

ISSN 0023-6071

**BULLETIN OF THE INSTITUTE
FOR CHEMICAL RESEARCH
KYOTO UNIVERSITY**

Vol. 69, No. 4

*Commemoration Issue Dedicated to
Professor Tetsuya HANAI
On the Occasion of His Retirement*

Published bi-monthly by
**THE INSTITUTE FOR CHEMICAL RESEARCH
KYOTO UNIVERSITY
KYOTO, JAPAN**

December 1991

(Bull. Inst. Chem. Res., Kyoto Univ.)

**INSTITUTE FOR CHEMICAL RESEARCH
KYOTO UNIVERSITY**

Director

Sumio SAKKA

Members of Council

Yoshichika BANDO	Kaoru FUJI	Makoto INOUE
Keisuke KAJI	Minoru KANEHISA	Takashi KOBAYASHI
Tadashi KOKUBO	Masakazu MATSUI	Takeaki MIYAMOTO
Takeshi MUKOYAMA	Akira NODA	Jun'ichi ODA
Hisashi ODANI	Atsuyoshi OHNO	Kunihiro OSAKI
Sumio SAKKA	Teruya SHINJO	Kenji SODA
Nobuyuki SUGITA	Yukio SUGIURA	Sho TAKAHASHI
Mitsuru TAKANAMI	Tohru TAKENAKA	Shigeo TANIMOTO

Publication Committee

Koji ASAMI	Makoto INOUE	Akiyoshi KAWAGUCHI
Sorin KIHARA	Kaoru NAKAMURA	Shigeo TANIMOTO

Business Staff

Ryohei HIROSE	Sayoko JIDO	Yutaro KOTANI
---------------	-------------	---------------

History of Publications

Term	Vol.	Title	Published
Jan., 1929- Dec., 1947	1-16	化学研究所講演集 (The Reports of the Institute for Chemical Research)	Indeterminately
April, 1933	—	10 Jahre Institut für chemische Forschung (化学研究所創立十周年記念号)	—
March, 1949- Dec., 1949	17-19	化研講演集 (The Reports of the Institute for Chemical Research)	Indeterminately
March, 1950- Sept., 1952	20-30	化学研究所報告 (Bulletin of the Institute for Chemical Research)	Quarterly
Dec., 1951	—	The Commemoration Volume for the Silver Jubilee (化学研究所創立二十五周年記念号)	—
Jan., 1953 onwards	31 No. 1-	Bulletin of the Institute for Chemical Research (化学研究所報告)	Bi-monthly
Nov., 1966	44 No. 6	Special Issue on the Commemoration of the Fortieth Anniversary (化学研究所創立四十周年記念号)	—
Nov., 1976	54 No. 6	Special Issue on the Commemoration of the Fiftieth Anniversary (化学研究所創立五十周年記念号)	—



花井哲也教授

Professor Dr. Tetsuya Hanai

Emeritus Professor Tetsuya Hanai

On March 31, 1991, Dr. Tetsuya Hanai retired after 40 years of service at Kyoto University. On the following day, he was honored with the title of Emeritus Professor by the University.

Dr. Hanai was born in Tokyo on May 23, 1927. In 1951, he graduated from Kyoto University with a major in physics and joined the Institute for Chemical Research, Kyoto University, where he started his studies on the dielectric properties of colloidal materials under the supervision of Professor R. Gotoh. After having received a doctoral degree from Kyoto University, he made a leave stay at the Department of Colloid Science, the University of Cambridge from 1962 to 1965, and worked on bilayer lipid membranes in cooperation with Dr. Haydon. Dr. Hanai was appointed associate professor in 1966 and full professor in 1985 to direct the Laboratory of Dielectrics in the Institute.

Dr. Hanai's professional career covers a wide range of colloid chemistry and dielectrics, but his special attention has been given to development of dielectric theories of heterogeneous systems and application of these theories to various kinds of membranes and colloidal particles including biological cells. His work advanced our knowledge on dielectric behavior of heterogeneous systems. Dr. Hanai is also widely recognized for his pioneering studies on bilayer lipid membranes, which have been extensively studied worldwide as a model of biological membranes.

He gave lectures on advances in dielectric spectroscopy of colloidal systems at the Graduate School of Science, Kyoto University, and supervised the dissertation work of a large number of graduate students. He also provided lectures on physical chemistry and colloid chemistry as visiting professor at several universities.

Dr. Hanai is respected by many friends, colleagues and students for his sincere and warm personality in addition to his scientific talent. This collection of papers is dedicated to Dr. Hanai in honor of his long period of sincere service on his retirement.

October, 1991

Sumio Sakka

Sumio Sakka

Director

Institute for Chemical Research

Kyoto University

CONTENTS

Commemoration Issue Dedicated to Professor Tetsuya Hanai on the Occasion of His Retirement

Junzo Umemura, Hitoshi Matsuda, Takeshi Kawai and Tohru Takenake: Resonance Raman Spectra of Thin Langmuir-Blodgett Films of Cetyl Orange	293
Kinzi Asaka and Tetsuya Hanai: Electrochemical Properties of Cellulose Acetate Membranes in Aqueous Electrolyte Solutions Containing Hydro- phobic Ions	300
Toshinobu Yoko, Akira Yuasa, Kanichi Kamiya and Sumio Sakka: Sol-Gel Derived TiO Film Semiconductor Electrode for Photocleavage of Water: Electrode Reaction Mechanism	311
Yoshisuke Tsunashima and Hisashi Odani: Dynamics of Dilute Polymer Solu- tion in Couette Flow. Dynamic Light Scattering Experiments on Polystyrene-Latex Particles in Water	322
Seiji Isoda, Yasuo Kita, Nobuo Donkai, Yoh Sano and Gerhard Wegner: Depen- dence of DC-Resistivity on Morphology in Polypyrroles	331
Hirohide Nakamatsu, Hirohiko Adachi and Takeshi Mukoyama: Computation of Symmetry Orbitals for Point Groups	342
Takeshi Mukoyama and Shin Ito: Multiple Ionization in Ion-Atom Collisions	350
Kongshuang Zhao and Tetsuya Hanai: D. C. Bias Effect of the Dielectric Behaviour of Some Disperse Systems	358
Kozo Iwauchi and Masao Kiyama: Dielectric Properties of α -Fe ₂ O ₃	375
Yukinobu Murata and Naokazu Koizumi: Relaxation Behavior in γ -Ray Irradiated Polytrifluoroethylene	383
Koji Asami and Akihiko Irimajiri: Dielectric Analysis of Outer Membrane Vesicles Isolated from Rat Liver Mitochondria	390

Hideo Kaneko, Koji Asami and Tetsuya Hanai: Dielectric Properties of Erythrocytes Treated with Membrane-Interacting Antibiotics	399
Shigeru Morita, Koji Asami and Tetsuya Hanai: Two Types of Reconstituted Model Membranes as Viewed from A. C. Impedance	404
Tadashi Uyeda and Hisashi Odani: Solution and Diffusion of Vapor Mixtures in Polybutadiene	412
Akihiko Irimajiri, Toshinobu Suzaki, Koji Asami and Tetsuya Hanai: Dielectric Modeling of Biological Cells. Models and Algorithm	421

COMMUNICATIONS

Soichi Hayashi: New Potential Energy Functions Suitable for Computer simulation	439
Yasuo Kita, Tetsuya Hanai and Takaya Sato: Nonlinear Dielectric Properties of Cyanoethylated 0-(2,3-Dihydroxypropyl) Cellulose in Ultra Low Frequency Region	444

REVIEWS

Katsuhisa Sekine, Hezhe Zhang and Tetsuya Hanai: Dielectric Analysis of Microcapsules	450
Herman P. Schwan and Shiro Takashima: Dielectric Behavior of Biological Cells and Membranes	459
Shiro Takashima and Herman P. Schwan: Dielectric Behavior of Biological Polymers	476

**Received from the Library of Institute for Chemical Research, Kyoto University
the following Publication(s)**

“Bulletin of Institute for Chemical Research, Kyoto University.”
Vol. 69, No. 4 (1991) copy/copies

Institute:

Address:

Date:

Signature:

Please return this form

POST CARD

LIBRARY
INSTITUTE FOR CHEMICAL RESEARCH
KYOTO UNIVERSITY
Uji, Kyoto-Fu
611 Japan

〒611 京都府宇治市五ヶ庄
京都大学
化学研究所図書室 行

京都大学化学研究所報告 第69卷 第4号

平成3年12月24日 印刷

【非売品】

平成3年12月30日 発行

京都府宇治市五ヶ庄

京都大学化学研究所

編集兼発行人

作花濟夫

〒553 大阪市福島区吉野1丁目2番7号

印刷所

日本印刷出版株式会社

電話(06)(441)6594番(代表)

印刷者

小林積造