Soc. Japan*, **52**, 1521 (1979), Note.

Reduction of Transition-metal Salts by *N*-Propyl-1,4-dihydronicotinamide. T. Okamoto, A. Ohno, and S. Oka. *Bull. Chem. Soc. Japan*, **52**, 3745 (1979), Note.

A Kinetic Study of the Reaction of 1-Propyl-1,4-dihydronicotinamide with Hexacyanoferrate (III). T. Okamoto, A. Ohno, and S. Oka. *Bull. Chem. Soc. Japan*, **53**, 330 (1980).

Reduction by a Model of NAD(P)H. 25. A Chiral Model Which Induces High Asymmetry. A. Ohno, M. Ikeguchi, T. Kimura, and S. Oka. *J. Amer. Chem. Soc.*, **101**, 7036 (1979).

Reaction of 2,2,4,4-Tetramethylpentane-3-thione *S*-Oxide (Di-*tert*-butylsulfine) with Grignard Reagents. A. Ohno, M. Uohama, K. Nakamura, and S. Oka. *J. Org. Chem.*, **44**, 2244 (1979).

Reduction by a Model of NAD(P)H. 26. Reduction of C=C Bond in 1,3,5-Trinitrobenzene. A. Ohno, H. Yamamoto, and S. Oka. *Tetrahedron Lett.*, 4061 (1979), Letter.

Reduction by a Model of NAD(P)H. 31. Syntheses and Reactions of Keratin-Bound Coenzyme-Models. A. Ohno, S. Ushida, and S. Oka. *Tetra-*

hedron Lett., 2969 (1980), Letter.

Ring-opening Reaction of Oxiranes, Oxetanes, and Tetrahydropyran by Mercury(II) Salts and Alkyl Halides. N. Watanabe, S. Uemura, and M. Okano. *Bull. Chem. Soc. Japan*, **52**, 3611 (1979).

Phenyl- and Tolythallium(III) Bis(trichloroacetate)s; Preparation and Reactions. S. Uemura, H. Miyoshi, M. Wakasugi, M. Okano, O. Itoh, T. Izumi, and K. Ichikawa. *Bull. Chem. Soc. Japan*, **53**, 553 (1980). Note.

The Reaction of Olefins with Chloroalkoxyalkanes and Formic Acid in Ether. K. Nishiura, T. Tagano, Y. Wada, S. Tanimoto, and M. Okano. *Bull. Chem. Soc. Japan*, **53**, 1376 (1980).

The Chloriodination of Deactivated Olefins with Antimony (V) Chloride-Iodine and Iodine Monochloride. S. Uemura, S. Fukuzawa, M. Okano, and S. Sawada. *Bull. Chem. Soc. Japan*, **53**, 1390 (1980).

Regio- and Stereospecific Z-Iodo- and Z-Bromochlorination of Alkylphenylacetylenes via Z-Chlorotelluration. S. Uemura, H. Miyoshi, and M. Okano. *Chem. Lett.*, 1357 (1979), Letter.

Facile Preparation of Cyclic Ethers by Oxyselenation of Diolefins. S. Uemura, A. Toshimitsu, T. Aoai, and M. Okano. *Chem. Lett.*, 1359 (1979), Letter.

Asymmetric Reactions in Chiral Hydrophobic Binding Sites. T. Sugimoto and N. Baba. *Isr. J. Chem.* **18**, 214 (1979), Review.

Oxyselenation of Cyclo-octa-1,5-diene. Solvent-controlled Formation of 9-oxabicyclo-[3.3.1]- and -[4.2.1]-nonane Derivatives. S. Uemura, A. Toshimitsu, T. Aoai, and M. Okano. *J. Chem. Soc., Chem. Commun.*, 610 (1979), Communication.

Stereoselective Formation of Aromatic Sulphoxides by Oxidation of Sulphides and Sulphoxides in the Presence of Bovine Serum Albumin. T. Sugimoto, T. Kobubo, J. Miyazaki, S. Tanimoto, and M. Okano. *J. Chem. Soc., Chem. Commun.*, 1052 (1979), Communication.

Highly Convenient Method for Hydroxyselenation of Olefins. A. Toshimitsu, T. Aoai, H. Owada, S. Uemura, and M. Okano. *J. Chem. Soc., Chem. Commun.*, 412 (1980), Communication.

Oxidation of *p*-Methoxytoluene by Manganese(III) and Iron(III) Acetates in the Presence of Strong Acid. S. Uemura, T. Ikeda, S. Tanaka, and M. Okano. *J. Chem. Soc., Perkin Trans. I*, 2574 (1979).

Regio- and Stereo-Selectivity of Acetoxymercuration of Acetylenes. S. Uemura, H. Miyoshi, and M. Okano. *J. Chem. Soc., Perkin Trans. I.*, 1098 (1980).

Facile Oxyselenation of Olefins in the Presence of Copper (II) or Copper (I) Chloride as Catalyst. A. Toshimitsu, T. Aoai, S. Uemura, and M. Okano. *J. Org. Chem.*, **45**, 1953 (1980).

A New Synthesis of 1,3-Diarylisobenzofurans. T. Oida, S. Tanimoto, T. Sugimoto, and M. Okano. *Synthesis*, 131 (1980). Communication

Phenylselenenyl Chloride as a Reagent for the Facile Preparation of Cyclic Ethers from Diolefins. S. Uemura, A. Toshimitsu, T. Aoai, and M. Okano. *Tetrahedron Lett.*, **21**, 1533 (1980), Letter.

Stereochemistry and Mechanism of the Copper(I) Halide Cleavage of Thallium-Carbon Bonds. J. E. Bäckvall, M. U. Ahmad, S. Uemura, A. Toshimitsu, and T. Kawamura. *Tetrahedron Lett.*, **21**, 2283 (1980), Letter.

Mercury and Thallium in Organic Synthesis. S. Uemura. *Kagaku (Chemistry)*, **34**, 786 (1979), Review, in Japanese.

Organomercury and Organothallium Compounds. S. Uemura. *Yuki Gosei Kagaku Kyokai Shi. (J. of Synthetic Organic Chem., Japan.)*, **37**, 1001 (1979), Review, in Japanese.

Polymer Chemistry

Sedimentation Field-Flow Fractionation in Macromolecule Characterization. H. Inagaki and T. Tanaka. *Anal. Chem.*, **52**, 201 (1980), Letter.

β -Chain Conformation of the High-Sulfur Proteins from Wool. T. Amiya, T. Miyamoto, and H. Inagaki. *Biopolymers*, **19**, 1093 (1980), Communication.

On the Meniscus Depletion Ultracentrifugation I. Pseudoideal Solutions. H. Suzuki. *Brit. Polymer J.*, **11**, 91 (1979).

The Refraction Correction for the Fica 50 Type of Light Scattering Photometer. H. Suzuki, Y. Muraoka, and H. Inagaki. *Brit. Polymer J.*, **12**, 31 (1980).

Temperature Dependence of Limiting Viscosity Number and Radius of Gyration of Cellulose Diacetate in Acetone. H. Suzuki, Y. Miyazaki, and K. Kamide. *Europ. Polymer J.*, **16**, 703 (1980).

Membranes Prepared from Keratin-Polyacrylonitrile Graft Copoly-

mers. J. Schaller, T. Miyamoto, K. Shimamura, and H. Inagaki. *J. Appl. Polym. Sci.*, **25**, 783 (1980).

Light Scattering from Polymer-Polymer-Solvent Ternary Systems. A Simple and Reliable Method for Estimating the Interactions between Unlike Polymers. T. Tanaka and H. Inagaki. *Macromolecules*, **12**, 1229 (1979), Note.

Thermodynamic Study on Acetone Solutions of Cellulose Diacetate by Rayleigh Light Scattering. H. Suzuki, K. Kamide, and Y. Miyazaki. *Netsu-sokutei (Calorimetry and Thermal Analysis)*, **7**, 37 (1980).

New Aspects of Graft Copolymerization of Styrene onto Cellulose Induced by Gamma Rays. T.-I. Min and H. Inagaki. *Polymer*, **21**, 309 (1980).

Functionality of Wool Keratin and its Derivatives. T. Miyamoto and H. Inagaki. *Nippon Kagakusen-i Kenkyusho Koen-shu (Annual Report of the Research Inst. for Chemical Fibers, Japan)*, **36**, 1 (1979), Review, in Japanese.

Graft Copolymerization of Vinyl Monomers onto Cellulose with Ceric Ion: The Reducing Endgroup of Cellulose as the Grafting Site. T. Taga and H. Inagaki. *Sen-i Gakkaishi (Journal of the Soc. of Fiber Science and Technology, Japan)*, **35**, 512 (1979), in Japanese.

Graft Copolymerization of Vinyl Monomers onto Cellulose with Ceric Ion: Detailed Examinations of the C₁-C₂ Glycol in the Reducing Cellulose-Endgroup as the Grafting Site. T. Taga, N. Ohara, and H. Inagaki. *Sen-i Gakkaishi (Journal of the Soc. of Fiber Science and Technology, Japan)*, **35**, 520 (1979), in Japanese.

Graft Copolymerization of Styrene onto Cellulose by Using Potassium Persulfate as Initiator. T. Taga and H. Inagaki. *Sen-i Gakkaishi (Journal of the Soc. of Fiber Science and Technology, Japan)*, **36**, 1 (1980), in Japanese.

Chain Conformations of Block Copolymers. M. Kurata and T. Kimura. *J. Polym. Sci.: Polym. Phys. Ed.*, **17**, 2133 (1979).

Flow Birefringence of Polymer Solutions in Time-Dependent Field. K. Osaki, N. Bessho, T. Kojimoto, and M. Kurata. *J. Rheology*, **23**, 457 (1979).

Flow Birefringence of Polymer Solutions in Time-Dependent Field. Relation between Normal and Shear Stresses on Application of Step-Shear Strain. K. Osaki, N. Bessho, T. Kojimoto, and M. Kurata. *J. Rheology*, **23**, 617 (1979).

Experimental Tests of a Few Constitutive Models for Polymer Solutions

Based on Birefringence Data in Time-Dependent Fields. K. Osaki, N. Bessho, T. Kojimoto, and M. Kurata. *J. Rheology*, **24**, 125 (1980).

Structural Changes of Polyethylene Single Crystals due to Electron Irradiation. A. Kawaguchi. *Bull. Inst. Chem. Res., Kyoto Univ.*, **57**, 206 (1979).

Observation of the Internal Lamellar Structure in Polyethylene Films by Nitric Acid Treatment and SEM Technique. T. Tagawa and K. Shimamura. *J. Electron Microsc.*, **28**, 314 (1979), Letter.

Setting Angle of Molecular Chains in Polyethylene Crystals. A. Kawaguchi, M. Ohara, and K. Kobayashi. *J. Macromol. Sci.-Phys.*, **B16**, 193 (1979).

Electron Microscopical Investigation of Internal Structure of Polyethylene Fibers. K. Shimamura. *J. Macromol. Sci.-Phys.*, **B16**, 213 (1979).

Deformation Mechanism of Polyethylene Spherulites. K. Shimamura, S. Murakami, M. Tsuji, and K. Katayama. *J. Soc. Rheology, Japan*, **7**, 42 (1979), in Japanese.

Grafting of Proteins onto Polymer Surfaces with the Use of Oxidized Starch. Y. Ikada, H. Iwata, T. Mita, and S. Nagaoka. *J. Biomed. Mater. Res.*, **13**, 607 (1979).

Experimental Nonsuture Microvascular Anastomosis Using a Soluble PVA Tube and Plastic Adhesive. S. Yamagata, H. Handa, W. Taki, Y. Yonekawa, Y. Ikada, and H. Iwata. *J. Microsurgery*, **1**, 208 (1979).

Structure and Properties of Lightly Crosslinked Crystalline Polymers Crystallized or Processed under Molecular Orientation. R. Kitamaru and S.-H. Hyon. *J. Polym. Sci. Macromolecular Rev.*, **14**, 207 (1979).

Synthesis of Graft Copolymer by Coupling Condensation through Acetalization. Y. Ikada, H. Iwata, and T. Mita. *Macromolecules*, **12**, 808 (1979).

Coupling Reactions Between Polystyrene Containing Acyl Chloride Endgroups and Poly(vinyl Acetate) Containing Amino Groups at the Chain End or along the Chain. Y. Ikada, K. Maejima, and H. Iwata. *Makromol. Chem.*, **179**, 865 (1978).

Interpretation of Rates of Polymer-Polymer Reactions in Terms of Statistical Thermodynamics of Dilute Polymer Solutions. H. Iwata and Y. Ikada. *Makromol. Chem.*, **181**, 517 (1980).

Embolization and Superselective Angiography by Means of Balloon

Catheters. W. Taki, H. Handa, S. Yamagata, I. Matsuda, Y. Yonekawa, H. Iwata, and Y. Ikada. *Surg. Neurol.*, **12**, 7 (1979).

Balloon Embolization of a Giant Aneurysm Using a Newly Developed Catheter. W. Taki, H. Handa, S. Yamagata, I. Matsuda, Y. Yonekawa, Y. Ikada, and H. Iwata. *Surg. Neurol.*, **12**, 363 (1979).

Radiopaque Solidifying Liquids for Releasable Balloon: A Technical Note. W. Taki, H. Handa, S. Yamagata, M. Ishikawa, H. Iwata, and Y. Ikada. *Surg. Neurol.*, **13**, 140 (1980), Note.

Fogging of Glass and its Prevention. Y. Ikada. *Hyomen (Surface)*, **17**, 769 (1979), Review, in Japanese.

Polymer Surface. Y. Ikada. *Kagaku (Chemistry)*, **34**, 861 (1979), Review, in Japanese.

Medical Polymers in the Present and the Future. Y. Ikada. *Kobunshi Kako (Polymer Processing)*, **28**, 437 (1979), Review, in Japanese.

Surface Properties of Hydrophilic Polymers. Y. Ikada and T. Matsunaga. *Nippon Kagaku Sen-i Kenkyusho Koenshu (Annual Report of the Research Inst. for Chemical Fibers, Japan)*, **36**, 17 (1979), in Japanese.

Phase Structure of Natural and Regenerated Celluloses. R. Kitamaru, R. Hirai, and F. Horii. *Nippon Kagakusen-i Kenkyusho Koenshu (Annual Report of the Research Inst. for Chemical Fibers, Japan)*, **36**, 91 (1979), in Japanese.

Some Problems on Adhesive Reliability-Medicine. Y. Ikada. *Nippon Setchaku Kyokai Shi (Journal of the Adhesive Society of Japan)*, **16**, 117 (1980), Review, in Japanese.

Nonsuture Microvascular Anastomosis-Experimental End-to-End Anastomosis of Artery with Soluble PVA Tube and Adhesive. S. Yamagata, H. Handa, W. Taki, Y. Yonekawa, Y. Ikada, and H. Iwata. *Noshinkei Geka (Neurosurgery)*, **7**, 1067 (1979), in Japanese.

Medicine and Polymer. Y. Ikada. *Rubber and Plastics*, **31**, 2 (1979), Review, in Japanese.

Biochemistry

Fermentative Phosphorylation of Galactose by Yeast. Y. Kariya, Y. Ohwada, A. Kimura, and T. Tochikura. *Agric. Biol. Chem.*, **43**, 1493 (1979).

Sensitive and Simple Methods for Determination of L-Lysine with L-Lysine α -Oxidase. H. Kusakabe, K. Kodama, A. Kuninaka, H. Yoshino, and K. Soda. *Agric. Biol. Chem.*, **43**, 1749 (1979).

Extracellular Production of L-lysine α -Oxidase in Wheat Bran Culture of a Strain of *Trichoderma viride*. H. Kusakabe, K. Kodama, A. Kuninaka, H. Yoshino, and K. Soda. *Agric. Biol. Chem.*, **43**, 2531 (1979).

Purification and Properties of meso- α , ϵ -Diaminopimelate D-Dehydrogenase from *Bacillus sphaericus*. H. Misono and K. Soda. *Agric. Biol. Chem.*, **44**, 227 (1980).

Effect of L-Lysine α -Oxidase on Growth of Mouse Leukemic Cells. H. Kusakabe, K. Kodama, A. Kuninaka, H. Yoshino, and K. Soda. *Agric. Biol. Chem.*, **44**, 387 (1980).

A New Assay for L-Aspartate:2-Oxoglutarate Aminotransferase. T. Yagi, H. Kagamiyama, S. Ohtawara, K. Soda, and M. Nozaki. *Anal. Biochem.*, **100**, 20 (1979).

Suicide Inactivation of Bacterial Cystathionine γ -Synthase and Methionine γ -Lyase during Processing of L-Propargylglycine. M. Johnston, D. Jankowski, P. Marcotte, H. Tanaka, N. Esaki, K. Soda, and C. Walsh. *Biochemistry*, **18**, 4690 (1979).

A Novel Purification Procedure of L-Lysine 6-Aminotransferase from *Flavobacterium lutescence*. T. Yagi, T. Yamamoto, and K. Soda. *Biochim. Biophys. Acta*, **614**, 63 (1980).

Purification and Properties of Alanine Dehydrogenase from *Bacillus sphaericus*. T. Ohshima and K. Soda. *Eur. J. Biochem.*, **100**, 29 (1979).

Purification and Properties of D-Glucosaminatase Dehydratase from *Agrobacterium radiobacter*. R. Iwamoto, Y. Imanaga, and K. Soda. *FEBS Letters*, **104**, 131 (1979).

Purification and Crystallization of L-Ornithine : α -Ketoglutarate δ -Aminotransferase from *Bacillus sphaericus*. M. Yasuda, H. Misono, K. Soda, K. Yonaha, and S. Toyama. *FEBS Letters*, **105**, 209 (1979).

Inducible and Constitutive Kynureninases: Control of the Inducible Enzyme Activity by Transamination and Inhibition of the Constitutive Enzyme by 3-Hydroxyanthranilate. K. Tanizawa and K. Soda. *J. Biochem.*, **86**, 499 (1979).

The Mechanism of Kynurenine Hydrolysis Catalyzed by Kynureninase. K. Tanizawa and K. Soda. *J. Biochem.*, **86**, 1199 (1979).

L-Lysine : 2-Oxoglutarate 6-Aminotransferase: Subunit Structure Composed of Non-Identical Polypeptides and Pyridoxal 5'-Phosphate-Binding Subunit. T. Yagi, H. Misono, N. Kurihara, T. Yamamoto, and K. Soda. *J. Biochem.*, **87**, 1395 (1980).

Studies on the Kinetics and Stoichiometry of Inactivation of *Pseudomonas* ω -Amino Acid : Pyruvate Transaminase by Gabaculine. G. Burnett, K. Yonaha, S. Toyama, K. Soda, and C. Walsh. *J. Biol. Chem.*, **255**, 428 (1980).

A New Antitumor Enzyme, L-Lysine α -Oxidase from *Trichoderma viride*. H. Kusakabe, K. Kodama, A. Kuninaka, H. Yoshino, H. Misono, and K. Soda. *J. Biol. Chem.*, **255**, 976 (1980).

Stereospecificity of Enzymatic Transamination of γ -Aminobutyrate. G. Burnett, C. Walsh, K. Yonaha, S. Toyama, and K. Soda. *J. Chem. Soc., Chem. Commun.*, 826 (1979).

Preliminary Crystallographic Study of ω -Amino Acid : Pyruvate Aminotransferase from *Pseudomonas* sp. F-126. Y. Morita, S. Aibara, K. Yonaha, S. Toyama, and K. Soda. *J. Mol. Biol.*, **130**, 211 (1979).

Bacterial L-Methionine γ -Lyase. N. Esaki, K. Soda and H. Tanaka. *Ganryu Amino-san (Sulfur-containing Amino Acids)* **2**, 235 (1979), in Japanese.

Determination of Methionine with Bacterial L-Methionine γ -Lyase. H. Tanaka, K. Imabara, N. Esaki, and K. Soda. *Ganryu Amino-san (Sulfur-containing Amino Acids)*, **2**, 313 (1979), in Japanese.

Suicide Substrate Inactivation of Pyridoxal Enzymes. K. Soda, K. Tanizawa, and N. Esaki. *Kagaku (Chemistry)*, **35**, 97 (1980), in Japanese.

Selenium-Containing Enzyme: Glutathione Peroxidase. K. Soda and E. Takenouchi. *Tanpakushitsu, Kakusan, Kouso (Protein, Nucleic Acid and Enzyme)*, **25**, 48 (1980), in Japanese.

Enzymatic Model of Hourglass Timer. K. Tanizawa. *Tanpakushitsu, Kakusan, Kouso (Protein, Nucleic Acid and Enzyme)*, **25**, 378 (1980), in Japanese.

Structure and Gene Organization in the Transforming Hind III-G Fragment of Ad12. H. Sugisaki, K. Sugimoto, M. Takanami, K. Shiroki, I. Saito, H. Shimojo, Y. Sawada, Y. Uemizu, S. Uesugi, and K. Fujinaga. *Cell*, **20**, 777 (1980).

Replication Origin of the *Escherichia coli* K-12 Chromosome: The Size and Structure of the Minimum DNA Segment Carrying the Information for Autonomous Replication. A. Oka, K. Sugimoto, M. Takanami, and Y. Hirota. *Molec. Gen. Genet.*, **178**, 9 (1980).

Regeneration of Ribonuclease A from the Reduced Protein. 1. Conformational Analysis of the Intermediates by Measurements of Enzymatic Activity, Optical Density, and Optical Rotation. Y. Konishi and H. A. Scheraga. *Biochemistry*, **19**, 1308 (1980).

Regeneration of Ribonuclease A from the Reduced Protein. 2. Conformational Analysis of the Intermediates by Nuclear Magnetic Resonance Spectroscopy. Y. Konishi and H. A. Scheraga. *Biochemistry*, **19**, 1316 (1980).

Fragmin: a Calcium Ion Sensitive Regulatory Factor on the Formation of Actin Filaments. T. Hasegawa, S. Takahashi, H. Hayashi, and S. Hatano. *Biochemistry*, **19**, 2677 (1980).

Characterization of Actin, Actinin, and Myosin Isolated from *Physarum*. S. Hatano, K. Owaribe, F. Matsumura, T. Hasegawa, and S. Takahashi. *Can. J. Botany*, **58**, 750 (1980).

Prediction of the Surface-Interior Diagram of Globular Proteins by an Empirical Method. K. Nishikawa and T. Ooi. *Int. J. of Peptide Protein Res.*, **16**, 19 (1980).

Orderd Structure in Dilute Solutions of Ionic Biopolymers. 1. Preliminary Small-Angle X-ray Scattering Study of Aqueous Solutions of Sodium Polyacrylate. N. Ise, T. Okubo, Y. Hiragi, H. Kawai T. Hashimoto, M. Fujimura, A. Nakajima, and H. Hayashi. *J. Amer. Chem. Soc.*, **101**, 5836 (1979).

Curve Analysis of Small-angle Scattering by Triaxial Body Models Using a Graphic Display Device. Y. Hiragi. *J. Appl. Cryst.*, **12**, 628 (1979).

Cross-linking Study on Tropomyosin. O. Ohara, S. Takahashi, and T. Ooi. *J. Biochem.*, **87**, 1795 (1980).

Assembly and Disassembly of F-actin Filaments in *Physarum Plasmodium* and *Physarum Actinin*. S. Hatano, F. Matsumura, T. Hasegawa, S. Takahashi, H. Sato, and H. Ishikawa. *Cell Motility: Molecules and Organization*. (ed. by S. Hatano, H. Ishikawa, and H. Sato), Univ. Tokyo Press., Tokyo, pp. 87-104 (1979).