Members of the task-group from six countries will follow the same preparative protocol in various laboratories, and the properties of the resulting materials will be compared at the international level. For the colloidal forms, the particle size and polydispersity determined by dynamic light scattering will be the main criterion. The films will be characterized with respect to their thickness, assessed by optical absorption measurements after calibration. The results of the project will contribute to the development of reproducible procedures for forming conducting polymers. Various macroscopic and microscopic substrates coated with conducting-polymer overlayer can find uses in analytical chemistry, separation science, the catalysis of organic reactions, conducting composite materials and in the development of micro-electronics.

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www.iupac.org/projects/2002/2002-019-1-400.html

Highlights from Pure and Applied Chemistry

Presenting recently published IUPAC technical reports and recommendations

Information Essential for Characterizing a Flow-Based Analytical System (IUPAC Technical Report)

by Elias A.G. Zagatto, Jacobus F. van Staden, Nelson Maniasso, Raluca I. Stefan, and Graham D. Marshall
Pure and Applied Chemistry, Vol. 74, No. 4, pp. 585-592 (2002)

Terminology related to classification and definition of analytical methods based on flowing media, as well as terms describing the flow-based analytical procedure or system and its components have been presented in previous publications, including *Pure and Applied Chemistry* and the "Orange Book," 3rd edition. However, a literature survey reveals that a number of such analytical procedures and/or related instrumentation are only partially described. As a proper description of any methodology is essential, it is important to complement the earlier recommendations by taking into account the recent progress in flow analysis. The objective of this report is to provide guidelines for characterizing a flow analyzer and/or related flow-based methods, emphasizing the minimum but adequate information that should be included in scientific or technical reports. Aspects more related to chromatographic procedures are not considered.

According to the report, for a complete description of a flow system, the following elements should be considered and described: flow pattern (technique), stream parameters, sample introduction (with possibility of reagent introduction), manifold, sample processing, and detection. The report also describes the following important performance parameters of a flow-based procedure: sampling rate, analytical characteristics, robustness, and portability.

This report should benefit practitioners and developers by permitting normalized proposals to be presented in the field of flow analysis. The authors intend to use this report to prepare a checklist that will lead to a protocol for reporting results and systems in flow analysis, which would result in the development of systems that are more consistently designed.

www.iupac.org/publications/pac/2002/7404/7404x0585.html

Sulfate-Sensing Electrodes. The Lead-Amalgam/Lead-Sulfate Electrode (IUPAC Technical Report)

by Patrizia R. Mussini and Torquato Mussini
Pure and Applied Chemistry, Vol. 74, No. 4, pp. 593-600 (2002)

It has long been recognized that sensitive and reproducible sulfate-reversible electrodes (e.g., the $Pb|PbSO_4$ or $Hg|Hg_2SO_4$ electrode) are not as readily available as chloride-reversible electrodes (e.g., a widespread $Hg|Hg_2Cl_2$ or Ag|AgCl electrode). In this context, two major features are evident: the activity solubility products of $PbSO_4$ and Hg_2SO_4 are larger than those of Hg_2Cl_2 and AgCl by several orders of magnitude, and in the case of the $Pb|PbSO_4$ electrode, the preparative and operational procedure had not been assessed satisfactorily until recently, so that the electrode in both $Pb|PbSO_4$ and $Pb(Hg)|PbSO_4$ forms proved difficult to use and/or was unsatisfactorily reproducible.

In this report a new, simplified design and a convenient preparation procedure for the $Pb(Hg)|PbSO_4|SO_4^{2-}$ electrode is proposed. This procedure ensures preparation of stable amalgams and reproducible electrode potentials, which make this electrode useful and attractive for both thermodynamic investigations and electroanalytical applications. For these purposes, the electrode prepared according to the proposed procedure has been exhaustively characterized both thermodynamically and as a sulfate-sensing electrode, in different sulfate solutions, including H_2SO_4.

The report also proposes a practical standardization procedure. The $Pb(Hg)|PbSO_4|SO_4^{2-}$ electrode can be