toxic chemicals as weapons of war. This report is based on an IUPAC Workshop held in Bergen, Norway, 30 June to 3 July 2002. The report highlights developments in organic synthesis and changes in chemical plant design that will pose new challenges to the Convention, but it also describes recent and probable future developments in analytical chemistry that should assist in implementation of the Convention. The key issues identified at the Workshop are listed and the findings and observations are summarized in 18 points. Some of the lectures presented at the Workshop are published in the same issue of *PAC*.

www.iupac.org/publications/pac/2002/7412/7412x2323.html

Critical Evaluation of Stability Constants and Thermodynamic Functions of Metal Complexes of Crown Ethers (IUPAC Technical Report)

by F. Arnaud-Neu, R. Delgado, and S. Chaves

Pure and Applied Chemistry,
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Stability constants and thermodynamic functions of metal complexes of crown ethers in various solvents published between 1971 and the beginning of 2000 have been critically evaluated. The most studied crown ethers have been selected: 1,4,7,10 tetraoxacyclododecane (12C4); 1,4,7,10,13 pentaoxacyclopentadecane (15C5); and 1,4,7,10,13,16 hexaoxacyclooctadecane (18C6). The metal ions chosen are alkali and alkaline earth metal ions, Ag^{+}, Tl^{+}, $Cd2^{+}$, and $Pb2^{+}$. The solvents considered are water, methanol, ethanol, and their mixtures, as well as acetonitrile, *N,N'*-dimethylformamide, dimethylsulfoxide, and propylene carbonate. The published data have been examined and grouped into two categories, "accepted" and "rejected." The "accepted" values were considered as (i) recommended (**R**), when the standard deviations (s.d.) on the constant K or on ΔrH were inferior to 0.05 lg unit or inferior to 1 kJ mol^{-1}, respectively; (ii) provisional (**P**), when s.d. is superior to 0.05 and inferior to 0.2 for lg K or s.d. is superior to 1 and inferior to 2 kJ mol^{-1} for ΔrH; (iii) recommended 1 (**R1**), if the values were obtained by a single research group, but were considered reliable in comparison with related systems, and considering that the research team usually presents R-level values for other similar systems.

www.iupac.org/publications/pac/2003/7501/7501x0071.html

Critical Evaluation of the Chemical Properties of the Transactinide Elements

by J. V. Kratz

Pure and Applied Chemistry,
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In this paper, the chemical properties of the transactinide elements rutherfordium, Rf (element 104); dubnium, Db (element 105); and seaborgium, Sg (element 106) are critically reviewed. The experimental methods for performing rapid chemical separations on a time scale of seconds are reviewed, and comments are given on the special situation with the transactinides for which the chemistry has to be studied with single atoms. There follows a systematic description of theoretical predictions and experimental results on the chemistry of Rf, Db, and Sg—their mutual comparison and evaluation. The literature cited has the cutoff date of March 1999. The more recent chemical identification of bohrium, Bh (element 107), and of hassium, Hs (element 108), should be evaluated in a future part II of this report.

www.iupac.org/publications/pac/2003/7501/7501x0103.html

Current Challenges and Needs for Analytical Chemistry

This workshop, organized by the Analytical Chemistry Division, will be held during the IUPAC General Assembly on Sunday 10 August (AM).

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