Opening remarks, May 14, 2004

Challenges for Chemistry and Chemical Technology

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1. Changes of chemistry and chemical technology

Chemistry, chemical technology and chemical community must keep changing for progress, in order to make sure their raison d'etre in the society and to contribute substantially to the sustainable development of the society. In this meeting we shall discuss the possible tasks of the chemical communities to achieve the goal.

2. Challenges for chemistry and chemical technology

Modern chemistry and chemical technology, together with other modern sciences and technologies, have made enormous progress in the past and have brought prosperity and convenience to humankind in many countries. We believe the chemistry and chemical technology will continue to play similar positive roles in the future. However, we recognize that serious problems of the environment, health and safety are accompanied by the progress of sciences and technology. We also notice that there exist many unsolved global and local problems such as climate change, energy crisis, mass starvation, and emergence of new diseases, that could be chemically coped with.

Another challenge may be the maintenance of the identity of chemical science and technology, or the necessity of their redefinition. The identity might be buried in the rapidly expanding frontiers of science and technology in general.

3. Two main streams of chemistry and chemical technology

There appear two main streams in chemistry and chemical technology. One is the "frontiers of chemistry," typically represented by the chemistry of electronic/optical properties of substances and the bio/life chemistry. They form the bases of information technology and life/health industry, respectively. The chemistry for efficient conversion

of matters and energies is another example of chemical frontier. Here, new academic and technological fields are rapidly growing, without sticking to traditional academic disciplines such as chemistry, physics and biology. The second main stream is the ”environment and safety,” related to chemistry. This is a rather difficult field that would involve even humanities and social sciences. But without this, sound progress of chemistry and chemical technology would not be possible.

These two main streams must go together in a harmonized manner. “Green/Sustainable Chemistry” in a broad sense is the possible solution.

4. Roles of chemical societies

In order to promote the above main streams, the chemical societies should encourage the chemists and chemical engineers, particularly of the young generation, to tackle to these new fields, i. e., chemical frontiers and environment/safety problems, by providing platforms for the activities. The establishment of sound relationship between the chemical community and the general public is another important role of chemical societies. Chemical societies must disseminate proper scientific information to and communicate with the general public, in order to share common sense required for the rational and efficient assessment of chemical technology.

The chemical societies must promote “education” and “ethics”, as these are the prerequisites for the relationship. Education at early stage as well as at the universities and after graduation must be reconsidered. As for ethics, it is evident that scientists and engineers should be very conscious of it to prove worthy of trust of the society.

International collaboration of chemists and chemical engineers are necessitated to provide chemical solutions to global and local problems as exemplified in the above, and to make their efforts more visible to the general public. We propose the major chemical societies take proper actions jointly for these objectives.