

## **Teamwork**

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### **This issue of 'Teamwork' includes:**

- A reminder about the next funding round
- A report on the Division Officers' meeting at the IUPAC Secretariat in December.
- Changes to the Division V web pages.
- 'Profiles' for members of the Division Committee: **Kazuko Matsumoto** (TM; Japan) and **Marja-Liisa Riekola** (NR; Finland).
- A report from **Yoshio Umezawa** and **Erno Lindner** on the Matrafured 02 conference on Electrochemical sensors.

### **The next funding round**

For the Project submission form, guidelines for its completion and an example of a completed submission form, see: [www.iupac.org/divisions/V/projects/index.html](http://www.iupac.org/divisions/V/projects/index.html)

The next funding round will be based on complete Project proposals received up to **April 1, 2003**. To date we have received rather few proposals for this next round, but now is the time to put the finishing touches to your proposal! TM, please consult with your Advisor groups and potential Task groups about this deadline.

### **Division Officer's meeting**

David Moore, Folke Ingman, Kip Powell and Ryszard Lobinski met at the IUPAC Secretariat, November 30 - December 1.

#### The meeting

- advanced the process to improve the quality of information about Division activities (e.g. via the web pages).
- constituted the Nominating Committee for the next Division Committee elections.
- reviewed the progress of all current Projects.
- made strategic decisions about the use of future Division meetings to
  - assist in building bridges with the wider scientific community,
  - hearing their perception of needs for IUPAC initiatives,
  - engaging the Division members in a 'think tank' exercise with the aim of developing new projects.

### **Division web pages**

The [example of a completed Project Submission form](#) has been updated to provide more explicit 'explanatory notes'. Flow diagrams have been developed to provide Division members and Task Group members with a clear indication of the stage and status of each 'final' project document after it has been submitted for review.

There are many steps in the review process, involving internal and external referees, assessment (at each stage) by the ICTNS (Inter-Divisional Committee on Terminology, Nomenclature and Symbols) and, in the case of 'IUPAC Recommendations', a period of 'public review' via the web.

As we go to press these changes are in the hands of the Secretariat but have not yet appeared as modified web pages.

### ***Nominating Committee***

The Nominating Committee has been constituted as Folke Ingman (chair, Sweden), Freddy Adams (Belgium), Bob Byrne (U.S.A.), Bob Cattrall (Australia) and Adam Hulanicki (Poland). The Secretariat has already invited all NAO's to submit nominations for positions on all of the Division and Standing Committees (closing date January 15). The Division President invites all Division Committee members and Task Group members to contribute further nominations. The closing date for these is February 15:

If you know of colleagues or other analytical chemists (or related disciplines), who would be willing to take on the task of furthering the work of the IUPAC and especially the Analytical Chemistry Division, please contact them regarding their willingness to work in that capacity (have them consult the Division web pages <http://www.iupac.org/divisions/V> for further information or clarification of what it is we actually do!) Then, if they are willing to be considered as a nominee, please obtain the following items from them and forward them to the Nominating Committee Chair, Folke Ingman ([folke@analyt.kth.se](mailto:folke@analyt.kth.se)): 1/2 page resume (CV) and 1/2 page explanation of how they would further the work of the division and the IUPAC if elected.

It is important that the Division Committee (NR + AM + TM) be constituted to provide geographic balance, include experienced scientists and emerging experts, provide subject balance, and meet the needs of both 'core' and 'emerging' areas of analytical chemistry.

### ***Elections.***

Since the Division meeting there has been an e-mail ballot to elect the Division officers for 2004-5. This resulted in Roger Smith being elected as Secretary and Ryszard Lobinski being elected as Vice-President. David Moore moves to Past-President and Kip Powell moves to President. This process had to precede the work of the Nominating Committee so that the number of 'vacant' positions on the Division Committee could be defined.

### ***Learning from our Stakeholders***

Starting with the combined Division Officer's/ Commission chair's meeting in Idstein in January 1998, the Division has been trying to improve its links with stakeholders/end-users. This process has been only partially successful, but does occur through Conference presentations of IUPAC projects, the requirement that stakeholders/end-users are involved in Task Groups for all new applications for Project funds, and through improved dissemination plans (e.g. 'announcements' in key analytical chemistry journals). The Idstein, and subsequent meetings, also identified the need for targeted 'workshops' which brought key industry sectors (e.g. pharmaceutical) and appropriate members of the Division Committee together. Such meetings have not yet occurred.

The Division Officer's meeting in 2002 also noted the capacity for the Division Committee to be much more pro-active in identifying projects. That is, the Committee meetings could, in part, assume the role of a 'think tank' and so generate Project proposals 'from the top down' (the inverse of the present process).

Thus, the Division Officers are proceeding with a plan to include a Workshop as part of the biennial meeting in Ottawa, at which

- Key participants from the IUPAC Congress will be invited to present their views on current needs and trends in analytical chemistry
- Division members will be invited to make similar contributions relevant to their area of expertise.

- The views of each group of presenters will be discussed.
- Project priorities will be identified.

This is an exciting new development and may well impact on the future focus of Division Committee business.

### **Project Reports**

Thank you to all those who submitted progress reports! The 5 months since the previous reporting period have been very productive! Two projects have been completed, two have progressed as far as review by the ICTNS and one has been submitted for external review.

### **Spreading the word**

Did you know that the December issue of *Chemistry International* contained 6 articles related to activities of the Analytical Chemistry Division! There is one more article in the January-February issue. Well done! We are very keen to see 'an article for CI' as one component of every dissemination plan for Division V projects.

### **Division Profiles**

In this issue of *Teamwork* we introduce two female members of the Division Committee to our readers.

**Kazuko Matsumoto** is a TM representing Japan. **Marja-Liisa Riekola** is a NR, representing Finland and was previously a member of the Commission on Separation Methods in Analytical Chemistry (1996-2001),

**Kazuko Matsumoto** was born in Tokyo. She received her B.S.(1972), M.S. (1974), and PhD (1977) from The University of Tokyo. In 1977-1984, she worked in the group of Prof. K. Fuwa at The University of Tokyo as a research associate. In 1984 she moved to Waseda University as associate professor and was promoted to a full professor there in 1989. During these years, she spent two years (1991-92) at the Institute for Molecular Science (Japan) as an adjunct professor, and spent half a year (1992) at MIT as a visiting professor. She is now the vice president of the Japan Analytical Chemical Society, and is also a member of The Council of Science and Technology Policy of Japan.

Her research area is related to analytical applications of metal-complexes as follows:

- (i) development of new biotechnology using new lanthanide fluorescent chelate labels for time-resolved fluorometry (immunoassay, DNA hybridization assay, a multicolor labeling system, bioimaging, a biochip system) The study includes the development of both labels and instruments, i.e., lanthanide-chelate labels which can be covalently bound to proteins and nucleic acids, and time-resolved fluorometric instruments based on the new concept for a multicolor labelling and detection system. The combination of the lanthanide labels and time-resolved fluorometry has turned out to efficiently remove the background fluorescence and improve the detection limits of conventional methods by 2 to 4 orders of magnitude. The principle is expanded to many bioassay systems.
- (ii) one-dimensional nano-wire metal complexes having delocalized metal-metal bonds with new luminescence and electronic properties.

### **References**

- i) "Lanthanide Chelates as Fluorescence Labels for Diagnostics and Biotechnology" Kazuko Matsumoto, Jingli Yuan, metal Ions in Biological Systems, Vol 40 in press
- ii)"Synthesis of a Terbium Fluorescent Chelate and Its Application to Time-Resolved Fluoroimmunoassay" Jingli Yuan, Guilan Wang, Keisuke Majima, and Kazuko Matsumoto, Anal. Chem 73, 1869 (2001)

**Marja-Liisa Riekkola** is Professor of Analytical Chemistry at the University of Helsinki (since November 1987).

Her research interests include:

*Separation science*: novel instrumental analytical techniques, capillary electromigration techniques; field-flow fractionation; and multidimensional chromatographic techniques; Miniaturized devices. Factors governing the separation mechanisms, selectivity and techniques, different interactions.

*Environmental science (green chemistry ideology)*: supercritical fluid extraction and pressurized hot water extraction, pressurized hot water oxidation and supercritical water oxidation, special analytical techniques (on-line coupled techniques). Utilization of pressurized hot temperature water in purification, reactions and processing.

Her work has led to the award of the Emmanuel Merck Prize in Chromatography in 1995, and the Tswett Medal in Chromatography in 1996. In serving IUPAC she prepared (with Jan Åke Jönsson) "Terminology for Analytical Electromigration Techniques".

Marja-Liisa serves on a number of Editorial Boards: *Journal of Biochemical and Biophysical Methods*, *Chromatographia*, *Electrophoresis*, *J. Chromatographic Science*, *J. Analytical and Bioanalytical Chemistry* and *J. Separation Science*.

Her professional service includes: Vice-Chairman of the Research Council for Natural Sciences and Engineering of the Academy of Finland, Member of Chairmen of the European Research Councils' Chemistry Committees, CERC3 (Chairman 2001-2002), Scientific Board Member of the University of Helsinki, Member of Research Grants Committee of the University of Helsinki, Member of Board of Directors of CSC - Scientific Computing Ltd, Vice Board Member of Helsinki Institute of Physics, Board Member of Finnish Institute for Verification of the Chemical Weapons Convention (VERIFIN), Member of Joint Committee of the Nordic Natural Science Research Councils, Member of Board of Directors of Centre for Continuing Education, University of Helsinki, Member of Committee for Public Information, Ministry of Education, Finland.

### **Conference Report**

One way to discern the needs of end-users is to discuss the Objectives of your IUPAC Project Proposal at an appropriate Conference.

**Yoshio Umezawa** (chair) and **Erno Lindner** are members of the Task Group that is preparing an IUPAC Technical Report on: "Performance evaluation criteria for preparation and measurement of macro and microfabricated ion-selective electrodes". They write about their IUPAC sponsored participation in the Matrafured 02 Conference on Electrochemical Sensors:

The focus of the conference was related to recent developments in the field of ion-selective electrodes. In specific discussion sessions, several of the targeted topics of the proposed Technical Report were discussed in detail. In these discussions it was generally accepted that, based on the developments in the understanding of the response mechanism of ion-selective electrodes, some of the previous IUPAC recommendations have to be revisited. In addition, it was recognised that issues related to the reported extraordinarily low detection limits of certain ion-selective electrodes should be incorporated into a new document. Also, it was concluded that the problems associated with miniaturisation of ion-selective electrodes should be addressed. In summary, these discussions confirmed the importance and timeliness of the project.

In the discussion sessions of the conference, several areas of interest, which were not specifically mentioned in the original proposal, were also discussed. These included but were not restricted to problems of the:

- use of non-equilibrium devices in potentiometry
- potentiometric sensors with twice-Nernstian or half-Nernstian responses
- definition of the detection limit of potentiometric sensors with super-Nernstian response in extremely low concentrations.
- recommended procedures for determining the selectivity coefficients of potentiometric sensors.
- recommended calibration procedures before potentiometric measurements in biological samples such as whole blood, serum or plasma.

In the first draft of the technical report these additional issues will be addressed.

They also note that:

According to the original proposal, the Technical report should give guidelines for the performance evaluation criteria of micro reference electrodes. The importance of the reference electrode and liquid junction potentials in potentiometry can not be over-emphasised. The design of high stability micro reference electrodes for monitoring acute and chronic illness is especially challenging. Unfortunately, only a very limited number of reports discuss these difficulties. Due to the lack of information in this important area the performance evaluation criteria can not fully be discussed in the desirable depth in the Technical report.

Erno also writes that most of the conference participants did not recognise the significant difference between IUPAC '**Recommendations**' and IUPAC '**Technical Report**'. Most had the impression that any document published in PAC with an IUPAC heading represented the 'official' stand of IUPAC. In fact this only applies to 'Recommendations'.

**Teamwork** could be the vehicle for you to share concerns or interesting news items. Do let me have your contributions!

Kip Powell

February, 2003.

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