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Publishing of the Revised Edition

This is the English translation of the newly revised edition of *Introduction to Surfactants* (*Kaimen Kasseizai Nyumon* in Japanese), which was published in March 2007. Intended as a systematic introductory guide to surfactants, covering everything from basic principles to practical applications, the Japanese version has always been well received for their great clarity by those embarking on the study of surfactants and by those concerned with their actual use.

The original Japanese version has been revised and reprinted repeatedly ever since it was first published in November 1963. With the retirement of the author, Dr. Takehiko Fujimoto (former chairman of the board of SANYO CHEMICAL INDUSTRIES, LTD.), in June 2004, the book was expected to go out of print. However, due to the enthusiasm of our readers and their wishes for continued publication, it was decided to enlist the support of our Research Division and Public Relations Dept., and to carry out revisions for a new edition.

The main thrust of the newly revised Japanese version, is the shift from referencing alkylphenol EO (ethylene oxide) adducts to replacement products. Since the earlier revised edition of the original volume that was published in 1981, the field of surfactants has seen remarkable technological advances, and the phenomenon of endocrine disruption has come to be recognized as a major issue.

Important nonionic surfactant raw materials such as alkylphenol EO adducts are derived from nonylphenol (NP) and octylphenol (OP) which manifest estrogen-like effects in the bodies of animals.

Although alkylphenol EO adduct itself is not an endocrine disruptor, upon biodegrading in the environment, NP and OP are produced. In order to address this problem, replacement product development programs and voluntary bans on water-polluting applications have been undertaken by the concerned industries. As a result, NP/OP environmental contamination has now been ameliorated to the extent that virtually no risk remains.

As alkylphenol EO adducts have excellent functionality and have therefore been used widely in surfactants, these substances were discussed throughout the original version of this book, and numerous references were made to their diverse applications. In light of these developments, it was decided that the contents of the original edition no longer reflected current world conditions, and a revised Japanese version was prepared in 2007. While the main thrust of this revision was this shift from also alkylphenol EO adducts to replacement products, the following three guidelines were implemented: 1. to update the classification of surfactants to be in line with the standards accepted by the Japan Surfactant Industry Association (JSIA); 2. to replace old data regarding safety and other concerns with data released by the JSIA ; and 3. to reassess

the appropriateness of the terminology in light of current conditions.

In response to requests from English language readers, an English translation of *Introduction to Surface Active Agents* (Surfactants) was first published in 1985. When the latest Japanese revisions were prepared in 2007, it was decided that the changes in the Japanese version should also be reflected in a new English version.

As the development of surfactants that substitute other substances for alkylphenol EO adducts is still ongoing, it is inevitable that this revised version will become outdated. Even so, it is my earnest wish that the reader will find this volume of use in understanding surfactants and the circumstances of their production and use.

I would like to express my deep gratitude to Dr. Tetsuo Morino (a veteran of our Public Relations Dept.), and to everyone in our Research Division and Public Relations Dept. for their cooperation in realizing the revision of this book.

March 2010

Tetsuo Kakehi Supervisor for the New Edition
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Preface of Original Japanese Edition

The present book is a complete rewrite of the book entitled *Introduction to Surfactants* (*Kaimen Kasseizai Nyumon* in Japanese) written by Koich Isoda and Dr. Takehiko Fujimoto, and published in November 1963.

In response to favorable public reception, the original book has run into its 6th edition since first published in 1963. The book was revised by Dr. Fujimoto several times, but such partial revisions were not sufficient to keep up with the remarkable progress of technology and society in those years. In 1973, the book was rewritten completely with the title changed to *Introduction to Surfactants*, *New Edition*, and it was supplemented and revised in 1976 and again in 1981.

In 1963, the Japanese economy was in the early stage of high growth, and what are called the golden sixties were just about to bloom. The year of 1973, when the new rewritten edition was published, saw the real beginning of the seventies, the transition period when social concern moved from quantity to quality + quality.

In the 1980s, with the transition period of the 1970s over, demands are being made on industries that they have their own resources of creativity. The importance of surfactants in a broad sense is increasing more and more these days in response to the industrial tendency to place emphasis on brain-intensive operations rather than mass production, and, in the case of the chemical industry, on specialty chemicals rather than heavy chemicals.

Therefore, even in the case of this kind of book of introduction, it is really difficult for a single author to cover the full-grown technical area of surfactants as it is today. In spite of the skillful support of the research chemists of our company in each specific field, I cannot help conceding that the present book is far from being "adequate."

I hope that, though the book is not adequate enough, it will serve you as a springboard for jumping into the more concrete realm of surfactants, namely, the realm of their practical applications. I believe that actual practice should be our excellent teacher, a far better one than any book can be.

It is an unanticipated pleasure for me to be able to revise the book at the beginning of the 1980s. I wish to take this opportunity of expressing my sincere thanks to the staff of Research Division and Public Relations Dept. of SANYO CHEMICAL INDUSTRIES, LTD. for their invaluable assistance.

July 1981

Dr. Takehiko Fujimoto