

## INTRODUCTION TO THIS SERIES

### A project to disseminate a series of “Introduction to Chemistry” by the Internet

by Yoshito Takeuchi

Professor Emeritus, the University of Tokyo

Professor Emeritus, Kanagawa University

A group of Japanese chemists launched a project to disseminate a series of “Introduction to Chemistry” by the Internet. As the representative of the group, the author wishes to introduce the purpose of this project, and the structure of the series, to the potential users of the textbooks.

For this purpose, the author prepared two short articles, one is the Q&A on the project, and the other Preface to the series.

We wish the series would be used by many young students and citizens who have some difficulty in purchasing textbooks though they are very much interested in chemistry.

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### LEARN CHEMISTRY via the INTERNET

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The series covers all branches of introductory chemistry

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Q: What are the titles of the eight volumes and who are the authors?

A: The general title of the series is: **Introductory Chemistry** published by Iwanami Shoten

- vol. 1 Basic Chemistry by Y. Takeuchi (ex. U. of Tokyo)
  - vol. 2 Physical Chemistry by K. Seki (Nagoya Univ.)
  - vol. 3 Inorganic Chemistry by T. Saito (ex. U. of Tokyo)
  - vol. 4 Organic Chemistry by Y. Takeuchi (ex. U. of Tokyo)
  - vol. 5 Synthetic Organic Chemistry by H. Suzuki (ex. Kyoto U.)
  - vol. 6 Quantum Chemistry by K. Ohno (Tohoku University)
  - vol. 7 Analytical Chemistry by Y. Umezawa (U. of Tokyo)
  - vol. 8 Biochemistry by A. Ikai (Tokyo Institute of Technology)
- originally written in Japanese and now translated into English .

Q: Why are textbooks originally written in Japanese being used for this project?

A: There are a large number of good-quality English-language textbooks available which cover all branches of chemistry; however, no author or publisher will provide free public access to their textbooks *via* the INTERNET.

Q: Why then are Japanese authors/publishers distributing their textbooks free of charge?

A: There are several reasons, but the main one is that these textbooks have sold well and the investment made in them has already been recovered. This activity is a kind of gift back to the people from the authors and publishers. As you know, there are many people who cannot afford good textbooks.

Q: Is there any other reason?

A: Providing these textbooks free of charge on the internet also serves to promote chemistry. We are keen to get more people interested in chemistry. If good textbooks are available for free, the opportunity for people to get involved in chemistry will be increased.

Q: You can obtain a lot of teaching/educational material *via* the INTERNET. Is there any rationale to add another series of textbooks to the wealth of teaching material already available?

A: Most of the information already available is supplementary material. The limitation of supplementary material is that it is indeed 'supplementary' and cannot substitute a good textbook. Supplementary material is useful and only useful when you have a good textbook, without which effective study is impossible.

Q: Are there people who would want to use these textbook *via* the INTERNET?

A: If you are a student you are generally surrounded by textbooks, and it is difficult to imagine a situation where you cannot find a textbook on the subject you are going to study. For other members of the public, however, such as those who have already left school/university, textbooks are not necessarily easily accessible. Sometimes one cannot buy textbooks due to their often high costs.

Q: At what level are the textbooks aimed?

A: The original intention of editing this series was to provide a series of standard textbooks for 1<sup>st</sup> and 2<sup>nd</sup> year college students for all branches of chemistry. The textbooks will be useful

even for 3<sup>rd</sup> and 4<sup>th</sup> year students not majoring in chemistry.

Q: How we can gain access to the textbooks?

A: Just visit the IUPAC CCE webpage. There is a window for WCEN (World-wide Chemical Education Network). There you will find **Introductory Chemistry** (Iwanami Shoten) and links to files via each author's individual website.

Q: When will the textbooks become accessible via the Internet?

A: The announcement will be made via WCEN. It is expected that textbooks will be made open one by one.

NOTE: This project is maintained on a 100% volunteer basis. Commercial use of any part of the textbooks is strongly discouraged.

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### **Preface to "Introductory Chemistry"**

Chemistry is a branch of science in which the kingdom of matter, that is, composed of atoms, molecules, ions, and great numbers of materials made of these, is studied in terms of molecules. It must be added that chemistry also covers the kingdom of life in the sense that even human being is composed of molecules. In chemistry, the properties of materials, the laws that govern the kingdom of matter and life, and the reactions taking place in nature and in laboratory are studied. Furthermore, chemistry is a core part of novel and frontier area of modern science/technology, i.e., biotechnology, electronics, novel and functional materials. In other word, chemistry is not only the core of basic science and technology, but also the core of medical, pharmaceutical, agricultural environmental sciences, or applied science/technology.

Because of its pantoscopic nature, chemistry has many characteristics. Chemistry treats a great number of materials, hence knowledge of chemistry is accumulating . Knowledge of chemistry is never become obsolete but simply accumulating. Knowledge obtained in the past is still important in modern era.

The methods employed by chemistry to investigate materials are also accumulating. Side by side with modern techniques such as spectroscopy and quantum chemical calculations, traditional methods such as melting/boiling point determination are also indispensable.

Such characteristic nature of chemistry influences the structure of chemical

education, in particular, the structure of textbooks of chemistry. The time allocated to chemistry teaching is necessarily limited and hence the number of pages of chemistry textbooks is limited. It is not an easy task to select what is to be taught and what is to be described in the textbook.

We presuppose, as the reader of this series, 1st-3rd university students who have studied some chemistry in high school and who are planning or have already decided to choose to choose chemistry or related field as their carrier.

This series of textbooks, "Introduction to Chemistry" is a proposal on the guideline of the materials to be taught to college level students (first and second year students of university).

The structure of knowledge of chemistry is "reverse-triangle", in that the basis is more or less fixed and concrete, and not very wide, while the upper structure is continuously developing and expanding. The role of introductory chemistry, and hence this series, is to indicate young students (and citizens who want to learn chemistry which is not familiar with the subject to them) the borderline between basic and advanced/developed area of chemistry. In other word, what is the basic part of chemistry, and what is its developing part.

By editing and writing this series, we wanted to show the reader the bridge from the basic part to the developing part. We further attempted to the reader the goal to be attained by studying with this series.

**FRONTIER OF CHEMISTRY**

