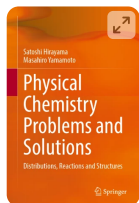


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# Physical Chemistry Problems and Solutions

Distributions, Reactions and Structures

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## Overview

**Authors:** [Satoshi Hirayama](#), [Masahiro Yamamoto](#)

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## About this book

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This book aims to provide the university-level student and educator with a convenient means for testing depth of knowledge and developing problem-solving ability by enabling wide-ranging problems to be tackled without the support of a textbook framework.

A solid foundation in physical chemistry concepts is fundamentally important for those wishing to make meaningful contributions to a diverse array of rapidly developing fields including renewable energy, environmental sustainability, biomedical technology, and material science and engineering. Effective solutions to real-world technological challenges require depth of knowledge and an ability to solve problems outside the usual contextual structure found in standard physical chemistry textbooks.

By using this book together with *Physical Chemistry Problems and Solutions: Atoms, Molecules and Thermodynamics*, in which nearly nine hundred problems are provided, the reader is able to identify knowledge gaps quickly and readily address them by consulting the accompanying comprehensively worked solutions. This approach of presenting probing questions "in isolation" fosters a deeper understanding of the subject and the development of problem-solving skills.

## Keywords

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Chemical Thermodynamics

Chemical Kinetics

Chemical Equilibrium

Chemical Statistical Mechanics

Molecular Structures

## Authors and Affiliations

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**Kyoto Institute of Technology, Kyoto, Japan**

Satoshi Hirayama

**Konan University, Kobe, Japan**

Masahiro Yamamoto

## About the authors

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Satoshi Hirayama was awarded a Ph.D. from Kyoto University in 1983. His specialties are physical chemistry and photochemistry. He was promoted to full professor of the Kyoto Institute of Technology (K.I.T.) in 1973 and retired there in 2006 as a professor emeritus. During his service at K.I.T, he received a British Council Scholarship and did research at Southampton University (U.K.) from 1976 to 1978. He collaborated as a visiting professor with researchers at Melbourne University (Australia), Saskatoon University (Canada), and Strathclyde University (U.K.), supported by the JSPS (Japan). He was appointed a visiting professor at IMS (Japan) for two years starting from 1993. He has published many peer-reviewed scientific papers and is the

co-author of the translation of Single Photon Counting by D. Phillips and D. O'Connor. He has 36 years of teaching experience at K.I.T and years at Konan University (Japan).

Masahiro Yamamoto received his Dr. Eng.degree from Kyoto University (Japan) in 1991, investigating the absorption mechanism of oxygen by  $\alpha$ -zirconium. He was an assistant professor at the Institute of Atomic Energy, Kyoto University, from 1985 to 1999 (surface science and first-principles calculation). He was a visiting scientist for one year at the Ames Lab, Iowa State University (U.S.A.); an associate professor in the Department of Energy and Hydrocarbon Chemistry, Kyoto University, from 1999 to 2009 (analytical electrochemistry); and a professor in the Department of Chemistry of Konan University, from 2009 (physical chemistry of surfaces and interfaces). He is the co-author of 100 peer-reviewed scientific articles and five books, including the translation of Foundations of Science Mathematics, by D.S. Sivia and R.G. Rawlings, Oxford University Press, 1999.

## Accessibility Information

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## Bibliographic Information

<b>Book Title</b> Physical Chemistry Problems and Solutions	<b>Book Subtitle</b> Distributions, Reactions and Structures	<b>Authors</b> Satoshi Hirayama, Masahiro Yamamoto
<b>Publisher</b> Springer Singapore	<b>eBook Packages</b> <u>Chemistry and Materials Science,</u> <u>Chemistry and Material Science (R0)</u>	<b>Copyright Information</b> The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2025
<b>Hardcover ISBN</b> 978-981-97-0149-0 Due: 27 September 2025	<b>Softcover ISBN</b> 978-981-97-0152-0 Due: 27 September 2026	<b>eBook ISBN</b> 978-981-97-0150-6 Due: 27 September 2025
<b>Edition Number</b> 1	<b>Number of Pages</b> VIII, 768	<b>Number of Illustrations</b> 32 b/w illustrations, 439 illustrations in colour

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