IUPAC Projects

Standard Potentials of Radicals

Thermochemical properties of inorganic and organic radicals in solution will be the subject for review by a new IUPAC Task Group sponsored jointly by the Inorganic Chemistry Division and the Physical and Biophysical Chemistry Division. The objective will be to review and evaluate a variety of thermodynamic properties, including standard potentials of radicals, pK_a's of radicals, and other chemical equilibria of radicals, both in aqueous and non-aqueous media. Prior evaluations of these data were performed by individuals, in a rather non-systematic way, and are now quite out of date. Knowledge of these aqueous properties is essential in modeling the chemistry of atmospheric cloud water, terrestrial waters, radiation processes, and in understanding the fate and effects of radicals in living tissues. Analogous data for nonaqueous systems will be of value in understanding the chemistry occurring in industrial processes, in energy-transduction technology, and other fields. Moreover, there is a synergy attained by having reliable data in both types of media. The task group, lead by Professor David M. Stanbury of Auburn University, USA, will establish a Web site where evaluations for individual radicals will be posted dynamically as they are generated. Upon completion of the project, the evaluations will be published in the *Journal of Physical and Chemical Reference Data* and/or in *Pure and Applied Chemistry*. The task group will hold its first meeting near Zurich, Switzerland in early June 2002.


www.iupac.org/projects/2001/2001-015-1-100.html

Glossary for Toxicokinetics of Chemicals

At a Commission on Toxicology–VII.C.2 (COMTOX) meeting in Szeged, Hungary, in September 2000, the members present identified the lack of knowledge and confusion regarding terminology currently used in the field of toxicokinetics and chemistry as a problem for the development of the subject. Accordingly, a project called "Glossary for Toxicokinetics of Chemicals" was initiated within the Chemistry and Human Health Division. Further support was obtained for the project in July 2001 at the 41st IUPAC General Assembly in Brisbane, Australia.

IUPAC is the world authority on chemical nomenclature and terminology and thus the projected glossary fits within its remit. The objective of the project is to compile definitions of the current terminology used in toxicokinetics, including, where relevant, information on chemical speciation, analytical methods, analytical equipment, and the biological activity of chemicals.

An appendix will give practical examples of situations where toxicokinetic data may be applied. The glossary will thus facilitate interdisciplinary research in toxicokinetics and contribute to a better understanding among the disciplines.

The task group is chaired by Monica Nordberg and the current members are Douglas M. Templeton and John H. Duffus. They will consult with scientists active in the fields of chemistry, toxicology, medicinal chemistry, pharmacology, and biostatistics.

Comments and suggestions from the chemistry and toxicology community for toxicokinetic terms to be included are welcome and should be addressed to monica. nordberg@imm.ki.se.


www.iupac.org/projects/2000/2000-034-2-700.html

Recommendation on the Use of Countercurrent Chromotography in Analytical Chemistry

IUPAC has approved a two-year project to prepare a critical review of applications of countercurrent chromatography (CCC) in organic and inorganic analytical chemistry, pharmaceutical industry, and in radiochemistry. The project will place an emphasis on theory, methodology, and instrumentation. Recommendations will be made on the terminology and standardization, taking into account its relative position between other extraction and chromatography processes.

CCC is used as a method for the concentration, separation, and purification of chemical and pharmaceutical substances at both analytical and process (production) scales based on their partition between two immiscible solvent phases. One liquid phase is held stationary in the force field of a coil planet centrifuge while the other is eluted through it as the mobile phase. Among its various advantages is the ability to achieve high-resolution extractions/separations with minimal solvent use.

The application of CCC in analytical chemistry has been investigated for 16 years at a fundamental level at the Vernadsky Institute of Geochemistry and Analytical Chemistry at the Russian Academy of Sciences. Various applications of CCC to the concentration and separation of a number of elements in environmental and inorganic analysis (including the purification of chemical reagents) have been studied and a fundamental understanding of the hydrodynamics is developing. It is also clear that a basis for developing various methods of analysis has been established from the applications of CCC in the pharmaceutical industry, particularly in the production of drugs, and through the equipment made at