

Editor Award, (1999) J. Jpn. Oil Chem. Soc.

Journal Publications

2007

Toshio Sakai, Paschalis Alexandridis

“Metal Colloid Synthesis in Block Copolymer Solutions: Role of Temperature, Polymer Concentration and micellar Organization on Particle Size and Shape”

2007, submitted for publication.

Toshio Sakai, Paschalis Alexandridis

“High-Yield Synthesis of Gold Microplates Using Amphiphiles: Are Lyotropic Liquid Crystals Required?”

2007, submitted for publication.

Toshio Sakai

“Amphiphilic Block Copolymers for Metal Nanoparticle Synthesis as Reducing, Stabilizing and Morphogenic Agents”

NEWSLETTER **2007**, 32(1), 6-11. (in Japanese)

2006

Toshio Sakai, Paschalis Alexandridis

“Ag-Au Monometallic and Bimetallic Colloids: Morphogenesis in Amphiphilic Block Copolymer Solutions”

Chem. Mater. **2006**, 18(10), 2577-2583.

Toshio Sakai, Paschalis Alexandridis

“Facile Preparation of Ag-Au Bimetallic Nanonetworks”

Mater. Lett. **2006**, 60(16), 1983-1986.

2005

Toshio Sakai, Paschalis Alexandridis

“Spontaneous Formation of Gold Nanoparticles in Poly(ethylene oxide)-Poly(propylene oxide) Solutions: Solvent Quality and Polymer Structure Effects”

Langmuir **2005**, 21(17), 8019-8025.

Toshio Sakai, Paschalis Alexandridis

“Size- and Shape-Controlled Synthesis of Colloidal Gold through Autoreduction of Auric Cation by Poly(ethylene oxide)-Poly(propylene oxide) Block Copolymers in Aqueous Solutions at Ambient Conditions”

Nanotechnology **2005**, 16(7), S344-S353.

Toshio Sakai, Paschalis Alexandridis

“Mechanism of Gold Metal Ion Reduction, Nanoparticle Growth and Size Control in Aqueous Amphiphilic Block Copolymer Solutions at Ambient Conditions”

J. Phys. Chem. B **2005**, 109(16), 7766-7777.

2004

Toshio Sakai, Paschalis Alexandridis

“Single-Step Synthesis and Stabilization of Metal Nanoparticles in Aqueous Pluronic Block Copolymer Solutions at Ambient Temperature”

Langmuir **2004**, 20(20), 8426-8430.

Masako Usui, Fumiori Harusawa, **Toshio Sakai**, Hideki Sakai, Masahiko Abe

“Dynamic Light Scattering Studies on Ostwald Ripening and Composition Ripening of Oil Droplets in Oil-in-Water Emulsion Systems”

J. Oleo Sci. **2004**, 53(12), 611-617.

Hiroyuki Yamazaki, Masanori Orita, **Toshio Sakai**, Takahiro Ohkubo, Hideki Sakai, Takashi Yamashita, Tohru Kohno, Masahiko Abe

“Electrically Controlled Two-Dimensional Cluster Formation of Polystyrene Particles and Cluster Fixation with Adsorbed Polyelectrolyte”

J. Oleo Sci. **2004**, 53(9), 437-444.

Hideki Sakai, Masanori Orita, Hiroyuki Yamazaki, **Toshio Sakai**, Nobuyuki Momozawa, Takahiro Ohkubo, Masahiko Abe

“Ordered Arrangement of Polystyrene Latex Particles using Electrophoresis and Dielectrophoresis”

J. Oleo Sci. **2004**, 53(7), 355-362. (in Japanese)

Masahiko Abe, Masanori Orita, Hiroyuki Yamazaki, Shinya Tsukamoto, Yuki Teshima, **Toshio Sakai**, Takahiro Ohkubo, Nobuyuki Momozawa, and Hideki Sakai

“Three-Dimensional Arrangements of Polystyrene Latex Particles with a Hyperbolic Quadruple Electrode System”

Langmuir **2004**, 20(12), 5046-5051.

Toshio Sakai, Yoshihiro Takeda, Fumitaka Mafuné, Tamotsu Kondow

“Surface Properties of Surfactant-Free Nanodroplets Dispersed in Water Studied by Confocal Fluorescence Microscopy”

J. Phys. Chem. B **2004**, 108(20), 6359-6364.

Keiji Kamogawa, Gen Okudaira, Mitsufumi Matsumoto, **Toshio Sakai**, Hideki Sakai, Masahiko Abe

“Preparation of Oleic Acid/Water Emulsions in Surfactant-Free Condition by Sequential Processing Using Midsonic-Megasonic Waves”

Langmuir **2004**, 20(6), 2043–2047.

2003

Toshio Sakai, Masahiko Abe, Nobuyuki Momozawa

“An Analysis of Multi-Step-Growth of Oil Droplets Dispersed in Water”

J. Oleo Sci. **2003**, 52 (12), 681-684.

Keiji Kamogawa, Naoko Kuwayama, Toshiyuki Katagiri, Hidetaka Akatsuka, **Toshio Sakai**, Hideki Sakai, Masahiko Abe
“Dispersion and Stabilization in Water of Droplets of Hydrophobic Organic Liquids with Addition of Hydrophobic Polymers”

Langmuir **2003**, 19 (10), 4063-4069.

Toshio Sakai, Yoshihiro Takeda, Fumitaka Mafuné, Masahiko Abe, Tamotsu Kondow

“Monitoring Growth of Surfactant-Free Nanodroplets Dispersed in Water by Single-Droplet Detection”

J. Phys. Chem. B **2003**, 107 (13), 2921-2926.

Gen Okudaira, Keiji Kamogawa, **Toshio Sakai**, Hideki Sakai, Masahiko Abe

“Suspension Polymerization of Styrene Monomer without Emulsifier and Initiator”

J. Oleo Sci. **2003**, 52 (3), 167-170.

2002

Toshio Sakai, Yoshihiro Takeda, Fumitaka Mafuné, Masahiko Abe, Tamotsu Kondow

“Dye Transfer between Surfactant-free NanoDroplets Dispersed in Water”

J. Phys. Chem. B **2002**, 106 (19), 5017-5021.

Toshio Sakai, Hideki Sakai, Masahiko Abe

“Dimpled Polymer Particle Prepared by Single-Step under Acoustic Field”

Langmuir **2002**, 18 (10), 3763-3766.

Toshio Sakai, Keiji Kamogawa, Katsuhiro Nishiyama, Hideki Sakai, Masahiko Abe

“Molecular Diffusion of Oil/Water Emulsions in Surfactant-free Conditions”

Langmuir **2002**, 18 (6), 1985-1990.

Toshio Sakai, Keiji Kamogawa, K. O. Kwon, Hideki Sakai and Masahiko Abe

“Pyrene fluorescence measurements of metastable oil droplets in surfactant-free oil-in-water emulsions”

Colloid and Polymer Science, **2002**, 280(2), 99-106.

2001

Masahiko Abe, **Toshio Sakai**

“Dispersion Stabilization of Surfactant-Free emulsion with Addition of Hydrophobic Substance”

Fragrance Journal **2001**, 12, 21-29. (in Japanese)

Toshio Sakai, Keiji Kamogawa, Hideki Sakai, Masahiko Abe

“New Aspects of Surfactant-free emulsion”

Oleo Science, **2001**, 1(1), 33-46. (in Japanese)

Toshio Sakai, Keiji Kamogawa, Tatsuya Kobayashi, Masakazu Enomura, Hideki Sakai, Masahiko Abe

“In situ evaluation of dispersion and growth processes of o/w emulsion using novel conductivity measurement system”

Material Technology **2001**, 19 (4), 127-134. (in Japanese)

Toshio Sakai, Keiji Kamogawa, Nobuyuki Momozawa, Fuminori Harusawa, Hideki Sakai, Masahiko Abe,

“Direct Observation of Flocculation/Coalescence of Metastable Oil Droplets in Surfactant-free Emulsion by Freeze Fracture Electron Microscopy”

Langmuir, **2001**, 17 (2), 255-259.

Keiji Kamogawa, Hidetaka Akatsuka, Mitsufumi Matsumoto, Shoko Yokoyama, **Toshio Sakai**, Hideki Sakai, Masahiko Abe

“Surfactant-free O/W Emulsion Formation of Oleic Acid and Its Esters with Ultrasonic Dispersion”

Colloids and Surfaces A: Physicochemical and Engineering Aspects, **2001**, 180, 41-53.

1999

Keiji Kamogawa, Mitsufumi Matsumoto, Tatsuya Kobayashi, **Toshio Sakai**, Hideki Sakai, Masahiko Abe,

“Dispersion and Stabilizing Effects of *n*-Hexadecane on Tetralin and Benzene Metastable Droplets in Surfactant-Free Conditions”

Langmuir, **1999**, 15 (6), 1913-1917.

1998

Keiji Kamogawa, **Toshio Sakai**, Nobuyuki Momozawa, Masakazu Enomura, Hideki Sakai, Masahiko Abe,

“Evolution and Growth of Oil Droplets in Emulsifier-free, Metastable Aqueous Dispersions: A Light Scattering and Conductive Probe Study”

J. Jpn. Oil Chem. Soc. **1998**, 47 (2), 159-170.

Conference Proceedings

Toshio Sakai, Paschalis Alexandridis

“Block Copolymer-Templated Size and Shape-Controlled Synthesis of Metal Nanoparticles”

Polym. Chem. **2005**, 46 (2), 720-721.

Toshio Sakai, Paschalis Alexandridis

“Metal Nanoparticle Synthesis and Organization in 1D, 2D and 3D Structures Formed by Amphiphilic Block Copolymers”
Polym. Mater. Sci. Eng. **2005**, 93, 7980-799.

Toshio Sakai, Paschalis Alexandridis

“Facile Synthesis and Colloidal Stabilization of Metal Nanoparticles in Aqueous Amphiphilic Block Copolymer Solutions”
paper 171a, *2004 AIChE Annual Meeting Conference Proceedings*. **2004**, CD-ROM (ISBN: 0-8169-0965-2). New York: AIChE.

Toshio Sakai, Paschalis Alexandridis

“Amphiphilic Block Copolymer Solutions as Media for the Facile Synthesis and Colloidal Stabilization of Metal Nanoparticles”

Polym. Mater. Sci. Eng. **2004**, 91, 939-940.

Toshio Sakai, Keiji Kamogawa, Fuminori Harusawa, Nobuyuki Momozawa, Hideki Sakai, Masahiko Abe

“Influence of Oil Droplet Size on Flocculation/Coalescence in Surfactant-Free Emulsion”

Studies in Surface Science and Catalysis 132, Y. Iwasawa, N. Oyama and H. Kunieda (Editors), **2001**, Elsevier Science B. V.157-160.

Keiji Kamogawa, Hidetaka Akatsuka, Mitsufumi Matsumoto, **Toshio Sakai**, Tatsuya Kobayashi, Hideki Sakai, Masahiko Abe

“Dispersibility of Surfactant-free O/W Emulsions and Their Stability Design: A Present Scope From Hydrocarbons to Some Oleate Esters”

Studies in Surface Science and Catalysis 132, Y. Iwasawa, N. Oyama and H. Kunieda (Editors), **2001**, Elsevier Science B. V.101-104.

Book Chapters

Masahiko Abe, Hideki Sakai, **Toshio Sakai**

“Preparation and Morphology of Polymer Fine Particles Using Ultrasonication” Chapter 5 in *Development of Functional Fine Particles and Nanomaterials-Nanotechnology for Material Design*. Frontier, Masumi Koishi (Ed.), **2004**, 96-104. (in Japanese)

Toshio Sakai, Keiji Kamogawa, Masahiko Abe

“Preparation and Morphology of New Polymer Microparticles” Chapter II-4 in *Technology, Evaluation and Its Application of Micro- and Nano-Capsules and Particles*. CMC, Masumi Koishi (Ed.), **2003**. (in Japanese)

Masahiko Abe, **Toshio Sakai**

“Characterization Techniques of Emulsion Systems” Chapter 8 in *Technology, Evaluation and Its Application of Functional Emulsion*. CMC, Teruo Tsunoda (Ed.), **2002**. (in Japanese)

Masahiko Abe, **Toshio Sakai**

“Recent Aspects of Emulsification Techniques” Chapter 1 in *Technology, Evaluation and Its Application of Functional Emulsion*. CMC, Teruo Tsunoda (Ed.), **2002**. (in Japanese)

Patents

Masahiko Abe, Mutsuyoshi Matsumoto, Hideki Sakai, **Toshio Sakai**, Yakahiro Ohkubo, Hirobumi Shibata

“Synthesis of Zirconium Oxide Porous Materials”

2007, Japan, Application number 2007-084894

Masahiko Abe, Hideki Sakai, **Toshio Sakai**, Yakahiro Ohkubo, Hirobumi Shibata

“Synthesis of Titanium Oxide Porous Materials”

2007, Japan, Application number 2007-063030

Jun-ya Kono, **Toshio Sakai**, Yoshihiro Takeda, Fumitaka Mafuné, Tamotsu Kondow

“Preparation Method and Application of Gold Catalysis”

2005, Japan, Patent number 2005-230699

Paschalis Alexandridis, **Toshio Sakai**

“Preparation of Metallic Nanoparticles”

2004, United States Patent Application No. 11/156,446; filed June 20, 2005; assignee: The Research Foundation of State University of New York.

Masahiko Abe, Hiroyuki Yamazaki, Masanori Orita, Shinya Tsukamoto, **Toshio Sakai**, Hideki Sakai, Aritomo Yamaguchi, Nobuyuki Momozawa

“Microparticle-Surface Potential Control Process and Adhesion of Microparticles by Surface Potential Thereof”

2003, Japan, Patent number 2003-222742

Masahiko Abe, Hiroyuki Yamazaki, Masanori Orita, Shinya Tsukamoto, **Toshio Sakai**, Hideki Sakai, Aritomo Yamaguchi, Nobuyuki Momozawa

“Formation Method of Minute Particle Membrane [Machine Translation]”

2003, Japan, Patent number 2003-215378

Masahiko Abe, Hideki Sakai, **Toshio Sakai**, Gen Okudaira, Katsuhiro Nishiyama, Shigeru Kido

“High-Purity Polymer Particles and Manufacture Thereof”

2003, Japan, Patent Number 2003-096121

Masahiko Abe, Katsuhiro Nishiyama, **Toshio Sakai**, Masumi Koishi, Akinori Nakayama

“Manufacture of Polystyrene Particles”

2003, Japan, Patent Number 2003-034703

Tamotsu Kondow, Fumitaka Mafuné, Yoshihiro Takeda, **Toshio Sakai**

“Optical Method and Apparatus for Measuring Properties of Particles”

2002, Japan, Patent Number 2002-372489

Invited Seminars at Universities and Industry

“Amphiphilic Block Copolymer Solutions as Media for Environmental Benign Synthesis of Metal Nanoparticles”

80 th Japan Society of Colour Material (JSCM) Anniversary Conference, Tokyo (Tokyo University of Science), Sep. 12-14, 2007.

“Titania Nanoskeleton Synthesis”

74th Electrical Chemistry Conference, Chiba (Tokyo University of Science), Mar. 28, 2007.

“Liquid and Solid Particle Dispersions-Surfactant-Free Emulsification and Metal Nanoparticle Synthesis-”

Korean Institute of Science and Technology, Seoul, Korea, June 2006.

“Amphiphilic Block Copolymer-Templated Size- and Shape-Controlled Synthesis of Metal Nanoparticles”

Cluster Research Laboratory, Toyota Technological Institute, Chiba, Japan, May 2006.

“Liquid Particle and Solid Particle Dispersions”

Philip Morris USA, Richmond, VA, November 2005.

“Liquid Particle and Solid Particle Dispersions”

Roswell Park Cancer Institute, Buffalo, NY, October 2005.

“Physical Properties and Applications of Liquid or Solid Particle Dispersion in Liquid Phase”

Xerox Research Centre of Canada, Mississauga, Canada, June 2005.

“Growth Processes and Surface Properties of Oil Droplets in Surfactant-Free Oil-in-Water Emulsions”

Institut Nanceien de Chimie Moleculaire, Université Henri Poincaré-Nancy I, Nancy, France, September 2002.

“Growth Processes and Surface Properties of Surfactant-Free Oil Droplets Dispersed in Water”

Institut Charles Sadron (CNRS-ULP), Strasburg, France, September 2002.

“Growth Processes and Dispersion Stability of Surfactant-Free Oil Droplets in Oil-in-Water Emulsions”

Kao Co. Tokyo, Japan, June 2001.

“Dynamic Properties of Surfactant-Free Oil Droplets Dispersed in Water”
Cluster Research Laboratory, Toyota Technological Institute, Chiba, Japan, July **2000**.

Presentations at National and International Conferences

Toshio Sakai, Paschalis Alexandridis, “Ag and Au Monometallic and Bimetallic Colloids: Morphogenesis in Amphiphilic Block Copolymer Solutions” AIChE 2006 Annual Meeting, California, November **2006**, Oral.

Toshio Sakai, Paschalis Alexandridis, “Metal Colloid Synthesis in Amphiphilic Block Copolymer Solutions: Role of Temperature, Polymer Concentration and Lyotropic Liquid Crystal on Particle Size and Shape” The 16th International Symposium on Surfactants Solution, Seoul, Korea, June, **2006**, Oral.

Toshio Sakai, Paschalis Alexandridis, “Synthesis and Stabilization of Metal Nanoparticles in Poly(ethylene oxide)-Block-Poly(propylene oxide) Solutions” The 2005 International Chemical Congress of Pacific Basin Societies, Hawaii, USA, December, **2005**, Oral.

Toshio Sakai, Paschalis Alexandridis, “Size and Shape-Controlled Synthesis of Metal Nanostructures Templated by Amphiphilic Block Copolymers” AIChE 2005 Annual Meeting, Ohio, November **2005**, Oral.

Toshio Sakai, Paschalis Alexandridis, “Block Copolymer-Templated Size and Shape-Controlled Synthesis of Metal Nanoparticles” 230th ACS National Meeting, Washington, DC, August 28-September 1, **2005**, Oral.

Toshio Sakai, Paschalis Alexandridis, “Metal Nanoparticle Synthesis and Organization in 1D, 2D and 3D Structures Formed by Amphiphilic Block Copolymers” 230th ACS National Meeting, Washington, DC, August 28-September 1, **2005**, Oral.

Paschalis Alexandridis, **Toshio Sakai**, “Amphiphilic Block Copolymer-Templated Nanoparticle Synthesis and Stabilization” 229th ACS National Meeting, San Diego, CA, March 13-17, **2005**, Oral.

Toshio Sakai, Paschalis Alexandridis, “Synthesis of Bimetallic Nanoparticles and of Metal Nanoshells on Silica Particles in Aqueous Amphiphilic Block Copolymer Solutions” AIChE 2004 Annual Meeting, Texas, November **2004**, Oral.

Toshio Sakai, Paschalis Alexandridis, “Facile Synthesis and Colloidal Stabilization of Metal Nanoparticles in Aqueous Amphiphilic Block Copolymer Solutions” AIChE 2004 Annual Meeting, Texas, November **2004**, Oral.

Paschalis Alexandridis, **Toshio Sakai**, “Amphiphilic Block Copolymer Solutions as Media for the Facile Synthesis and Colloidal Stabilization of Metal Nanoparticles” 228th ACS National Meeting, Philadelphia, PA, August 22-26, **2004**, Oral.

Toshio Sakai, Paschalis Alexandridis, “Single-Step Synthesis and Stabilization of Metal Nanoparticles in Aqueous Amphiphilic Block Copolymer Solutions at Ambient Temperature” 78th ACS Colloid and Surface Science Symposium, New Haven, Connecticut, June, **2004**, Oral.

Toshio Sakai, Yoshihiro Takeda, Fumitaka Mafuné and Tamotsu Kondow, “Surface Properties of Surfactant-free Oil Droplets Dispersed in Water Studied by Confocal Fluorescence Microscopy” 78th ACS Colloid and Surface Science Symposium, New Haven, Connecticut, June, **2004**, Poster.

Toshio Sakai, Yoshihiro Takeda, Fumitaka Mafuné and Tamotsu Kondow, “Nanodroplets in Aqueous Medium Observed by Single Fluorescence Microscopy” ISSPIC 11, Strasbourg, France, September, **2002**, Poster.

Toshio Sakai, Hideki Sakai and Masahiko Abe, “Polymerization in Surfactant-Free Emulsion in Acoustic Field” 75th Japan Society of Color Material Anniversary Conference, Tokyo, Japan, April, **2002**, Oral.

Toshio Sakai, Toshiyuki Katagiri, Keiji Kamogawa, Hideki Sakai and Masahiko Abe, “Oil in Water Emulsion Stabilized by Another Hydrophobic Oil in Surfactant-free Condition” 222st National Meeting of the American Chemical Society, Chicago, Illinois, August, **2001**, Poster.

Toshio Sakai, Keiji Kamogawa, Hideki Sakai and Masahiko Abe, “Characteristics and Applications of Surfactant-free Emulsion” 221st National Meeting of the American Chemical Society, San Diego, CA, April, **2001**, Poster.

Toshio Sakai, Keiji Kamogawa, Nobuyuki Momozawa, Hideki Sakai and Masahiko Abe, “Direct Observation of Fine Oil Droplets in Emulsifier-free Aqueous Dispersions by Freeze Fracture Electron Microscopy” The 2000 International Chemical Congress of Pacific Basin Societies, Hawaii, USA, December, **2000**, Oral.

Toshio Sakai, Keiji Kamogawa, Nobuyuki Momozawa, Hideki Sakai and Masahiko Abe, “Evolution and Growth of Surfactant-Free Metastable Oil Droplets” International Conference on Colloid and Surface Science, Tokyo, Japan, November, **2000**, Poster.

Toshio Sakai, Keiji Kamogawa, Nobuyuki Momozawa, Hideki Sakai and Masahiko Abe, “Study on Evolution Processes of Surfactant-Free Emulsion by Dynamic Light Scattering and Freeze Fracture Electron Microscopy” JOCS/AOCS World Congress 2000, Kyoto, Japan, October, **2000**, Oral.