

Foreword by the Chair: Traceability on Global Basis



CITAC's mission is to improve traceability of the results of chemical measurements everywhere in the world. Its global basis can be seen in its composition. Today CITAC is composed of thirty-five members from twenty-three countries: Argentina, Australia, Austria, Belgium, Brazil, Chile, China, Czech Republic, Finland, France, Greece, India, Ireland, Israel, Japan, Korea, Mexico, New Zealand, Russia, South Africa, The Netherlands, United Kingdom and the USA. Some members act as liaisons of regional or worldwide organizations which is very beneficial by dissemination and strengthening interactions as well as for scientific purposes.

Providing guidance on best procedures, getting quality measurements results thus improving the quality operations in laboratories, for qualitative and quantitative analysis and for routine and non-routine analysis, is not an easy task. However, this is fundamental for those looking towards formal recognition, accreditation, certification or other particular technical quality requirements for products and services.

The demands of establishing metrologically-sound traceability for the very broad areas covered by "chemical measurements" are challenging. First, for metrology in chemistry the task is to determine the quantity of a specific chemical entity and not merely "amount of substance". In this regard, chemical measurements are multidimensional, requiring

measurement of a large number of chemical entities, in a broad range of matrices, and mass fraction ranges. Adding to the complexity, not all measurements important for trade and quality of life are traceable to the SI, but rather other "agreed upon international references" like for fat or protein determination in milk where the results are attained by calculations based on the nitrogen content. So, how can we reach globally recognized, reliable, comparable and equivalent measurement values with stated measurement uncertainty in all fields of measurements, analysis and testing?

It is clear the increasingly important role in disseminating traceability. We can observe that many NMIs and designated laboratories in fact are at the top metrological level but how can we raise levels for (a) the floor laboratories that are responsible for quality control of industrial products and process, and (b) the environment and health area taking into consideration the complexity of the field involved?

Networks and distributed systems have been an international trend and currently are in practice in many countries as a way to support these demands. In this regard, we decided to develop a study at the University of São Paulo, Brazil, — looking at the various models in the world and identifying management factors that could be worthwhile when working under this kind of configuration. So, I deeply thank all my colleagues who answered the questionnaire about this issue. We will send you all the results collected at the end of this research. CITAC has developed an important role regarding co-operation for valid and comparable measurements on a global basis. Many actions have been developed to support the need for traceability for the field laboratories that deliver results to the user community.

In the last year activities on education, training and dissemination have been part of events like the CITAC Workshop on Metrology and Quality Assurance in Chemistry held under the umbrella of the International Congress on Analytical Sciences in Moscow, the International

Conference on Metrology in Israel and the 6th International Conference on Advances in Metrology in India. Next year CITAC will be present at the 11th International Symposium on Biological and Environmental Reference Materials (BERM11) to be held in Japan under the coordination of the former CITAC chair, Dr. Kensaku Okamoto (NMIJ/Japan).

The participation of CITAC in forums such as the above is important in order to disseminate metrological concepts and practices and engage new members. We receive many contacts and solicitations after such events. CITAC members continue to cooperate with international organizations like EURACHEM, ISO REMCO, ILAC and IUPAC.

The CITAC website is another way for disseminating CITAC activities. However, the website needs to be redone in terms of both format and content. It is necessary to publicize CITAC activities and generate the interest of academia, industry and government in order to move forward with our mission. Clearly, as a short term objective we must escalate our industrial outreach.

"Traceability in Chemical Measurement: A guide to achieving comparable results in chemical measurement (2003)"; "Quality Assurance for Research and Development and Non-routine Analysis (1998)" and "Quantifying Uncertainty in Analytical Measurement, The Second Edition (2000)" have been successfully translated to Portuguese.

At our last meeting a proposal from Dr. Ilya Kuselman, CITAC Vice-Chairman, was approved for nominating outstanding papers on metrology in chemistry. Details about the procedures for this process appear in his editorial in this issue and in ACQUAL online.

At the meeting, a discussion was held on strategies for broadening the CITAC membership base. One possibility is inviting organizations to be nominated for membership and have more representatives at meetings. This aspect must

Continuation on page 3 ►

Foreword by Chair: Traceability on Global Base / *V. Poncano*1

Editorial: CITAC Nomination for the Most Interesting/Important
Papers on MiC / *I. Kuselman* 3

The 21th CITAC Members' Meeting / *L. Besley* 4

Reports of International Organizations

- Summary of the CCQM Report / *CITAC* 4
- ILAC Update / *A. Squirrell* 8
- SADC MET Activity in MiC / *W. Louw* 9
- Information from DAC of EuCheMS / *E.H. Korte* 12
- IMEKO TC-23 on Food and Nutritional Metrology / *V. Iyengar* 12

Dissemination of MiC Concepts

- State Service of CRMs for Composition and Substances
in Russia / *V. Leonov and I. Dobrovinsky* 13
- Stranaska Contributions to MiC / *J.D. Messman* 14
- Master's Program in Applied Measurement Science at the University of Tartu / *I. Leito* 17

Meeting Reports

- ICAS-2006 in Moscow, Russia / *V. Kolotov* 18
- The 3rd International Conference on Metrology in Israel / *I. Kuselman* 20
- The 6th International Conference on Advances in Metrology in India / *A.K. Agrawal* 21
- Workshop on Metrological Concepts for Strengthening Food and Nutritional
Measurements in India / *V. Iyengar* 21

Announcements

- IV International Congress on Chemical Measurement Traceability and Quality Assurance,
Brazil 2007 / *V. Poncano* 23
- Workshop on Uncertainty in Sampling, Denmark 2007 / *C. Grøn* 24
- Test and measurement conference in SA 2007 / *W. Louw* 24
- The 1st International Proficiency Testing Conference, Romania 2007 / *G. Guslicov* 25
- BERM 11, Japan 2007 / *K. Okamoto* 26

Messages from New Members:

- *M. Suchanek* 27
- *C. Burns* 27
- *H. Emons* 28

Citac Terms of References 29

Updated CITAC Members' List 30

CITAC Publications and Erratum 32

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Contribution of the Vice Chair

Editorial: CITAC Nomination of the Most Interesting/Important Papers on Metrology in Chemistry



Metrology in chemistry is recognized today by worldwide metrological and chemical/analytical communities as a scientific discipline. The number of publications in the field is increasing dramatically. It is improbable for anyone to keep track of all the relevant literature published in different countries. Therefore, CITAC has developed a new procedure for nominating the most interesting/important papers on metrology in chemistry. The aim is to highlight remarkable papers in the field which a) may not have been "discovered" after publication in a national journal and not accessible to the larger metrological and chemical/analytical community or b) have been published in a known international journal but are unclear in meaning or c) papers with important scientific content that are worth special mention.

The nomination will be coordinated by the CITAC Coordinator for Nomination (**Coordinator**) elected at a CITAC members meeting for a period of three years. For nomination, a supporting letter from **any CITAC member**, as well as an abstract of the paper in English, are required to be sent to the Coordinator until **September 1** of the current year.

The Coordinator will send all nominations to CITAC members for choosing the **three** most appropriate papers. The Coordinator will summarize the CITAC members' answers and inform members of the results, which will be published in CITAC News, Accreditation and Quality Assurance, and other relevant scientific journals.

The Coordinator will also prepare corresponding CITAC honorary certificates for awarding the authors of the papers at the closest CITAC members' meeting.

This procedure reminds me of a Hasidic story retold by Doug Lipman. Once, two villagers came to a rabbi with a dispute. They quickly described their disagreement, and then awaited the rabbi's judgment. Instead of giving an immediate verdict, the rabbi asked one of the villagers a question about what had happened. The rabbi listened to the answer for a long time, and then asked the other villager a question about his experience.

The rabbi continued asking questions until both his visitors admitted that they had nothing more to say. At that point, the rabbi retired to deliberate. Almost immediately, he returned and announced his decision. The villagers, seeming to accept his judgment without question, shook hands as they departed.

After they left, another man who had witnessed the whole matter asked the rabbi, "It took you only a moment to decide. Why did you spend all that time with them, when you were able to arrive at the proper decision so quickly?" The rabbi replied, "I needed to listen to everything they had to say. Only then would they accept my decision without resentment. Only then would their problem really be solved."

To be wise like this rabbi, CITAC needs the support and interaction of the metrological and chemical/analytical communities. Therefore, I call on colleagues from all continents to contact CITAC members in their countries with proposals for the nomination (the list of CITAC members is available in the last pages of the CITAC News and in the CITAC website www.citac.cc).

At this time I wish to draw your attention to the contents of the present issue of CITAC News. Not only are there interesting traditional reports of international organizations written by well-known specialists in metrology, but also papers on the dissemination of metrology in chemistry (MiC) by representatives of a small private company, a university and of a state institution.

Of course, international meeting reports and announcements of upcoming meetings in the MiC field are included. In addition, I invite you to welcome the new CITAC members and become acquainted with them.

CITAC Terms of References are published here again, since they were adopted in 2004 for an initial term of 3 years and should be discussed at the 22nd CITAC Members' Meeting, 16-20 July 2007, São Paulo, Brazil.

The updated list of the members and the list of the CITAC publications are available also. The last one includes info on the new EURACHEM/CITAC Guide "Use of Uncertainty in Assessment of Compliance".

Dr. Ilya Kuselman
Vice Chair of CITAC
INPL, Israel

◀ *Continuation of Foreword, page 1*

be considered looking for a greater involvement of other organizations engaged with traceability in chemistry, even though they are not part of the formal metrological system, such as instrument companies which are part of the "commercial world". This point is important in terms of interacting with the community disseminating traceability and must be decided in our next meeting or through members' vote at present.

Recently a vote was taken for selecting the place for our next CITAC meeting. We can now announce that it will be held during the week of July 16th - 20th 2007 in Sao Paulo, Brazil in conjunction with the IV International Congress on Chemical Measurement Traceability and Quality Assurance (see details on page 23).

As I begin my last year as Chair, I would like to mention that it has been a pleasure serving you

in this capacity; with your continued support, we will be able to meet most of the objectives for CITAC. Finally, I wish you and your loved ones happiness and prosperity in 2007.

Ms. Vera Poncano
CITAC Chair
IPT, Brazil

Message of the Honorary Secretary

The 21st CITAC Members' Meeting in Moscow, June 2006



In June it was a smaller than usual group of eight CITAC members who assembled at the Congress Centre of the Russian Academy of Sciences in Moscow in warm summer weather. They met to conduct the 21st annual meeting of members, the first such meeting to be held in Russia.

Although the number in attendance was disappointing, members had come from all four corners of the globe, from Russia, Brazil, Israel, Australia, New Zealand, the United Kingdom, Finland and Belgium, to attend. Observers from Russia and Hong Kong were also present.

The members' meeting followed two and a half days of a CITAC workshop on metrology in chemistry, held as one of the concurrent streams of the International Conference on Analytical Sciences, that was held in Moscow in that week. The CITAC workshop had been very successful, attracting capacity or near-capacity audiences (mostly of Russian scientists) for all sessions, and revealing the strong hunger in Russia for greater awareness of the issues surrounding metrology in chemistry. To overcome the obvious language barriers, sessions were conducted with translation into Russian or English.

At the members' meeting, after a warm welcome from Ms. Vera Poncano in the Chair, the previous minutes were accepted and reports made on the actions flowing from that meeting. Two new members were then proposed to the meeting: Prof. Miloslav Suchanek from the Czech Republic, and Prof. Henrik Emons from IRMM in Belgium. Both offered to CITAC a wealth of experience in analytical chemistry and both were elected. CITAC members were also informed that Mrs.

Cathy Burns, FDA, USA, elected earlier, has received the necessary permission from her administration to join CITAC as an AZLA representative.

Unfortunately, to balance our new members, two resignations from CITAC were regrettably accepted by the meeting. They were from long-standing members, Dr. Wolfgang Richter and Dr. Werner Hässelbarth. Both have retired from their scientific posts and felt it no longer appropriate to be involved as CITAC members.

The meeting expressed its gratitude for the enormous contribution both of these men have made to CITAC over the many years of their involvement, and wished them every good fortune in their respective retirements. Replacement candidates for CITAC membership will be sought from their respective organisations.

The report from the CITAC Treasurer, Prof. Wolfhard Wegscheider, showed that CITAC is still in a sound financial situation. The slump in membership subscriptions that has been experienced in the past few years has been arrested, but recovery to the 80%-paid level of 8 years ago has still to be achieved. The major expenses incurred during the past year had been the printing costs of CITAC News and the EURACHEM / CITAC Guide to Quality in Analytical Chemistry.

Led by Dr. Steve Ellison, the meeting then reviewed the progress of the development of three guides to chemical practice, that for uncertainty and traceability issues in qualitative analysis, for sampling uncertainty, and for the fitness for purpose of chemical measurements. CITAC members are encouraged to contact Steve if they wish to contribute to any of these very valuable projects.

The CITAC Vice-Chairman Dr. Ilya Kuselman reported on the project on the selection and use of proficiency testing schemes for a limited number of participants, a project currently being undertaken by IUPAC. Although a number of CITAC members were already heavily involved in this work, others were urged to do so if they felt that they could make a contribution.

Discussion was continued from the 20th meeting on strategies for broadening the CITAC membership base. The following points were made:

- The need to involve members from organisations other than those within the formal metrology network. Two thirds of current members are from NMIs;
- Abandoning the principle of CITAC being constituted only by individuals, and inviting organisations to nominate for membership and have representatives at meetings;
- Increasing the involvement of the commercial world (instrument companies, etc.) in direct activities through membership.

It was agreed that the meeting did not constitute a sufficiently large forum to justify making decisions on such a crucial matter. It was further decided that the Executive would prepare a paper proposing changes of this type which could be put to the vote by ballot at or by the next members' meeting.

Dr. Ilya Kuselman, also proposed a scheme for CITAC to highlight important papers in metrology in chemistry, and undertook to work this into a draft policy paper for the next members' meeting. It was agreed that the principle was a sound one that should be supported by members, and whose implementation would be an ongoing role for the CITAC Vice-President.

Finally, Ms. Vera Poncano, on behalf of all the CITAC members, proposed a vote of thanks to the Russian organisers of the Moscow meeting who had facilitated the holding of the CITAC events.

In alignment with the CITAC policy of worldwide exposure for its activities, similar CITAC involvement was planned for conferences in Tel Aviv, Israel in November, 2006, in Delhi, India in December, 2006, and in Sao Paulo, Brazil in July 2007.

Dr. Laurie Besley
Honorary CITAC Secretary
NMIA, Australia

Reports of International Organizations

Summary of the Report of the Consultative Committee for Amount of Substance: Metrology in Chemistry (CCQM)

This is a summary of the CCQM report 2006 to the International Committee for Weights and Measures (CIPM), composed by CITAC with the permission of the BIPM. The complete official report approved by the CCQM can be found at the BIPM website: www.bipm.org.

1. Possible Redefinition of the Mole

The second and the metre are both defined in terms of fundamental properties of nature, but the kilogram, the ampere, the Kelvin and the mole were not. Of these, the ampere and the mole depended on the kilogram. Two alternative approaches to redefining the kilogram had been considered. These involved either fixing the Planck constant, or fixing the Avogadro constant. A definition in terms of the Avogadro constant would be easier to understand, but the alternative had a stronger link to fundamental physics and if in addition to fixing the Planck constant, the ampere were defined by fixing the elementary charge then Josephson voltage measurements and quantum Hall resistance measurements would be SI measurements. A definition of a base unit should be based on an invariant property of nature, simple, accurate, and freely available to anyone, anywhere, at any time. Revised definitions of four of the base units may be formulated as mentioned below. However, one should be aware that different formulations, still based on the same principles of defining the units in terms of the fundamental constants, are possible.

- “The kilogram, unit of mass, is such that the value of the Planck constant is $6.6260693 \times 10^{-34}$ joule second.”
- “The ampere, unit of electric current, is such that the elementary charge (the charge on a proton) is exactly $1.60217653 \times 10^{-19}$ coulomb.”
- “The Kelvin, unit of thermodynamic temperature, is such that the Boltzmann constant is exactly $1.380\ 6505 \times 10^{-23}$ joule per Kelvin”
- “The mole, unit of amount of substance of a specified elementary entity, which may be an atom, molecule, ion, electron, an other particle, or specified group of such particles, is such that the Avogadro constant (N_A) is exactly 6.0221415×10^{23} per mole” or alternatively, “The mole is the amount of substance of a system that contains exactly 6.0221415×10^{23} elementary entities, which may be atoms, molecules, ions, electrons, other particles, or a specified group of such particles.”

The proposals would have several consequences, including the fact that the mass of the prototype kilogram would no longer be exact, but would have an uncertainty of about 0.17 parts per million. There would be similar consequences for the molar mass of carbon-12, which would need to be determined by experiment, but its value would be consistent with $0.012 \text{ kg} \cdot \text{mol}^{-1}$ within an uncertainty of less than two parts in 109. The triple point of water would also no longer be exact, but would need to be determined by experiment, but its value would be consistent with 273.16 K, within an uncertainty of about 0.25 mK. In this very moment, however, in determining the kilogram in terms of the fundamental constants, there exists still a discrepancy of about $1 \cdot 10^{-6}$ between work based on the determination of the Avogadro constant by the X-ray crystal density method and work with the watt-balance based on Planck's constant. Before any change in defining the base units will be considered this discrepancy has to be solved.

2. Reports of the CCQM Working Groups (WG)

2.1 Organic Analysis (OAWG)

During the year OAWG had carried out key comparisons and pilot studies required by the health, food and commodity sectors. The results of four key comparisons had been reported: CCQM-K38 (PAHs in organic solution), CCQM-K39 (chlorinated pesticides in solution), CCQM-K11.1 (glucose in serum) and K11.2 (creatinine in serum).

Four pilot studies had also been completed. The first two had been run in parallel to key comparisons: CCQM-P31.a.1, PAHs in organic solution, run in parallel to CCQM-K38; and CCQM-P31.c.1, chlorinated pesticides in solution, run in parallel to CCQM-K39. The third was CCQM-P68 (19-norandrosterone): statistics for 2004 indicated that nandrolone was the second most abused of the anabolic steroids. Participants measured free and glucuronide forms of the metabolite. Four national metrology institutes (NMIs) had participated in the pilot study, each of which had used a different method. The results were all comparable with the reference value within their estimated uncertainties. The fourth pilot study completed during the

year was CCQM-P69 (PAHs in soils and sediment). Samples had been sent to 11 laboratories, 9 of which had submitted results. The results had indicated some problems with the homogeneity of the samples, and this would be addressed prior to continuing with CCQM-K50 and the pilot study CCQM-P69.1, which would be run in parallel to the key comparison.

Two comparisons were in progress at the time of the meeting: CCQM-K47 (VOCs in solution) was being carried out with a parallel pilot study CCQM-P61.1. Whilst results were good for most analytes, they were poor for m-xylene and the coordinating laboratory was investigating the accuracy of the reference value derived from gravimetric preparation, and how the uncertainty of a reference value might be calculated.

Further work analysing the results of a suite of comparisons (CCQM-K40, P31.b.1, P57 and P67) aimed at evaluating the uncertainty of measurements of PCBs in mussel tissue. Solutions of five target PCB congeners had been used to determine the influence of extraction on the uncertainty of the analysis. A new statistical approach had been developed to evaluate the consistency of results by different laboratories, from which it had been concluded that chromatographic separation and signal quantification were larger sources of uncertainty than extraction in these systems.

Future plans include development of series of key comparisons to underpin NMI measurement capabilities for organic high purity materials. The OAWG had agreed that 17 β -estradiol would be an appropriate material for such first key comparison (CCQM-K55.a).

Four pilot studies were being planned: CCQM-P77 a, b (Progesterone and cortisol in serum), CCQM-P20 e, f (Theophylline and digoxin), CCQM-P78 (Nutrients in infant formula), CCQM-P88 (Malachite green in fish). In addition, the OAWG discussed the possibility of organising pilot studies involving residues of veterinary drugs (nitrofurans and/or chloramphenicol), apple juice spiked with pyrethroids, acrylamide in potato chips, and organic components in alcoholic drink. A work on method-defined analytes such as moisture in grain was also considered.

Reports of International Organizations

2.2 Inorganic Analysis (IAWG)

The current status of key comparisons and pilot studies being undertaken by the IAWG: reports for six key comparisons and seven pilot studies were completed or being completed in 2005-2006; the reports of a further seven pilot studies were not yet complete, or awaiting comments on the first draft; a further two key comparisons and four pilot studies were in progress; and four new key comparisons and four pilot studies had been proposed.

CCQM-K44 (and CCQM-P70) involved measurements of seven trace metals in a matrix of sewage sludge. The concentration range covered three orders of magnitude and therefore the statement of "how far the light shines" would be broad. He highlighted the results for chromium, where a mixture-model median had been used to calculate the key comparison reference value (KCRV). CCQM-K45 and the associated pilot study CCQM-P72 involved toxic metals in food at levels close to an EU regulatory limit for tin of 200 mg/kg. There were five participants in the key comparison and five additional laboratories in CCQM-P72, which had also studied other toxic metals (including Cd and Pb) in the same samples.

Three new key comparisons are proposed: trace elements in soyabean powder CCQM-K56/P64.1 (following CCQM-P64), chemical composition of clay CCQM-K57/P65.1 (following P65), and nitrogen and five trace elements in Si nitride powder CCQM-K58/P74.1 (following P74). A new key comparison with an associated pilot study on nitrite and nitrate in calibration solutions and natural water (CCQM-K59/P89) is also proposed.

2.3 Gas Analysis (GAWG)

The results of four key comparisons organized by the GAWG are obtained: CCQM K23 (natural gas), CCQM-K26.a (NO in nitrogen), CCQM-K26.b (SO₂ in air), and CCQM-K41 (H₂S in nitrogen).

In order to develop a future program for comparisons to be carried out by the GAWG the "gaps" had identified: methane and propane in air, oxygen in nitrogen, nitrous oxide, nitrogen dioxide, carbonyl sulphide, organo-sulphur compounds, formaldehyde, non-methane hydrocarbons, volatile organic compounds at environmental levels and the purity analysis of gases. The "gaps" analysis had also identified priorities for repeating key comparisons. These included: CCQM-K1.d (SO₂ at emission levels),

CCQM-K1.c (NO at industrial levels), CCQM-K3 (automotive emissions), and CCQM-K4 (ethanol in air).

Work on ozone, green-house gases and VOC's is carried out in close cooperation with the World Meteorological Organization's Global Atmospheric Watch Programme.

2.4 Electrochemical Analysis (EAWG)

There had been a bi-lateral comparison carried out subsequently to CCQM-K34.1 (assay of KHP). This had shown satisfactory comparability between the BAM and the SMU. The final report of CCQM-K19 (pH of borate buffer) at three temperatures has been prepared. EAWG reported also on CCQM-K36 (electrolytic conductivity) involved 14 participants, each measuring two samples; there was good comparability among laboratories at both conductivity levels studied.

The plan of the EAWG includes six key comparisons and pilot studies. In the field of electrolytic conductivity they will be spanned the range between pure water and seawater. Similarly, the work on pH had covered the range of the pH scale covered by all of the designated "primary standards".

2.5 Surface Analysis (SAWG)

The scope of the SAWG covers not just surface analysis, but also micro- and nano-spatial analysis.

The SAWG had been involved in the review of calibration and measurement capability (CMC) data covering BET and surface porosimetry. After some necessary corrections, these had been approved.

In the two pilot studies organized by the working group, CCQM-P80 (C in Fe) and CCQM-P81 (N in Fe), the EPMA methods were used widely. The results showed poor comparability, even among those laboratories using the same methods. It was believed that the problem might, in part, be due to the data reduction methods. This possibility was being investigated in more detail by the NPL and the BAM.

Possible future projects for the SAWG involve the quantitative surface analysis of Fe-Ni alloy using CRMs from the KRIS and the determination of F and N in diamond-like carbon films coordinated by the BAM. Some possible areas for research relevant to the life sciences are identified including: the quantification of functional groups at surfaces, the study of surface

energy in terms of surface chemistry, the quantification of SIMS images of biological samples and imaging cells at cryogenic temperatures by scanning-electron microscopy.

2.6 Bioanalysis (BAWG)

The scope of the BAWG covers "large" macromolecules, where the target measurand is of biological origin in a biological context. Therefore, bio-measurement is included, but is not limited to: the identification and quantification of the active macromolecule in complex matrices and mixtures immediately relevant to its biological function are important.

Four pilot studies were organised by the BAWG. One of them CCQM-P44.1 was aimed at achieving the quantification of DNA by quantitative use of the polymerase chain reaction (PCR). The results in the second round had shown a significantly reduced variability between laboratories compared with the first round. However, the group still believed that further progress was required before proceeding to a key comparison. CCQM-P58 was studying instrumental and inter-plate effects in assays performed by the ELISA method. Results from the first round of measurements indicated a variability of up to 10%. This pilot study would proceed to a second phase that would involve the measurement of protein samples. CCQM-P59 was studying the measurement of proteins by circular dichroism. This had involved the distribution of carefully controlled protein samples to participants. The coordinating laboratory (NPL) had carried out a comprehensive analysis of the results by principal component analysis. The results suggested that the level of comparability between results from the participants was poor, particularly for results measured in the far-ultraviolet part of the spectrum. CCQM-P60 was studying the extraction of DNA. This had made use of real-time-PCR. It had led to a conclusion that the percentage of genetically-modified material extracted depended on the method and that the major component in the measurement uncertainty was due to a lack of method repeatability.

Two other pilot studies were underway, CCQM-P54.1, which would determine the mass fraction of a defined 20mer in a sample oligonucleotide, and identify any sequence failure products and their relative mass fractions, and CCQM-P55 on protein and peptide quantification.

Plans for new work include proposal from the KRIS to study the quantification of DNA methylation (CCQM-P94). Other proposals

Reports of International Organizations

would be developed further, and these involved: the assessment of reference materials and methods for cell mediated responses, DNA reference materials and glycoprotein and glycan analysis.

2.7 Key Comparisons and CMC quality (KCWG)

The KCWG included representatives from the CCQM working groups and the regional metrological organizations (RMOs). The 379 CMCs had been submitted by five RMOs as part of the Cycle VII review process, while the inter-regional review process had worked well for Cycles V, VI, and VII. There continued to be a problem with the approval of CMCs that were supported by either a key comparison or a pilot study that had been completed shortly before the review. If the full report from a comparison had not been agreed, then it was only appropriate to use the results with the agreement of the relevant working group. However, a unified approach was not used across the groups for treatment of revised values (KCRV) as part of their calculation. A harmonization of the different approaches to the uncertainty calculation of the KCRV and discussion how claimed CMCs are related to the results of key comparisons is necessary.

3. Update on the BIPM KCDB

The BIPM Key Comparison Database (KCDB) includes information relating to 671 comparisons, of which 537 were key comparisons and 134 supplementary comparisons. Approximately 50% of these were organised by the consultative committees and the rest by the RMOs and the BIPM. There were 18058 CMCs recorded in Appendix C of the KCDB of which 3521 were in chemistry. It should be noted that the final approval of the Joint Committee of the Regional Metrology Organizations and the BIPM (JCRB) is needed before CMCs could be entered into the KCDB.

4. BIPM Programme on Metrology in Chemistry

A questionnaire for NMIs had been drafted to aid the BIPM in the formulation of its 2009-2012 work plan proposals, and would enable the BIPM to monitor the consistency of its proposed

program with current and likely future NMI priorities in the fields of gas, organic and bio-analysis. The opinion of the CCQM Advisory Group on the BIPM metrology in chemistry program project proposals one can find in Annex 2 of the complete report.

5. Joint Committee for Traceability in Laboratory Medicine (JCTLM)

5.1 JCTLM WG1

The work carried out by WG1 of the JCTLM was based on the recommendations of ISO standards 15193 and 15194. The lists of higher order reference materials and reference measurement procedures for laboratory medicine and in vitro diagnostics developed by WG1 included approximately 100 reference measurement procedures and 190 CRMs.

5.2 JCTLM WG2

WG2 of the JCTLM was concerned with the technical competence of reference measurement laboratories. WG2 had prepared a manual that described its processes and procedures. An open call for laboratories to nominate their reference measurement services had been published through the JCTLM pages on the BIPM website. A total of 210 nominations of reference measurement services from twenty six laboratories had been received in 2006.

WG2 had developed an approach to structuring a series of inter-laboratory comparisons. This involved defining a single "key measurand" representing each class of analytes. In each cycle the "key measurand" would be different.

6. Cooperation with International and Inter-Governmental Organisations

Cooperation was discussed of CCQM with the World Anti-doping Agency, International Atomic Energy Agency, International Organization for Standardization – Committee of Reference Materials, International Laboratory Accreditation Cooperation, International Association of Forensic Sciences, Codex Alimentarius Committee on Methods of Analysis and Sampling, and with the regional metrology organizations.

The US Pharmacopoeia expressed great interest in cooperating with the CCQM and its working groups.

7. CCQM Recommendation Q1 (2006): On Metrology in Chemistry and Biotechnology

CCQM considering

- the importance of reliable, comparable and traceable chemical measurement results in support of world trade, monitoring the state of the environment including climate change and air quality, food quality and safety, laboratory medicine, and forensics;
- the growing importance of biotechnology in human health, food production, forensic medicine and the protection of the environment,
- the increasing reliance of pharmaceutical products and regulations on internationally equivalent measurement results;
- the increasing international mobility of the world population;

noting

- the BIPM's activities in coordinating and promoting the development of metrology in cooperation with other relevant intergovernmental and international organizations;

recommends that

- National Metrology Institutes continue to initiate and coordinate national activities in the field of metrology in chemistry and biotechnology, in close cooperation with other relevant bodies;
- National Metrology Institutes in collaboration with the CIPM, work to define the areas of priority and essential international comparisons which are key to ensuring the comparability of measurement results in chemistry and biotechnology, both worldwide and within regions;
- the BIPM continues to work at the international level in order to facilitate and support these activities.

CITAC

Reports of International Organizations

ILAC Update

CITAC

ILAC values its close cooperation with CITAC. This cooperation has enabled us to continue our efforts in strengthening the links between accreditation and metrology (particularly in chemistry) - an essential link to assist accreditation bodies and accredited laboratories in delivering traceable and reliable measurement results, which are fit for their intended use.

An example of recent activity on this is the current CITAC/Eurachem work on developing a guide on compliance with limits (taking measurement uncertainty into consideration). A meeting was held in November 2006 at LGC (UK) and a final draft has been circulated to CITAC and Eurachem members for vote/comment. Once approved, ILAC will review and publicise on its website for the use of members (and may well adopt this guide as a replacement for ILAC document G8-1996). A general update on ILAC activities in 2006 follows:

ILAC Meetings

The first ILAC Executive Committee and the Arrangement Committee meetings for 2006 were hosted in February by ISRAC in Tel Aviv.

The June meetings were hosted by FINAS in Helsinki. Meetings of the ILAC and IAF Executive Committees, the ILAC/IAF Joint Committee for Closer Cooperation (JCCC), the ILAC Arrangement Management Committee (AMC), the IAF MLA Management Committee and the ILAC/IAF/ISO Joint Working Group were held during this period. There was also the first joint session of the ILAC AMC and IAF MLA MC, as required by ILAC Resolution GA 9.17. Terms of Reference for the operation of this joint activity are being prepared.

The 2006 Annual Meetings for ILAC and IAF, were hosted by the Entidad Mexicana de Acreditación a.c. (EMA) in Cancun, Mexico, from 6-14 November 2006, a very successful and happy time was had by all. In particular, the Inter American Accreditation Cooperation (IAAC) received formal recognition of their Multilateral Arrangement (MLA) by ILAC during the meetings. The 2007 Annual Meetings will be held in Sydney, Australia, from 19-31 October.

The ILAC Arrangement

As at 31 January 2007, there were 58 Signatories (Full Members) to the Arrangement, representing 46 economies.

ILAC continues to focus on enhancing a more widespread understanding of the benefits of the Arrangement amongst the international community, particularly governments and regulators.

Joint ILAC/IAF Activities

The joint activities between ILAC and IAF continue to be managed through the JCCC. Currently operating under the stewardship of this committee are the following:

- Joint working group for inspection;
- Joint development support committee;

With the publication of the Joint IAF/ILAC A-Series documents the work of the Joint working group on harmonisation of peer evaluation procedures has been completed. As a result, it was decided by both organizations in Cape Town, that this group should be disbanded and replaced by three Joint Working Groups, covering the following areas:

- maintenance of the A-Series documents;
- training of Peer Evaluators;
- transition/guidance for ISO/IEC 17011:2004

Each of these Joint Working Groups reports on their work programs and progress at the JCCC meetings and also at the annual Joint General Assembly.

ILAC Liaisons

The review of liaison activities continues to be a major focus of the ILAC Executive Committee, who seek to ensure that ILAC interests are represented in areas which have an impact on the activities of ILAC and its members. To assist with the management of the ILAC liaisons, the Liaison Database was established in the last quarter of 2005. The volume of information in the database has increased substantially since that time and it is available for the information of all ILAC members. It can be accessed via the members area of the ILAC website (ILAC members who have not as yet sought access to the Members Area of the website, can do so online, via the home page of the Members area).

March 2006 saw the annual week of meetings and workshops scheduled with BIPM and OIML in Paris. These meetings focussed on progressing the cooperation between the three organisations, following the recent release of the joint statement between ILAC and BIPM and the tripartite declaration between ILAC, BIPM and OIML. Subsequently, the BIPM/ILAC (AIC) working

group has met twice to address important issues relating to dissemination of traceability (e.g. BMC/CMC). A meeting of the CCQM (Consultative Committee on Amount of Substance - Metrology in Chemistry) was held in April 06 and ILAC was represented at meetings of the Joint Committee on Traceability in Laboratory Medicine (JCTLM) and ISO TC212 in Paris in December 2006.

ILAC and OIML have been working closely since March 06 to develop a MoU and this was signed in Cancun in November 2006.

ILAC's continuing close cooperation and liaison activity with EURACHEM and CITAC supports these important metrological initiatives in chemical and biological measurement, including work on method validation, measurement uncertainty and compliance with limits, the use of "good quality" reference materials and proficiency testing.

April 2006 also brought the first round of meetings of the various ISO committees in which ILAC plays a very active role. Meetings of the CASCO CAPS (Conformity Assessment Promotions and Support Group), CASCO CPC (Chairman's Policy Committee) and WG 27 (Drafting requirements for use in conformity assessment applications) were attended by ILAC liaison officers. A further set of ISO CASCO meetings was held in Buenos Aires during the period 29 Oct - 3 Nov 2006 and the first meeting of CASCO WG28 (Revision of ISO Guide 43 - Proficiency Testing) was attended by ILAC delegates on 4-5 December in Geneva.

ISO REMCO (reference materials) met in May in Prague where it was agreed to review many of the ISO guides relating to reference materials, including ISO Guide 34. ILAC and its Regional Cooperation Body members will contribute to the future version of this important guide.

ILAC has also continued its cooperation with various ISO technical committees - eg TC 176 (ISO 9000 series), TC 69 (Statistical methods), TC 34 (Food Safety) and ISO TC212 (Medical Testing).

ILAC and the World Anti Doping Agency (WADA) have continued the cooperation begun in 2003. ILAC now holds a seat on the WADA Laboratory Committee (LC) and attended/teleconferenced meetings in March 06 and October 06 - LC issues relevant to WADA/ILAC cooperation are

Reports of International Organizations

fed into the ILAC/WADA working group. WADA held its third training course for (Accreditation Body) Assessors in April 2006 and another is scheduled for early 2007. Representatives from WADA also participated in the meeting of the ILAC Proficiency Testing Working Group and the Accreditation Committee/WADA Working Group, held in Madrid in May 06 and some of the meetings in Cancun. It is pleasing that good progress has been made in the collaboration between both organisations in the area of accreditation and assessment of sports drug testing laboratories.

The trend of 2006 will continue into 2007, with ILAC being actively involved in many liaison activities.

Secretariat Staff

The Secretariat farewelled Florence Fung in early January 06. Florence began working with the Secretariat in 2000, after many years working for NATA. Many members will have exchanged regular emails with Florence during her 5 plus years with the Secretariat. We wish Florence well in her future endeavours.

We are pleased to advise that Alison Hay, who has been working with the Secretariat since April 2005, now occupies the position of Administrator

- ILAC Secretariat - together with Nilla Merrigan, who joined the Secretariat in May 06. From January 2007, Annette Dever will take over from Alan Squirrell as the ILAC Secretary (Alan will continue to support the work of the Secretariat on a part-time basis), and Sharon Kelly will join them.

The Work of the ILAC Secretariat

The ILAC website is, as always, subject to regular review and has recently been upgraded.

The ILAC-MRA Mark registration process continues and, as at 31 July 2006, 39 ILAC Full Members had signed Licensing Agreements with ILAC, for the use of the Combined MRA Mark. The Combined MRA Mark, is the ILAC-MRA Mark used in combination with the accreditation body's own mark. The Secretariat continues to receive a variety of enquiries on various aspects relating to the registration, licensing and use of the ILAC-MRA Mark. To assist in this area, a list of "Frequently Asked Questions" on ILAC-MRA Mark matters, was compiled earlier in the year. It can be downloaded from the Member's area of the ILAC website.

Other on-going activities for the Secretariat include the ILAC accounts, general and specific

enquiries, publications and updating membership and liaison activities.

ILAC Membership

ILAC membership as at 31 January 2007 is as follows:

ILAC

- 58 Full Members (Signatories to the ILAC Arrangement) representing 46 economies;
- 15 Associates representing 12 economies;
- 20 Affiliates representing 19 economies;
- 5 Regional Cooperation Bodies (3 recognized)
- 1 National Coordination Body
- 21 Stakeholders

The ILAC membership (total 122 bodies) now covers a total of 80 different economies worldwide and approximately 30,000 laboratories and inspection bodies are accredited by the 73 ILAC Full Members and Associates.

Further information on ILAC can be obtained from the ILAC website at www.ilac.org, or email the Secretariat on ilac@nata.asn.au.

Mr. Aln Squirrell
ILAC Secretariat

SADCMET Activity in Metrology in Chemistry

Introduction

The Southern African Development Community Cooperation in Measurement Traceability (SADCMET) is one of the most recently established regional metrology organizations. Due to the nature of the region encompassing both developed, developing and third world countries, it has to deal with several unique challenges. Despite this, measurement result traceability is rapidly advancing within the community.

Technical barriers to trade are amongst the stumbling blocks preventing economic cooperation and growth within the region. As such, a regional quality infrastructure was put in place with the express goal to eliminate these barriers through the establishment of common standards. A programme of strengthening the trade parameters resulted in a group of mass and related quantities laboratories at national metrology institutes being third party accredited.

In addition to strengthening metrology in the areas of trade measurement, the current focus in the region is on traceability for measurement results in analytical chemistry and medical diagnostics. Special programmes are being conducted to provide reference materials for food analysis and proficiency testing schemes are high on the agenda. The first phase of a regional water proficiency testing scheme has recently been completed. Third party accreditation of food health testing laboratories is progressing and traceability in medical diagnostics is receiving special attention.

Legislation pertaining to measurement units and standards are being developed in most countries in the region and South Africa is in the process of modernizing its Measuring Units and National Measuring Standards Act, Act No. 76 of 1973 as amended in 1998, to include traceability in chemical metrology and especially reference to the CIPM MRA.

The Southern African Development Community (SADC) currently has fourteen member states, Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe. A map of the member states of SADC is shown in Fig. 1. In addition to the current member states of SADC, a number of organisations hold associate membership of SADCMET. These are the Kenya Bureau of Standards, the National Institute of Standards (Egypt), the Quality and Standards Authority of Ethiopia, and the Uganda National Bureau of Standards.

The operations of SADCMET are overseen by a chairperson, and the daily running of its affairs is handled by a secretariat, currently run by the CSIR National Metrology Laboratory (CSIR NML) of South Africa. The technical work of the cooperation is performed by a technical committee structure.

Reports of International Organizations



Figure 1. A map showing the member states of SADC (<http://www.grida.no>)

The secretariat consists of a regional coordinator, a projects coordinator and a secretary. The typical metrology services currently focus on trade measurements, such as mass, volume and length. A number of laboratories in the region are in the process of applying for accreditation for these services.

SADC MET Highlights, Achievements and Future Activities in Metrology in Chemistry

SADC MET coordinates metrology activities and services in the Region, in order to provide regional calibration and testing services, including regulatory bodies, with readily available traceability to the SI units of measurement, through legally defined and regionally and internationally recognized national measurement standards.

Since 1995, metrology in chemistry facilities are being established in the region, with the most active laboratories CSIR NML (South Africa), TBS (Tanzania) and two of the associate members of SADC MET, KEBS (Kenya) and NIS (Egypt). Most of the other member states have some activity in chemistry, focusing mostly on test certificates for food export products. Traceability

is to measurement standards of CSIR NML, non-African NMIs and international CRM producers, with confidence in the analysis results underpinned by official third party accreditation.

In accordance with the global MRA and the Quality system rules of SADC MET, most metrology in chemistry laboratories in the region are applying for accreditation to ISO 17025 and ISO 34. During 2006, fourteen food testing laboratories in Tanzania were assessed to ISO 17025 and most have been recommended for accreditation, pending the clearance of non-conformances. The organic metrology laboratory of the CSIR NML obtained accreditation to ISO 17025 and in October 2006, was the first laboratory in South Africa (and the region) to receive accreditation to ISO 34. The gas metrology laboratory, already accredited to ISO 17025, was recommended for accreditation to ISO 34 in December 2006.

The only NMI with CMC entries in the region is still CSIR NML. Five more gas claims were accepted and published in cycle VII and since the organic laboratory have now also attained accreditation, more CMC entries are expected in cycle VIII.

During 2005 and 2006, SADC MET held various training workshops and organized proficiency

testing schemes and regional comparisons. A summary of the activities and a view of the future are supplied below.

Metrology support to Small and Medium Enterprises (SMEs)

The metrology support for SMEs project continued successfully, with pilot roll-out workshops on the Measurement Practice Improvement Guide. The workshops were held in twelve countries in East and Southern Africa. Further roll-outs took place between September and November 2006 in three African countries. The toolkit has generated a lot of interest, not only from the African continent, but also from South America. Further work will entail the completion of an impact assessment study to measure the level of measurement implementation in SMEs, as well as a benchmarking study to establish best practices in member countries. This would provide an indication of the success of the collaboration project. SADC MET's Technical Committee 5 (TC5) is also looking at other tools to assist SMEs with regard to measurements.

SADC MET water-testing laboratories proficiency testing (PT) scheme

The fourth Water PT scheme workshop was held in Gaborone, Botswana in November 2006. Previous workshops were held in Windhoek, Namibia in February 2004, Pretoria in November 2004 (reports are available from <http://www.sadcmet.org>) and Dar-Es-Salaam, Tanzania in November 2005. As a result, two proficiency tests for water-testing laboratories were organised by Umgeni Water (Pietermaritzburg, South Africa). The Pretoria workshop was to evaluate and assess the first PT scheme and to investigate ways to implement a regular PT scheme system and other supportive measures. The aim of the third workshop in Dar-Es-Salaam was to evaluate the second PT scheme and to establish a Water Laboratory Association to facilitate collaboration among water laboratories in the SADC region. The workshop was preceded by a training course, organised by the CSIR NML, on the estimation of measurement uncertainty.

Results studied at the workshop showed that there is a need for improvement in nearly all laboratories. The use of PT results in finding the weaknesses in the analysis and a link to the estimation of measurement uncertainty were highlighted. It was recommended that the PT

Reports of International Organizations

scheme system for chemical analyses should be continued and extended to microbiology. The structure of local coordinators was strengthened to minimise future logistical problems and to increase the number of participants. The assessment procedure, using limited standard deviations, has proven to be very effective; the statistical methods used will be changed in future to be in accordance with the new ISO standard.

The SADC Association of Water Testing Laboratories (SADCWATERLAB) was established and office bearers were elected. The main objective of the association is to improve the quality of its members' laboratories through collaboration. An initiative to support the SADC laboratories with instrumentation was started and will be coordinated by SADCWATERLAB.

Arsenic and cadmium was then added to the list of parameters for the third PT round, conducted during June 2006.

The focus of the workshop in Gaborone in November 2006 was to evaluate the results of the third Water Testing Proficiency Scheme, arranged by NamWater (Namibia), and identify possibilities for improvement. Also included was training on method validation and the use of control charts. In addition, it was agreed to initiate a Biological Proficiency Testing Scheme for the SADC region, to be piloted by Tanzania Bureau of Standards. The report from the meeting will be available on the SADC MET website in 2007.

SADC MET bio-measurements symposium

African and international experts in biological and biochemical measurement science met in Pretoria when the CSIR NML hosted the SADC MET symposium on Bio-Measurement.

The symposium was aimed at the African metrology community, and commercial or public organisations that use bio-measurements in food and clinical analysis. The focus was on bio-measurements with an emphasis on food and health-care issues.

Various delegates from a number of African countries' National Metrology Institutes met at the CSIR International Convention Centre in Pretoria to share research results, strategy, and experience in the areas of genetically modified organisms (GMOs), medical diagnostics, and the detection of pathogenic micro-organisms in

food. The African countries represented included Botswana, Kenya, South Africa, Tanzania and Zimbabwe. Symposium delegates included metrologists from the Biological Analysis Working Group (BAWG) of the BIPM Consultative Committee on Amount of Substance (CCQM), which had just completed its 8th meeting, also hosted by the CSIR NML, and the majority of the presentations were by these international experts. They included delegates from the Netherlands, UK, USA, Japan, New Zealand, France, Belgium and Australia.

Presentations on the role of the CCQM and of the BAWG in international metrology emphasised the importance of bio-metrology to international trade. Other presentations covered the international standardisation of biological materials, which is critical to the control of diseases, such as HIV/Aids and malaria, GMOs in crops that have to be monitored to enforce labelling regulations and maintain trade relations, the protection of human health through detection of microbial pathogens and the traceability and equivalence of measurements in clinical laboratories. An overview of current trends in the accreditation of microbiology laboratories in SADC and the East African Community (EAC) was presented. Delegates discussed the options for Africa to stay abreast of the international developments in bio-measurements and to participate in discussions on these new measurement technologies.

Mass laboratories accreditation project

SADC MET, with the active support and assistance from PTB, is running a project to enable member laboratories to achieve accreditation of their mass laboratories. A task team has been formed to assist with the evaluation and review quality manuals and mass procedures of member laboratories as a first step towards this process. It is expected that nine mass labs from the region will be accredited to ISO 17025 by the end of 2007.

The participating countries are Botswana, DRC, Egypt, Ethiopia, Kenya, Mozambique, Tanzania, Zambia and Zimbabwe.

Inter-Africa Metrology Programme (AFRIMETS)

The AFRIMETS launch workshop, attended by 40 delegates from across Africa sponsored by the PTB with resource persons from the BIPM, EUROMET, SIM and APMP, was hosted by SADC MET together with the New Partnership

for Africa's Development (NEPAD) in Midrand, South Africa from 23 to 24 March 2006.

A copy of the declaration agreed to by the participants is illustrated below:

- 1) Mindful of the challenges that face our continent and the vision and direction created by NEPAD and the Africa Union;
- 2) Committed to the positive contribution of Metrology to building Africa's Productive Capacity, through the NEPAD Sustainable Industrial Development Strategy and its Market Access Initiative;
- 3) Recognising the synergies and the potential of joint efforts and collaboration with the other pillars of the Quality Infrastructure in Africa (Accreditation and Standardization);
- 4) Aware of the increasing need to raise the profile of Metrology in Africa and to raise the profile of Africa's metrology Internationally; and
- 5) Recognizing the need to optimize limited resources in the Metrology systems;

We hereby resolve to:

- Create the Inter-Africa Metrology System as the umbrella body for Metrology Cooperation in Africa, encompassing legal, scientific and industrial metrology.
- The AFRIMETS will be an open non-exclusive partnership to stimulate collaboration in the area of Measurement standards and Measurement in Africa.
- This resolution empowers NEPAD, in cooperation with SADC MET, to establish a task force to take all the necessary actions to give effect to this declaration.

The CSIR NML, in partnership with NEPAD and the PTB, will continue to actively support this endeavour as the primary founder member of a metrology system for the continent. CSIR NML also volunteered to be the first host of the secretariat of AFRIMETS.

Metrology in chemistry will be high on the AFRIMETS agenda and in particular a work programme to advance traceability to internationally accepted standards and the SI.

Dr. Wynand Louw
CSIR National Metrology Laboratory
South Africa

Reports of International Organizations

Information from the DAC of EuCheMS

The First European Chemistry Congress organized by the European Association of Chemical and Molecular Sciences (EuCheMS) in Budapest end of August 2006 was a full success attracting about 2500 participants among whom young chemists were well represented. Even though Europe can be taken as the cradle of Chemistry there has never been a congress on chemistry bringing together chemists from around Europe. EuCheMS provides a roof to 50 national chemical societies comprising of roughly 150 000 European chemists.

The Congress program consisted of plenary lectures of five Nobel laureates, 1400 oral and poster presentations, an ambitious series of special topic symposia and satellite meetings. The success of the first Congress supports plans to derive a series from it. The next Congress will be held in Torino, Italy, 16-20 September 2008, and the EuCheMS Divisions have been called to contribute specific topics. The Division of Analytical Chemistry (DAC) is going to respond to this request and is prepared to intensify its engagement.

EuCheMS is publishing a newsletter which is distributed via the national societies to their individual members. The first two issues were produced in 2006 and the third issue is planned to appear in Spring 2007. For this DAC has

submitted a note on Euroanalysis XIV, the broad-spectrum analytical conference organized for the Division. So far this analytical forum was held in even years, for instance 2000 in Lisbon, 2002 in Dortmund, and 2004 in Salamanca. However, to avoid interferences with the Budapest Chemistry Congress, Euroanalysis has been shifted to 2007 and from then on the conferences are planned for odd years.

Euroanalysis XIV will be held in Antwerp, Belgium from 9-14 September 2007. As you can see from the website www.euroanalysisxiv.ua.ac.be, the preparations are in full progress. The cooperating institutions such as the Micro- and Trace Analysis Centre of Antwerp University and the Institute for Reference Materials and Measurements (IRMM, a European Joint Research Centre) will surely contribute to the flavor of this particular Euroanalysis as will the cooperation with other EuCheMS Divisions for instance those related to Food and Computational Chemistry, History and Education. In general, the conference program will focus on the essential role that Analytical Chemistry plays in the preservation of mankind's natural and cultural environment. Abstracts can be submitted anytime until 15 April 2007 and registration at reduced fee is possible up to 1 August 2007.

For the second time, a Robert-Kellner Lecture will be delivered as a prominent plenary lecture

of the Antwerp Euroanalysis conference. DAC has established this lecture in memory of its late Chairman to honour a colleague who made substantial contribution to the advancement of Analytical Chemistry research or education. The call for nominations appeared in a number of international journals such as Analytical Bioanalytical Chemistry and Accreditation and Quality Assurance as well as in Newsletters of chemical societies, e.g. RSC (UK) and GDCh (Germany). Eight highly qualified candidates have been nominated before the closing date on 31 October 2006. Out of these Prof. Alfredo Sanz-Medel of Oviedo University, Spain, was elected by a jury consisting of five renowned analytical scientists. The lecture is sponsored by Springer Verlag.

As exemplified by the common engagement for meetings, DAC is actively networking with the other EuCheMS Divisions. This cooperation has been personalized by appointing liaison persons, while contact to supranational boards and non-European societies is held by observers. Comprehensive and updated information on the DAC network is available from the website at www.dac-euchems.org.

Dr. Ernst-Heiner Korte
Secretary, DAC-EuCheMS
www.dac-euchems.org

IMEKO Technical Committee (TC-23) on Food and Nutritional Metrology

International Measurement Confederation known as IMEKO is a non-governmental federation of 36 Member Organizations individually concerned with the advancement of measurement technology. Its fundamental objectives are the promotion of international interchange of scientific and technical information in the field of measurement and instrumentation and the enhancement of international co-operation among scientists and engineers from research and industry. Founded in 1958, the Confederation has consultative status with UNESCO and UNIDO. IMEKO secretariat is based in Budapest, Hungary (see the webpage: www.IMEKO.org).

IMEKO has recently approved a Technical Committee (TC-23) on Food and Nutritional (F&N) Metrology. This is yet another important milestone for strengthening the reliability of F&N measurements by an international organization supported by a host of outstanding metrology experts. The TC-23 facilitates addressing food

safety issues, expanding the activities in the area of inorganic chemical metrology relevant to F&N measurements.

Food safety concerns and measurement issues: In the world of food as a trading commodity, we are moving towards a global but borderless-trade situation. Food safety being a prime concern under this scenario, reliable F&N measurements take the centre stage in decision-making. A measurement process characterized by metrological concepts enhances the reliability of analytical results and ensures sustainability to the quality assurance (QA) needs. These steps infuse authority to the F&N analytical results and enhance the user confidence in the ensuing public health decisions. Importantly, QA is also firmly linked to economic benefits at the national levels.

Objectives of TC-23: F&N metrology is an emerging discipline that is helpful in strengthening the reliability of analytical data, and integration

of metrological concepts into the measurement process is the need of the hour. This step is necessary also to ensure sustainability of the analytical QA process. These tasks are looked upon as a twin assignment under TC-23: (i) enhancing the reliability of F&N measurements by introducing metrological concepts, and (ii) strengthening the metrological capability of the professional pool (capacity building for young investigators), since the academic system in the F&N areas generally does not provide for adequate training that includes teaching metrology.

For details how you can contribute to this effort, please contact:

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Dissemination of MiC Concepts

State Service of Certified Reference Materials for Composition and Substances in Russia

The task of the use of certified reference materials (CRMs) for composition in Russia was addressed at the congress of metallurgists in 1905, where the possibility of using "normal probes" of cast iron in analytical practice was first discussed.

The issue of officially registered CRMs in the former Soviet Union was launched in 1927, and in 1947 the function of CRM registration was delegated to Sverdlovsk Branch of All-Union Research Institute for Metrology (VNIIM) named later by D.I. Mendeleev. Today the Branch is named "Urals Research Institute for Metrology" - UNIIM.

State Service of CRMs for Composition and Substances (SSCRM) in the former Soviet Union was established in 1978 to coordinate the activities of a great number of CRM producers. It operates at present in compliance with the Law of the Russian Federation "On Ensuring the Uniformity of Measurements". The key tasks of SSCRM are as follows:

- inter-branch and interregional coordination of works aimed at CRM production and use in the national economy;
- setting forth uniform norms and requirements regulating the procedure for CRM development, production, marketing and use;
- study of promising areas and forecasting the needs in CRMs;
- development of scientific and guidance, regulatory and procedural documents;
- official validation of produced CRMs and maintaining State Register of Approved CRM types;
- international activity on CRM problems.

Solution of these tasks rests upon the involvement of the whole modern arsenal of scientific and applied metrology: a) reference basis for the units of physical quantities; b) technical means for CRM production and certification and for the system of dissemination of the units of physical quantities; c) general metrology regulatory and legislative acts.

State Service of CRMs is governed by Federal Agency of Executive Power in charge of the issues of metrology (now it is Federal Agency on Technical Regulating and Metrology, the former Gosstandart of Russia). The functions of SSCRM Parent Body are delegated to the Urals

Research Institute for Metrology conducting scientific and guidance activities on the problem and keeping State Register of Approved CRM types.

The works, aimed at providing the economy of Russian Federation with CRMs are conducted by more than 200 various organizations, including institutes of the Academy of Sciences, branch-purpose scientific and research institutes, a number of industrial and non-industrial enterprises.

For SSCRM successful operation its regulatory and guidance basis, i.e. the package of regulatory and guidance documents, organizational structure, informational flows and well-developed range of CRMs in circulation is of primary importance. For SSCRM operation a new regulatory basis has been actually created in the context of today's Russia. The package of operative SSCRM documents contains 35 documents. Among them there are 3 underlying State Standards, a number of documents have the status of "Rules on Metrology", and about 20 are guidelines documents. These documents meet the requirements of ISO/REMCO documents.

It should be noted that in Russia in compliance with the existing law "On the Ensuring the Uniformity of Measurements", the spheres of activity covered by the State Metrological Control and Supervision are outlined (similar practice is applied in many other countries). CRMs used in the sphere of the state supervision, are subject to the rules, such as CRM type approval, its state registration, uniform preparation of documents accompanying CRM supplies.

As of 1 June 2006 State Register, which has been kept since 1970, holds more, than 7000 CRM types. Their range is commensurable with that of USA, Germany, China, France and other countries and their quality is proved by numerous comparisons.

CRMs entered in the Register have the "State" status and are allowed for use in all branches of national economy of the Russian Federation. Up to the early eighties CRMs of ore materials and the products of ferrous and non-ferrous metallurgy were given a considerable prominence in the structure of the Register.

During the last two decades there has been a tendency towards a considerable growth of CRMs used in certification tests of food, petroleum refined products, in the environmental monitoring and health protection. In traditional fields the demand in CRMs has been saturated.

Taken as a whole, the development of advanced works and production of new CRMs rest upon a certain analytical work of SSCRM specialists. The development of new CRM types includes serious research work. This work is aimed at the mutual coordination of requirements for the accuracy of measurements and the control of the product parameters, standards for test methods and CRM metrological characteristics, used in the work.

In general case CRMs in the Russian Federation today are used in:

- production of about 3000 steel grades, 6000 grades of non-ferrous metals and alloys, 100000 organic and non-organic substances as raw materials of the end products;
- more than 1500 measurement procedures for control of parameters of food, environment, hygienic and sanitary factors;
- 25 state traceability chains.

In specific applications with CRM use the following metrological tasks are being addressed:

- verification, calibration of measurement instruments, control of their metrological parameters;
- metrological certification of measurement procedures and control of their error in the course of measurement.

Active metrological cooperation is carried out on CRM problems, its key tasks being as follows:

- harmonization of methodological principles of CRM production and regulatory requirements to their technical level and quality;
- creating conditions and developing procedures for CRM recognition for their free use, primarily in international supplies of substances and materials, for certification of supplied products and in the national economy of cooperating countries;
- establishment of efficient mechanisms for CRM international supplies, both for metrological developments and for the use in various fields of measurements and tests;
- establishment of the system of international

Dissemination of MiC Concepts

comparisons of CRMs, used in the areas, such as, ecological monitoring of adjacent territories, river and sea basins, etc.

In the framework of the Commonwealth of Independent States (CIS) the problem of CRMs is implemented in compliance with "Agreement for cooperation in production and use of CRMs for composition and properties of substances and materials" according to the relevant programs and annual plans. During the period of 1999-2005, three Programs have been realized for the development and use of Interstate CRMs (CIS CRMs) recognized by member-states of the Commonwealth with a possibility to use them in all branches of national economies. As of the end of 2006 the Register of CIS CRMs, kept by the Bureau for Standardization of the Interstate Council, includes about 1500 CIS CRM types. General organization of the activities under review is regulated by 2 Interstate Standards and 10 normative documents of advisory nature. The "Memorandum of understanding on development and use of CRMs for composition

and properties of substances and materials" is adopted by the regional metrological organization COOMET. According to this memorandum a number of CRMs has been already developed and recognized by all COOMET member-countries. As of the end of 2006 fifty eight COOMET CRM types are included in the Register of COOMET CRMs. In the framework of this organization, 4 guidance documents have been developed. The Program of Joint CRM Production within COOMET has been formed.

In the framework of OIML the International Document No. 18 "The Use of Certified Reference Materials in Measurements" has been revised. More, than 40 countries took part in the revision of this Document.

Due to the wide spread of CRMs in practical metrological work and active multilateral cooperation on this problem, the role of informational functions of SSCRM has significantly grown. In compliance with

Memorandum of Understanding, signed in 1990, UNIIM as a Coding Centre runs the international database "COMAR", holding the data on about 10 000 CRMs, released in the world.

The information in this database is annually updated. UNIIM runs also computer database of the State CRMs, containing the information on all approved State CRM types, including the data on CRM metrological characteristics, their intended use, the form of issue, etc. The last database is used for the issue of the Catalogues of the State CRMs and corresponding special publications (in ferrous and non-ferrous metallurgy, petroleum industry, ecology, etc.). Starting from 2005, UNIIM publishes a special scientific and technical journal "Certified Reference Materials" to highlight all the problems of CRM production and use.

*Prof. Vladislav Leonov and
Dr. Igor Dobrovinsky
UNIIM, Yekaterinburg
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Stranaska Contributions to Metrology in Chemistry

Introduction

Stranaska Scientific LLC is an applied research and educational outreach company dedicated to the advancement of metrology in chemistry. The company strives to help bridge the gap between the user segment of analytical instrumentation (e.g. laboratory analysts, technicians, scientists, etc.) and the technical group responsible for the metrological calibration of analytical instrumentation (e.g. metrologists, calibration specialists, service technicians, etc.). The diverse user segment is involved in various analytical and industrial disciplines, and the technical group may be in-house corporate metrology, instrument vendor service, or a third-party calibration company.

Stranaska serves a broad customer base in both the private and public sectors which encompass measurement operations in the laboratory, in remote field environments, or at the process site. Through innovative measurement services and learning resources, Stranaska often functions as an intermediary between a national metrology institute (NMI), such as the National Institute

of Standards and Technology (NIST) in the United States, and a customer laboratory. In doing this, Stranaska facilitates the transfer of knowledge-based NMI outputs in a relevant, timely, and practical manner to the customer laboratory, usually at the bench level.

Stranaska is comprised of two distinct business scopes: measurement services and learning resources. Through the duality of research and education, the company facilitates analytical measurement efficiency, traceability, comparability, and harmonization on a global scale. As a secondary objective, Stranaska promotes awareness of the vital role of technicians in laboratory analysis and metrology, and supports programs to recognize and reward their important work accomplishments. Herein is an overview of selected Stranaska contributions to metrology in chemistry.

Measurement Services

For more than a decade, Stranaska has facilitated the metrological calibration process for UV/VIS absorption spectrophotometric instrumentation

by developing science-based calibration artifacts and rigorous measurement procedures for their periodic recalibrations. Such calibration artifacts are commonly used within regulated laboratory environments of the life science industry for the qualification, systems suitability testing, performance monitoring, diagnostics, and routine quality control of commercial UV/VIS absorption spectrophotometers.

Most of Stranaska's secondary calibration artifacts are CRMs patterned after or derived from the primary spectrophotometric SRMs issued by NIST. Because of certain unique similarities between Stranaska spectrophotometric CRMs and NIST spectrophotometric SRMs, Stranaska has earned the reputation in the United States for being a leading alternative to NIST for the recalibration of NIST wavelength and transmittance (absorbance) SRM artifacts.

Stranaska issues a Certificate of Calibration with each new reference material artifact, and a Report of Calibration with each recalibration of a reference material artifact. The certified

Dissemination of MiC Concepts

reference values are rigorously benchmarked and traceable to NIST measurement standards, and the Certificate or Report serves as the document for traceability. Measurement traceability is explicitly documented by its unbroken experimental chain, pathway, timeline, and uncertainty budget. The degree of detail and transparency of Stranaska Certificates or Reports of Calibration continues to be the signature characteristic, tradition, and salient feature of the company's measurement services program.

Spectrophotometric Artifacts – First Generation

The original array of secondary spectrophotometric CRM artifacts developed by Stranaska over a seven-year period is presented in Table 1. The CRMs facilitate science-based testing of wavelength accuracy, stray radiant energy (stray light), and photometric accuracy and linearity in the ultraviolet, visible, and short-wave near infrared regions of the spectrum. The year of commercial introduction for each artifact is indicated in parenthesis.

is a kit comprised of a holmium oxide solution/cuvette filter, a potassium dichromate solution/cuvette filter, and three neutral-density glass filters. The CRM 1404 kit was developed in response to a major manufacturer of UV/VIS spectrophotometers who requested this specific kit configuration to support its spectrophotometer field validation programs. CRM 1000 designates any customized Stranaska kit configuration comprised of at least two different individual CRMs listed in Table 1.

Stranaska's science-based recalibration program originated for the purpose of recalibrating the prestigious array of NIST spectrophotometric SRM artifacts, and also to support its first generation of UV/VIS artifacts as they became commercially available. As the Stranaska name became more familiar over time, the company's UV/VIS measurement program quickly expanded to encompass many other types of third-party optical standards.

In 2003, Stranaska licensed its original array of products and measurement services to Refmacal

launched its current research program with a broadened vision and new metrological objectives. As a result of its research over the past four years, Stranaska is selectively phasing in its next generation of innovative reference materials, artifacts, and recalibration and testing services. The new business model allows for the market introduction and assessment of new or improved calibration artifacts and measurement services which augment those currently available from other commercial sources.

CA₂M™ - Calibration Artifacts for Analytical Metrology - is the exclusive brand name for Stranaska's emerging product line of new reference materials for integrating measurement traceability with analytical instrument calibrations.

The company's CA₂M™ product line facilitates a laboratory means to establish and substantiate "fit-for-purpose" accuracy and science-based measurement traceability of analytical and calibration data to ensure compliance with regulatory and corporate quality standards. The initial products under the new CA₂M™ brand address specific metrological calibration needs for molecular absorption spectrophotometry in the ultraviolet, visible, and near infrared regions of the electromagnetic spectrum.

Stranaska proudly features its commemorative Vintage MAVRO™ Series which is comprised of the company's inaugural "top ten" spectrophotometric CA₂M™ products (CA₂M™ 701 through CA₂M™ 710). This unique series is developed and maintained exclusively as a namesake tribute to Dr. Radu Mavrodineau, the "founding father" of NIST's contemporary high-accuracy spectrophotometry program. Produced on demand and in limited quantities, the Vintage MAVRO™ Series is designed for use by the discerning analysts and metrologists who embrace the perceptual benefits of a cultural quality linkage of their own UV/VIS calibrations to the historical legacy of NIST's spectrophotometric SRM program.

Stranaska's new absorbance, wavelength, and stray light filters in a microtiter plate format facilitate vendor-independent calibration for the performance evaluation of commercial absorbance microplate readers. Different versions of these exclusive CA₂M™ artifact standards now enable metrologists, calibration specialists, and laboratory analysts to establish science-based measurement traceability of qualification data and laboratory output results

TABLE 1. SUMMARY OF FIRST-GENERATION STRANASKA® SPECTROPHOTOMETRIC ARTIFACTS

CRM	Composition	Parameter	Spectral Region
100	Holmium Oxide Solution (1993)	Wavelength	240 - 642 nm
110	Holmium Glass (1999)	Wavelength	279 - 638 nm
150	Didymium Glass (1997)	Wavelength	327 - 880 nm
200	Cobalt-Nickel-Nitrate Solution (1994)	Photometric	302 - 678 nm
300	Potassium Dichromate Solution (1998)	Photometric	235 - 350 nm
400	Neutral-Density Glass (1996)	Photometric	440 - 635 nm
500	Neutral-Density Metal-on-Quartz (1997)	Photometric	250 - 635 nm
600	Cut-off Edge Glass (1998)	Stray Light	220, 340, 400 nm

For those CRMs comprised of a chemical solution, the solution is flame-sealed in a fused-silica optical cuvette of 1-cm pathlength. The chemical solutions comprising CRM 100 and CRM 300 are also issued as consumable standards in which the solution is sealed in a glass ampoule (designated CRM 100A) or issued in a glass screw-lid bottle (designated CRM 300B). For those CRMs comprised of a solid optical filter, the filter is mounted in a cuvette-style holder.

In addition to the individual CRM artifacts listed in Table 1, Stranaska has developed CRM kits for calibration of UV/VIS absorption spectrophotometers. For example, CRM 1404

Labs LLC. This licensing arrangement included the exclusive commercialization of the individual CRM artifacts listed in Table 1 and the CRM kits described above, and the CRM filter recalibration procedures, all under the new REFMACAL™ brand. The licensure rights also included the significant recalibration domain for certain NIST spectrophotometric SRMs and other third-party UV/VIS filters and standards.

Spectrophotometric Artifacts – Next Generation

Coincident with the licensing of its first generation of spectrophotometric calibration products and services in 2003, Stranaska

Dissemination of MiC Concepts

over the entire operating range of most commercial absorbance microplate readers.

Absorbance Microplate Recalibration Service

A myriad of commercial microtiter plates (or microplates) of various filter configurations and dimensional designs is used in analytical laboratories for the performance verification of spectrophotometric microplate reader instruments. Because NIST currently does not offer recalibration services for microtiter plate standards in the United States, laboratories have traditionally relied on the manufacturer of the microplate reader to perform the recalibration. This situation has led to wide variations in the metrological integrity and measurement traceability of reference data for spectrophotometric microplate standards.

Stranaska is pioneering a centralized facility for NIST-traceable recalibrations of absorbance microplate verification standards from the leading commercial suppliers. This recalibration service is unique in that it now provides a viable option to a company with ownership of several microplate readers from multiple vendors to have all of its absorbance microplate standards recalibrated solely by the same independent and reputable metrology company.

Learning Resources

As part of its fundamental passion for educational outreach, Stranaska promotes unique learning opportunities which facilitate the career development and professional growth of practitioners of metrology in chemistry. As such, the company provides continuing education designed to benefit any individual who has responsibility and accountability for the acquisition, interpretation, acceptance, and/or application of calibration and analytical measurement data. The STRANASKA™ Analytical Metrology Education Series (SAMES) is designed specifically for the dissemination of tutorial information from the company's short courses and training publications.

Tutorial workshops and publications are developed for the dissemination of topical content with in-depth instruction that can not be found to the same degree in most other

training short courses and publications. The tutorial workshops (e.g. seminars, classroom lectures, and laboratory sessions) and tutorial publications (e.g. self-guided learning modules and reference manuals) are often complementary. They collectively promote a common business quality strategy which saves a company time and money by eliminating instrument downtime, rework, non-compliance risk, and quality misperception.

The following workshops have been developed and are scheduled for presentation in 2007:

- UV/VIS Spectrophotometer Calibration and Traceability
- Analytical Chemistry for Metrologists
- Metrology for Laboratory Analysts
- HPLC Detector Calibration and Traceability
- Instrumental Analysis: Introduction to Optical Spectroscopic Techniques

Stranaska's flagship workshop, UV/VIS Spectrophotometer Calibration and Traceability, has been offered many times in continuously updated versions throughout the company's history.

Stranaska Press is the company's in-house publishing entity. Its primary objective is to provide centralized archival, control, and dissemination of output results, in both print and electronic formats, from the company's applied research and educational outreach activities.

In addition to publishing the company's workshop training materials and tutorial publications, Stranaska Press also has exclusive publishing responsibilities for the *Stranaska Journal of Applied Research and Measurement Analytics* (SJARMA).

Designed in effect as a virtual journal which functions as a repository with introductory open access, SJARMA features perspective commentaries, interpretations, and experimental results derived from the company's internal research, investigational projects, and application studies. Such knowledge-based information is archived as an accumulative collection of scientific papers, technical reports, application

notes, etc. Proceedings, abstracts, and podium/poster papers are also published in their original or reprinted forms.

Awards and Scholarships

Stranaska encourages the recognition of personal achievements and advocates the educational and professional growth and development of analytical practitioners. In addition, the company is committed to increasing the visibility of college and university professors and instructors who integrate the principles and applications of metrology in chemistry into the course curriculum for their students. Towards this end, Stranaska has set aside \$5,000 annually, as needed, for monetary awards and scholarships in different categories to recognize the accomplishments of individuals making significant contributions to the understanding and practice of metrology in chemistry. All applications are reviewed, and recipients are selected, by Stranaska's Recognition Awards Committee.

Stranaska Analytical Metrology Forum

The Stranaska Analytical Metrology Forum (SAMF) is a free educational outreach service which is accessible through the Stranaska website: www.stranaska.com. The primary objective of SAMF is to network analytical practitioners around the world. SAMF provides its registered members a unique learning opportunity to share technical knowledge and tips, ask questions, find answers, and exchange ideas that can be used directly in their workplace.

Summary

Throughout its 15-year history as a small company in the private sector, Stranaska Scientific LLC has been a vocal advocate of the principles and benefits of metrology in chemistry. Companies which embrace the rigors of this important analytical discipline enjoy the piece of mind of knowing their chemical measurement practices and operations bear the stamp of metrological integrity.

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Dissemination of MiC Concepts

Master's Program in Applied Measurement Science at the University of Tartu

Introduction

During the recent years significant changes have been and still are taking place in the measurement, testing and analysis community. The importance of tests, measurements and analyses is constantly increasing. More and more legal acts are issued that concern measurements and tests. Fully functional quality system, accredited according to international standards is now a must in many activity areas (food, environmental, etc). where the laboratories are active. Most importantly, there are serious requirements to the technical quality of measurements and analyses. The most prominent of these are the metrology-related requirements (traceability, evaluation of uncertainty, validation, participation in interlaboratory comparisons). Measurements are very important from legal and economy point of view.

These processes have significantly increased the society's need for measurement specialists. The changes have been rapid and up until now education systems in most countries have not been able to respond adequately to the changing situation.

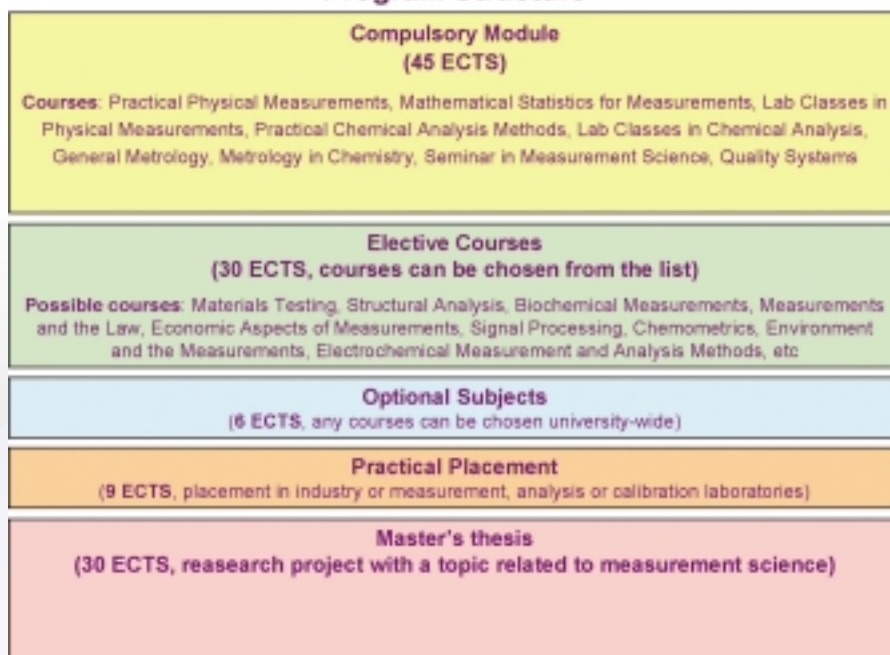
In response to this growing gap the University of Tartu (UT) is launching a new Master's program: starting autumn 2007 a degree program in Applied Measurement Science will be available in English and open for international applicants.

Outline of the program

The program offers a combination of knowledge in physical measurements, chemical analyses, metrology, quality systems and economic and legal aspects of measurements, thus bridging the gap between areas that are usually scattered throughout different programs. We are not aware of any similar programs in Europe at the moment.

The structure of the program is presented in Fig. 1, where ECTS is the European Credit Transfer and Accumulation System - a standard for comparing the study attainment and performance of students of across the European Union. For successfully completed studies, ECTS credits are awarded. One academic year corresponds to 60 ECTS-credits in all countries irrespective of standard or qualification type and is used to facilitate transfer and progression throughout the Union.

Program Structure



The program gives systematic knowledge of the physical, chemical and metrological basis of the more widespread measurement and analysis methods, factors affecting the results, methods of calculating measurement results, assessment of their quality and documenting measurement results and quality systems. The program also gives practical skills necessary to work with the many contemporary measurement and analysis methods, to tune them according to a given measurement or analysis procedure, to optimize measurement procedures and to assess the adequacy of the measurement or analysis results obtained. Teaching methods include lectures, seminars, laboratory classes, independent work. Strong emphasis is given to hands on work.

The program targets graduates with Bachelor's degrees in physics, chemistry, materials science and related fields, and practitioners in analysis and measurement laboratories, personnel of accreditation, certification and inspection agencies, etc.

The nominal duration of the program is 2 years. However, there is a possibility of credit transfer available to graduates with a 4-year Bachelor diploma. Also, recognition of prior work experience is available to applicants with substantial work experience in the field.

Full information on the program (including admission details, required documents, tuition fees, etc.) can be found at the program website www.ut.ee/195210, and on the website of international master's programs of UT: www.ut.ee/studentoffice/studies/ma/english

About the University of Tartu

Founded in 1632, UT is the most prominent public university of Estonia. Today UT has 11 faculties and 6 colleges, with almost 19 000 students, and is famous for research-based education. UT is the only Baltic university member of the Coimbra Group, uniting reputable European research universities of long-standing traditions. Tartu is a unique university town with intellectual atmosphere, rich history and lively student traditions. It is a great place to study and live.

UT has always tried to be at the forefront of measurement science education and training. In particular, teaching metrology in chemistry as a separate subject¹ started at UT in 1999 being one of the first of its kind. Currently metrology basics are firmly established in the curricula of physics, chemistry and materials science students. UT organizes training in different metrology topics for practitioners in Estonia and participates in the TrainMiC² training initiative.

Both undergraduate and postgraduate studies in the field of metrology at UT are strongly symbiotic with the UT Testing Center³ - a unit of UT that offers measurement, analysis and metrology services based on the competence of UT scientists. Graduate students get experience of working with real issues of the field. The Testing Centre operates a quality system accredited to ISO 17025⁴ and performs calibrations, organizes interlaboratory

comparisons, etc. The Testing Centre is part of the Estonian NMI in the fields of metrology in chemistry, air humidity and air flow velocity.

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³ <http://www.ut.ee/katsekoda/>

⁴ A. Rodima, M. Vilbaste, O. Saks, E. Jakobson,

E. Koort, V. Pihl, L. Sooväli, L. Jalukse, J. Traks, K. Virro, H. Annuk, K. Aruoja, A. Floren, E. Indermitte, M. Jürgenson, P. Kaleva, K. Kepler, and I. Leito. *Accred. Qual. Assur.* 2005, 10., 369-372

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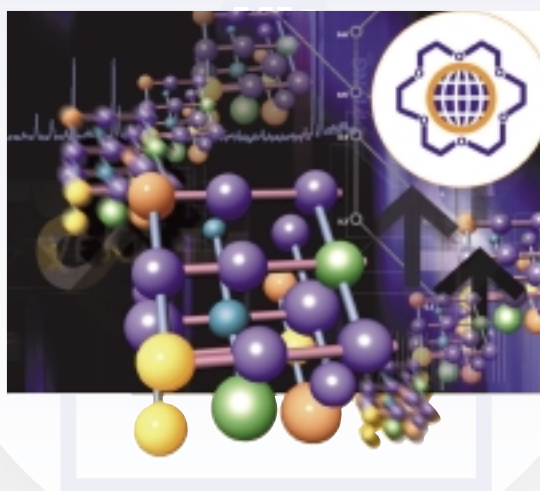
M e e t i n g R e p o r t s

International Congress on Analytical Sciences in Moscow 2006, Russia

The International Congress on Analytical Sciences (ICAS-2006) was held in Moscow 25-30 June, 2006. The aim of this Congress was to allow analytical chemists from around the world to exchange ideas, discuss new developments, and form collaborative alliances, so that the international community of specialists in chemical analysis can better meet the demands of environmental protection, biology and medicine, new technologies, higher education, etc.

The Congress was organized by the Russian Academy of Sciences (RAS) with participation of Vernadsky Institute of Geochemistry and Analytical Chemistry, RAS, Lomonosov Moscow State University and Kurnakov Institute of General and Inorganic Chemistry, RAS, in cooperation with International Union of Pure and Applied Chemistry (IUPAC), Analytical Chemistry Division of the European Association for Chemical and Molecular Sciences (DAC EuCheMS), and Co-Operation on International Traceability in Analytical Chemistry (CITAC).

Following the traditions of the ICAS meetings, emphasis was put on new developments and applications in various directions of modern analytical sciences. Among them there are analysis of materials, atomic spectrometry, biochemical/biomedical analysis, chemometrics, chromatography, education, electroanalytical chemistry, electrophoresis, environmental analysis, flow analysis, food analysis, mass spectrometry, metrology and quality assurance,



micro total analysis systems, molecular spectrometry, new instruments and systems, pharmaceutical analysis, radioanalytical methods, sample preparation, sensors, separation science, speciation, surface analysis, X-ray / electron spectroscopy, general aspects of analytical chemistry, etc.

The Congress was held at Congress Center of RAS situated close to a scenic park region of Moscow on the high bank of Moskva-River, not far from the city centre. The opening ceremony was started by Prof. B.Ya. Spivakov (Chairman of the Congress), then the welcoming speeches were delivered by Prof. Yu.A. Zolotov (Head of Russian Scientific Council on Analytical Chemistry), Prof. H. Akaiwa (President of Japan Society for Analytical Chemistry), Prof. N.A. Plate (Vice President of RAS), Mr. Yu.M. Louzhkov (Mayor of Moscow), Prof. R. Lobinski (President of Analytical Chemistry Division of IUPAC),

Dr. H. Korte (President of DAC EuCheMS), and Mr. A.V.Lapshin (President of Exhibition Holding MVK).

Each day of the Congress began with a joint plenary morning session, followed by 4-5 parallel topical morning/evening sessions. In total, the program of the Congress included 5 plenary sessions (9 speakers), 30 oral topical sessions (170 presentations including 40 invited ones) and 3 posters sessions (more than 500 posters). More than 700 persons from 45 countries attended the Congress.

Prominent scientists were invited for plenary and key note lectures. The list of plenary lecturers and titles of their talks includes (in order of presentations) Nobel Prize winner Prof. K. Tanaka (Japan) "Innovation from fusion of interdisciplinary analytical sciences", Prof. Yu.A. Zolotov (Russia) "Analytical chemistry in Russia: most important achievements", Prof. P. Haddad (Australia) "Faster, smaller, smarter: new developments in ion chromatography", Prof. D. Günther (Switzerland) "Laser ablation inductively coupled plasma mass spectrometry on the way to become mature", Prof. G. Hieftje (USA) "New sources, spectrometers, and capabilities for the analytical laboratory", Prof. P.J. Worsfold (UK) "Flow injection techniques for investigating dynamic environmental systems", Prof. E. Wang (China) "Some aspects of self-assembled nanostructures and electrochemistry", Prof. A. Manz (Germany) "Continuous-flow focusing and separations on chip", and Prof. M. Mascini (Italy) "DNA biosensors for hybridization detection".

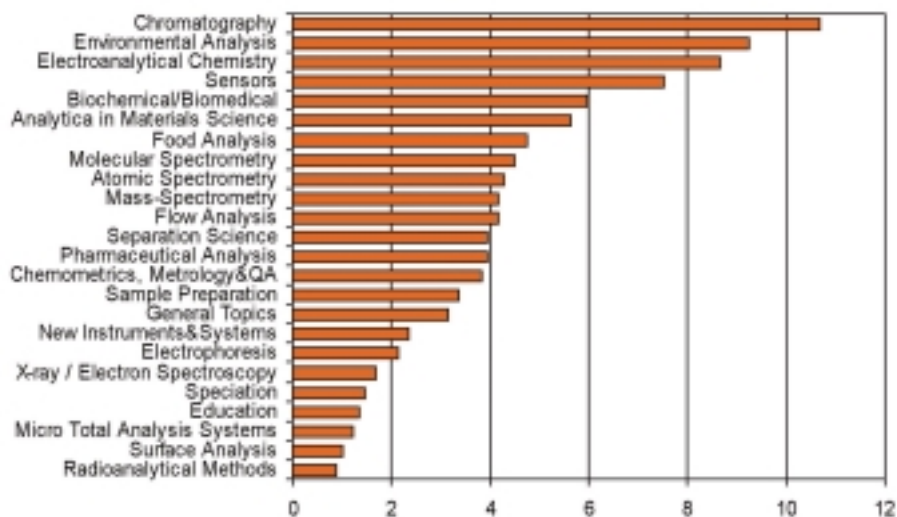
Meeting Reports

Topical distribution of the abstracts is shown in the picture. One can see that chromatography, electroanalytical methods, development of sensors, biochemical/biomedical analysis and methods for environmental analysis compose more than 40% of the whole material.

A workshop on metrology and quality assurance in chemistry in cooperation with CITAC was held during the Congress. The Workshop was opened with the welcome speech of Mrs. Vera Poncano (CITAC Chair). Famous specialists on metrology - Prof. P. De Bievre, Prof. Yu.A. Karpov, Dr. I. Kuselman, Dr. L. Besley, Dr. S. Ellison, Dr. Y.C. Won and others have delivered interesting lectures dealing with topics which are of great importance for analysts. Among them are: errors and uncertainties of measurements; issues of quality assurance, analytical control and proficiency testing; general questions of metrology and its modern terminology; recent activity and projects of the international organizations, and many others. The lectures were translated in Russian and attracted many analysts working in Russian industry and analytical laboratories.

The Organizing Committee of the Congress expresses sincere gratitude to CITAC for the very useful initiative to organize this Workshop and for preparation of the interesting program. The annual meeting of CITAC members was held during the Congress.

Seventh European Furnace Symposium (EFS'2006) dedicated to 50th anniversary of the



Fraction of abstracts %

electrothermic atomic absorption method was held in St. Petersburg on July 2-6, 2006 as a post Congress scientific event.

During the closing ceremony some young scientists were awarded prizes for excellent works presented at the poster sessions. The prizes were established by journals "Analytical Sciences" (Japan Society for Analytical Chemistry) and "Spectrochimica Acta Part B: Atomic Spectroscopy" (Elsevier Publishing House). Among the winners were: Diego Camila Duran (Colombia), Ivan Spanik (Slovak Republic), Iwona Szpakowska (Poland). Each listed person received an annual subscription to "Analytical Sciences". Timur Labutin (Russia) was awarded an annual subscription to "Spectrochimica Acta".

It was announced that the next ICAS meeting will be held in Japan in 2011 and will be dedicated to the jubilee date (60 years) of Japan Society for Analytical Chemistry.

The materials of the Congress were issued in the form of the Book of Abstracts (two volumes of 719 pages) and a CD. The information on the Congress is still available on the site www.icas2006.ru

Dr. Vladimir Kolotov
Secretary General of ICAS 2006
Russia



Prof. Yuri Karpov delivers his lecture at the CITAC Workshop

The 3rd International Conference on Metrology in Israel

The 3rd International Conference on Metrology - Trends and Applications in Calibration and Testing Laboratories - was held in conjunction with the 16th International Conference of the Israel Society for Quality, Tel Aviv, 14-16 November, 2006. The Conference on Metrology was organized by the Israeli Metrological Society (IMS) with the participation of two international organizations: the National Conference of Standard Laboratories (NCSLI) and the Co-operation on International Traceability in Analytical Chemistry (CITAC). The Conference was co-sponsored by the International Measurement Confederation (IMEKO).

However, the known paradox is that "at home" we are usually less successful in promoting any idea, since "no man is a prophet in his own country". Therefore, as the IMS Chairman and the Chairman of the Conference on Metrology, I said at the conference opening that I am also thankful to the Israeli co-sponsors: the Analytical Chemistry Society, my colleagues from the National Physical Laboratory, the ISAS International Seminars, and especially to the sister organization - the Society for Quality, its Chair Ms. Chava Scher and the Chairman of the Conference on Quality Mr. Shlomo Lichtenstein - for their helpful understanding and co-operation in organization of this binary event. Thus, I agreed that there are seven fathers to the Conference's success.

many people as possible. A combined commercial exhibition of measuring instruments and quality products attracted numerous participants of the two conferences on Metrology and Quality.



The exhibition

The first two hours of each conference day were dedicated to plenary sessions attended by participants of both the Quality and the Metrology conferences. For example, the plenary session on November 16 featured two lectures: 1) "Quality, Leadership and Ethics" by Prof. Avishai Braverman, member of the Israeli Parliament (Knesset) and President of the Ben Gurion University in Beer Sheva, and 2) "Metrology: Essential to Trade, Industry and Society" by Dr. Robert Kaarls, The Netherlands, the Secretary of the International Committee for Weights and Measures and President of the Consultative Committee for Amount of Substance – Metrology in Chemistry.

improve accuracy/quality of measurement, calibration and testing/analytical results. At the end of each conference day, general sessions were organized for all the participants interested in metrology. On the first day it was the session titled "New Trends in Metrology". It included a lecture by Dr. Tamas Kemeny (former General Secretary of IMEKO), Hungary, on the latest trends in measuring instrumentation and IMEKO activity, and a lecture by Prof. Paul De Bievre (Editor in Chief of the International Journal "Accreditation and Quality Assurance") on the ongoing re-determination of the Avogadro constant and possible redefinition of the SI Kg. The topic of the general session on the second day was "New Terminology and Ethics in Metrology".



Prof. Miloslav Suchanek, chairman of a parallel session, helps Dr. Semyon Rabinovich, USA, prepare his presentation



Dr. Ilya Kuselman welcomes participants of the conferences at the joint opening session

About 1900 professionals in quality and specialists in metrology (measurement, calibration and testing, including chemical analysis) from 23 countries, had a unique opportunity to network with each other, interact with senior management and learn how to convey the "message" to as

After the plenary lectures the participants of the conference on Metrology worked in two parallel sessions, one on traditional physical fields of measurement and calibration, and the second on metrology in chemistry including quality standards in testing laboratories, concepts of test results, proficiency testing, etc. Seven CITAC members contributed to the sessions on metrology in chemistry: Ms. Vera Poncano (Chair), Brazil, Dr. Ilya Kuselman (Vice-Chairman), Israel, Dr. Robert Kaarls, The Netherlands, Dr. Ed De Leer, The Netherlands, Prof. Paul De Bievre, Belgium, Prof. Miloslav Suchanek, Czech Republic, and Prof. Yuri Karpov, Russia. In addition a poster session covering almost all fields of metrology took place on the first day of the conference.

The Conference had a strong practical focus and was aimed at helping participants learn and develop new tools and techniques that could

Prof. Paul De Bievre talked about the need for intercontinentally understood concepts and terms for metrology (new VIM issue), and Mr. Steve Sidney (manager of the National Laboratory Association, South Africa) discussed ethical problems in the laboratories. The final general session held on the third day was dedicated to analysis of the experience of calibration and testing laboratories presented by the Israeli lecturers Mr. Eitan Sharon, Dr. Boris Katz and Dr. David Kisets. A panel "New Challenges in Metrology" chaired by Dr. Robert Kaarls ended the session.

An attractive social program included a gala banquet and tours allowed to the conference participants to enjoy exploring the land of Israel, the birthplace of the three great monotheistic religions.

**Dr. Ilya Kuselman
Chairman of the Conference
INPL, Israel**

6th International Conference on Advances in Metrology in India



Participants of the Conference on Chemical Metrology in India

The National Physical Laboratory of India (NPLI) and the Metrology Society of India have organized the International Conference on Advances in Metrology (AdMet-2006) in conjunction with 22nd APMP General Assembly and Related Meetings in India, December 2006.

A Conference on Metrology in Chemistry was also organized as a parallel event of it in collaboration with Asia Pacific Metrology Program (APMP) and Co-operation on International Traceability in Analytical Chemistry (CITAC) during December 11-13, 2006. Nearly 90 scientists from Australia, Brazil, China, Germany, Hong Kong-China, Indonesia, The Netherlands, New Zealand and India participated in this event. Eminent chemical metrologists delivered 20 invited talks and presented 15 poster papers. The scope of the conference was traceability in chemical measurement, recent scientific/technical

advancement in realization of the SI unit mole, certified reference materials (CRMs), regional and international intercomparison programme.

Dr. Robert Kaarls (the CIPM Secretary and the CCQM President), The Netherlands, was one of the key speakers delivered a lecture on the Metre Convention: Establishing Global Comparability of Chemical

Measurements Results. Dr. Lindsey Mackey, Chairman of the CCQM Key Comparison Working Group, Australia, and Dr. Ed W.B. de Leer, Chairman of the CCQM Gas Analysis Working Group, The Netherlands, delivered lectures on the important topics of SI-traceable Reference Values for Proficiency Testing Schemes in Food Analysis and of state of the art Gas Analysis, respectively.

Ms. Vera Poncano, CITAC Chair, Brazil, and Dr. Arun K. Agrawal, Head, CRM Programme of National Physical Laboratory, India, gave the general lectures on CITAC and COMAR International Database for CRMs, respectively. Dr. Laly Samuel, New Zealand, Dr. Laurie Besley, Australia, Dr. J. Arunachalam, India, Dr. V. Balam, India, Prof. Yu Yadong, China, Mr. Prabhat K. Gupta, India, Dr. Krishan Lal, India, and Dr. Della Sin, Hong Kong, covered topics related to traceability in chemical measurement, mutual recognition arrangement (MRA), CRMs, SI unit mole, new methods of analysis, uncertainty in chemical measurements,

national/regional/international intercomparisons and proficiency testing (PT) programs.

Six CRMs of mono elemental solutions of lead, cadmium, cobalt, zinc, iron, copper and 4 pesticides, namely chlorpyrifos, isoproturon, fenvalerate, cypermethrin, were also released by Dr. Robert Kaarls and Mr. G. Gyani, Secretary General, Quality Council of India jointly on December 13, 2006.

A special issue of the Journal of Metrology Society of India - MAPAN (MSI-NPLI publication) is planned to publish the papers presented at the conference, which has met all the expectations.

Dr. Arun K. Agrawal
NPLI
New Delhi, India



Dr. Robert Kaarls delivers his lecture

Workshop on Metrological Concepts for Strengthening Food and Nutritional Measurements

This International Training Workshop was sponsored by UNU/IUNS/INF/TUFTS University and held June 26-30, 2006, at the Central Food Technological Research Institute (CFTRI) in Mysore, India. Course Director: Dr. Venkatesh Iyengar, (venkatesh.iyengar@tufts.edu). 17 participants drawn from Ghana, Morocco, Indonesia, Malaysia, Sri Lanka, Korea, China and India, spent a week in Mysore attending the course that was made up of 10 modules: target group was young investigators in the food and nutritional sciences, professionals (with PhD/MS

level education in food and nutrition or related sciences) from food safety institutions and laboratory managers from food industries. In particular, the course was aimed at dynamic young professionals aspiring to become future leaders in public health and food safety issues. Dr. V. Prakash, Director of CFTRI, and his staff members extended generous logistical and other needed support for running this training course.

The driving force for this course is the fact that food safety has become a global issue. Different

laboratories generate analytical findings frequently and a sound basis recognized as traceability (internationally accepted basis built on principles of metrology) needs to be established for judging their accuracy merits. Such a basis is helpful in safeguarding the comparability of the results between laboratories. Food and nutritional measurements backed by metrological approaches, reflect authority. Accomplishing this goal is considered as central to the emerging role of food and nutritional metrology.

Meeting Reports

The workshop objective was to facilitate public health and nutrition investigators to develop awareness for current concepts in measurement practice, i.e. the processes relating to metrology, the science of the measurements. The final goal is to enhance the reliability of food and nutrition measurements.

The following 10 modules were used to highlight the metrological concepts outlined in this report:

1. Challenges faced with biological matrices for compositional studies
2. Milestones in biological trace element research
3. Metrological concepts in physical, chemical and biological systems
4. Analytical quality assurance and analytical quality control
5. Food and nutritional (and selected clinical) RMs
6. Food Composition and chemical measurements for nutrient intake
7. Stable isotopes techniques in nutrition research
8. Issues and trends in nutrient food fortification
9. Economic impact of analytical quality assurance (examples)
10. Capacity development issues in food and nutrition

The course focused on:

1. Metrological concepts readily applicable to physical, chemical and biological systems (traceability and comparability of measurements; sampling and metrology; compatibility of measurement procedures; harmonization of chemical measurements).
2. Metrology in Biology covers biological and physiological measurements including food and

nutrition areas; a beginning has already been made with the application of metrological concepts for some areas in food safety and through food based natural matrix certified reference materials; areas open for improvements by applying metrologically sound procedures were addressed.

3. Highlighting the deficiencies in setting up good analytical procedures and emphasizing the role of quality assurance in food and nutrition related analytical measurements; presenting established quality control procedures in practice; outlining the role of certified and other reference materials, their preparation and proper use in food and dietary investigations; dietary studies and food and nutrient intake measurements.
4. Applying stable isotope techniques in nutrition research (e.g. isotope techniques for studying energy metabolism, bioavailability of nutrients, body composition among many other applications).
5. Enhancing the participant's awareness to issues and trends in nutrient food fortification, (e.g. nutrition and HIV/AIDS, iron and vitamin A situations, and cost-benefit aspects of food fortification, among others).
6. Facilitating evaluation of the economic benefits brought about by strict adherence to quality assurance, and the need for strengthening the human capacity to achieve reliable measurement results as a basis for sustainability and national development.

Outcomes of the workshop:

1. The course demonstrated ways and means of achieving measurable improvements in the accuracy of analytical results for responding to food safety and a few other public health concerns.
2. The need for harmonization in generating

analytical data calls for mandatory laboratory accreditation, proficiency testing and collaborative efforts between laboratories belonging to government, academia and industry. The role of appropriate CRMs was demonstrated for translating regulatory acts into practice keeping in focus the industry's technical capabilities and providing realistic metrological link.

3. The need for enhancing the reliability of food and nutritional measurements (F&N) was brought into focus as a key for success in a world of borderless-trade. Enhancing the reliability demands integration of metrological concepts into the measurement process.
4. The discussions covered how integration of metrology into F&N measurements strengthen the very base of nutrition education for young professionals (scientific and technical) and improve institutional measurement infrastructure. Thus contributing to the much-needed capacity development in F&N. Collectively, these inputs generate concrete economic benefits from well-designed public health projects to meet client needs.

The course was very successful and as result, efforts are going on to host national courses in Korea, Thailand, Morocco and Ghana. The course in Korea is scheduled for December 2006 with focus on metrological concepts and stable isotopes in health and nutrition. The other 3 countries are planning to host the course in 2007.

For further details about this course, please contact Dr. G.V. Iyengar through e-mail: GViyengar@gmail.com.

Prof. Venkatesh Iyengar
TUFTS University
USA



A N N O U N C E M E N T S

IV International Congress on Chemical Measurement Traceability and Quality Assurance

July 16th – 20th 2007, São Paulo, Brazil



Objectives

This congress will provide a forum for information exchange among leaders in the international community on various topics regarding the need for and implementation of metrologically-sound traceability in chemical measurements.

Presentations and discussions will focus on metrological concepts and tools to improve accuracy and quality of measurement results. In addition there will be discussions on models and infrastructures for disseminating traceability to working laboratories, and case studies documenting the role and impact of quality-assured chemical measurement results on innovation, trade and enhanced quality of life. The Congress is being co-sponsored by Co-Operation on International Traceability in Analytical Chemistry (CITAC) and the presence of CITAC members will certainly contribute for fruitful discussions on the congress subjects and to its success.

Preliminary Program Topics

- Concepts of Metrology in Chemistry
- Metrological Traceability
- Uncertainty of Measurement / Analytical/Test Results



- Uncertainty of Sampling
- Compliance Assessment Using Uncertainty
- Reference Materials
- Calibration of Analytical Instruments
- Validation of Measurement/Analytical/Test Procedures
- Quality Control and Quality Assurance in Analytical Laboratories
- Accreditation and Certification of Analytical Laboratories
- Interlaboratory Comparisons and Proficiency Testing
- Certification of Products Based on Analytical/Test Results
- Training and Education
- Ethics in Analytical Laboratories



As they apply to the following technical areas:

- Agriculture
- Biofuels
- Chemistry
- Clinical analysis
- Electrical
- Environmental analysis
- Exports and Imports
- Food
- Forensics
- Mechanical
- Metallurgy
- Minerals and Geology
- Petroleum
- Quality systems and management
- Rubber and plastics
- Toxicology
- Others

Who should attend

Researchers and practitioners from the international and Brazilian communities interested in applications of theoretical and practical metrology in chemistry including, but not limited to those from:

- testing and calibration laboratories
- industrial laboratories
- research centers and technological institutes, universities

Organized by

- Brazilian Program on Measurements Reliability in Chemistry (PBMQ)
- CITAC
- Institute for Technological Research (IPT)

In cooperation with

- São Paulo State Metrological Network (REMESP)
- Institute of Energetic and Nuclear Research (IPEN)

Supported by

- The National Council for Scientific and Technological Development (CNPQ)/ Ministry for Science and Technology (MCT)
- The State of São Paulo Research Foundation (FAPESP)
- Union for Chemistry Industry of São Paulo State

Additional Information

The 22nd CITAC Members' Meeting, courses and meetings of working groups on different topics will be held during the event.

A combined commercial exhibition within the framework of the Congress will be available also for participants, end users and producers of instruments and products.

For details contact Ms. Vera Poncano
vponcano@ipt.br; poncano@hotmail.com.

Ms. Vera Poncano
CITAC Chair
IPT, Brazil

A N N O U N C E M E N T S

Workshop on Uncertainty in Sampling

12-13 April 2007, Hillerød, Denmark

The workshop is organised by the participants in the Nordic Innovation Centre (NICE) project "Uncertainty from Sampling".

We are becoming more and more aware of the fact that the quality of all monitoring and control data, whether environmental or industrial process data, are strongly affected by uncertainty introduced already in the sampling step.

The consequences, economical as well as for the environment and human health, of taking decisions based upon sampling of insufficient quality can hardly be overestimated.

Estimation of analytical uncertainty has been the topic for the last 10 years and it is now time to pay attention to uncertainty in sampling. An international guide for estimation of sampling uncertainty is now ready from Eurachem, and sampling quality assurance is currently being introduced in European legislation.

The workshop on uncertainty in sampling will be an excellent opportunity for all planning or evaluating sampling programmes for monitoring and control of the environment or industrial

production to meet and discuss the factors that affect the quality of the resulting data.

At the workshop, an international guide on estimation of the measurement uncertainty arising from sampling recently produced for Eurachem, as well as the new Nordtest guide to the subject will be introduced.

The methods and tools for quantification of sampling uncertainty will be described and in addition, practical examples on different approaches to estimation of uncertainty of sampling will be presented for:

- Food
- Iron ore
- Groundwater
- Wastewater

Furthermore, the workshop will provide practical training in groups on uncertainty estimation for sampling using either data provided by the organisers or the participants own data.

Workshop program and details will be e-mailed to all registered participants.



For the latest information, see www.samplersguide.com.

Specific questions can be directed to aob@dhigroup.com, +45 4516 9469

Dr. Christian Gron
*DHI Water and Environment
Denmark*

Test and Measurement Conference

Emperors Palace, Johannesburg, South Africa, 19-21 November 2007

The annual Test and Measurement Conference will take place at the Emperors Palace, conveniently situated near the Oliver Tambo (previously Johannesburg International) Airport.

THEME: Measurements Traceability - Challenges in the 21st century

The key to good measurements, both physical and analytical, is the degree to which the accuracy of the measurement has been transferred from a standard of higher accuracy ultimately to one, or a combination, of the base SI units. In most physical metrology disciplines the traceability chain is well defined, however, in the field of analytical measurements, this is not always the case.

It is also vital that adequate measurement traceability is in place in areas such as Food, Medical & Pharmaceutical, Environmental, Water, Automotive, Military, Telecommunications, Electrical, Trade, Chemical etc. to ensure that measurements affecting quality can be performed with the required accuracy to facilitate trade.

This issue will be highlighted at the conference as well as the challenges facing well established National Metrology Institutes such as the National Metrology Institute of South Africa (NMISA), which will be celebrating its 60th anniversary, compared with the challenges facing less developed National Metrology Institutes in SADC and Africa.

Contributions are sought which address all levels of the traceability chain from SI units to measurements on the 'shop floor', such as from National Measurement Institutes, Accredited Test & Calibration Laboratories, Research Organizations as well as measurement and control practitioners.

SUGGESTED TOPICS

Establishment & dissemination of traceability

New/Improved standards
Estimation of Measurement Uncertainty
Traceability
Validation of methods

Applied traceability

Calibration/Testing Processes
Improvements/new trends in instrumentation
Interlaboratory/Proficiency Testing
Applications in industry, regulatory, telecoms, medical, automotive, legal, pharmaceutical etc
Reference Materials

Laboratory & Quality Management

Information Systems
Equipment Management
Accreditation
Laboratory Quality Systems
Education & training
Regional Measurement Systems

PAPERS

The due date for complete papers is 31 September 2007.
Please visit www.nla.org.za for full details.
Information about the venue can be found at www.emperorspalace.co.za

Dr. Wynand Louw
CSIR-NML, South Africa

A N N O U N C E M E N T S

The First International Proficiency Testing Conference

11th – 13th October 2007, Sinaia, Romania



Motto: "There is no science without measurements, no quality without testing and no global market without standards." The Commission of the European Union

Dear Colleagues,

I am delighted to invite you to attend the First International Proficiency Testing Conference. On behalf of the Steering Committee, I am looking forward to welcoming you to Sinaia, Romania, 11 - 13 October, 2007.

The Conference is dedicated to the specialists from the analysis and testing laboratories in many fields (aggregates, chemistry, construction materials, electrical engineering, environmental, food and feed, mechanics, metallurgy, microbiology, petrochemistry, physics of lasers, plasma and radiation, plastics, soils, textiles etc.). It is an opportunity to promote discussions and an exchange of opinions between interested parties (institutes of higher education, research institutes, testing laboratories, accreditation and standardization bodies, national authorities, manufacturers, users of products and services, etc.). The Conference represents an important meeting for those who are interested to share and disseminate their experience, knowledge and innovative ideas on the themes below.

The Conference Exhibition will highlight the latest equipment and relevant scientific instrumentation as well as chemicals and other products.

The event is organized by the Institute of Research, Engineering and Consulting for Cement, Lime and Plaster CEPROCIM SA - Bucharest, Romania, under the auspices of the Research Excellence

Programme CEEX initiated by the Romania's Ministry of Education and Research.

Themes

- Proficiency testing schemes
- Reference materials
- Validation of testing methods
- Uncertainty of measurement
- Metrology and traceability
- Standardisation
- Research, development and education in the laboratory activity
- Accreditation and quality management in testing laboratories
- Conformity assessment

General Information

Venue: The conference will take place at the International Convention Center: www.casino-sinaia.ro, Sinaia, Romania. The town of Sinaia is situated in an awe-inspiring mountainous region at the foothills of the Bucegi Mountains, along the Prahova Valley, being one of the oldest and famous Romanian resort, also known as "the Pearl of the Carpathians". The Sinaia Casino was inaugurated in 1913 as a replica of Monte Carlo's Casino and its architectural elements are breathing an aristocratic air which is still overflowing over the whole resort.

Language: The conference will be conducted in English and Romanian. Simultaneous translation will be available.

Welcome cocktail: A welcome cocktail will be held on Wednesday evening, October 10th at 19:00.

Gala dinner: A festive evening will be held on Friday, October 12th at 20:00. The evening will include entertainment and dinner.

Conference proceedings: All attending participants will receive a book of the oral and poster contributions.

Exhibition: Organisations and companies are invited to present their products and services.

Abstracts: Abstracts of 300 words should be submitted in MS WORD format by e-mail to contact@pt-conf.ro and a fax copy to + (4021)3188894 by April 1st, 2007.

Presentations: There will be oral and poster presentations. Oral presentations will be limited to 30 minutes.

For more details please contact the Conference Secretariat:

CEPROCIM S.A

#6 bd. Preciziei, sect 6, Postal Code 062203, Bucharest, ROMANIA

Phone: + (4021)3188893

Fax: + (4021)3188894;

E-mail: contact@pt-conf.ro

Webpage: www.pt-conf.ro

Dr. Eng Graziela Guslicov
President PT CONF, Steering Committee
Romania



The Sinaia Casino

A N N O U N C E M E N T S

11th International Symposium on Biological and Environmental Reference Materials (BERM 11)

October 29 to November 2, 2007

Tsukuba International Congress Center (EPOCHAL TSUKUBA), Tsukuba, Ibaraki, Japan

Scope

The Eleventh International Symposium on Biological and Environmental Reference Materials, BERM 11, will be held in Tsukuba, Ibaraki, Japan, from October 29 to November 2, 2007. This is the first BERM to be held in the Asia-Pacific region as an intermediate one between those held alternately in the European Union and the United States of America since 1983. As a continuation of the symposium series, BERM 11 is intended to be a forum to address issues related to the development of biological and environmental reference materials and their role in the quality assurance of analytical measurements.

Topics

The following session topics are planned:

CRM development

- Recent development of CRM production
- Biological RMs
- Environmental RMs
- RMs for laboratory medicine
- RMs in food and safety
- RMs for RoHS directive
- Greenhouse gas RMs
- Asian collaboration on CRMs

Quality control

- RMs for proficiency testing
- RMs in QA/QC
- RMs in lab accreditation
- Uncertainty evaluation

Analytical techniques

- Analytical techniques for certification
- Application of RMs

Symposium schedule

Oct. 29 (Mon)

On-site registration, Reception

Oct. 30 (Tue) - Nov. 1 (Thu)

Plenary and keynote lectures,
Oral and poster sessions, Exhibition
Symposium dinner (Oct. 31)

Nov. 2 (Fri) Lab tour and excursion

Call for papers

The Scientific Organizing Committee is soliciting abstracts for both oral and poster presentations. All abstracts are due by June 15, 2007. For abstract submission guidelines, please visit the website.

Important dates

Apr. 15 - Jun. 15, 2007 Submission of abstract
Jul. 31, 2007 Notification of acceptance
Aug. 31, 2007 Deadline of early on-line registration
Oct. 29 - Nov. 2, 2007 Symposium

Further information

Up-to-date information on BERM11 is available on www.nmij.jp/berm11/

Contact address

If you have questions, please contact:

Dr. Kensaku Okamoto, *Chair*
Dr. Koichi Chiba, *Secretary*
BERM 11 Organizing Committee
National Metrology Institute of Japan (NMIJ)
National Institute of Advanced Industrial Science and Technology (AIST)
1-1-1 Umezono, Tsukuba, Ibaraki 305-8563, Japan
Tel/Fax: +81-29-861-4100
E-mail: berm11@m.aist.go.jp

Dr. Kensaku Okamoto
NMIJ, Japan



The Congress Center

Messages from New Members

Introduction of Miloslav Suchánek



It is a great pleasure for me to be elected as a new member of CITAC. I will have an opportunity to share my ideas and the ideas of my colleagues in the Czech EURACHEM about the chemical world with a broad metrological community. A close relationship with people leading in metrology in chemistry should also be very helpful in my pedagogical life.

Just a few words about my past scientific and pedagogical activities. I received my Master degree in Analytical Chemistry from the Institute of Chemical Technology Prague (ICT Prague) in 1965, PhD degree in Analytical Chemistry from the same Institute in 1974. Today I am a ICT professor of Analytical Chemistry and Quality Engineering at the Department of Analytical Chemistry, teaching Chemometrics, QA/QC, Metrology in Chemistry and Process Analytical Chemistry. I am responsible for Quality Engineering specialization, a new comprehensive part of the curriculum at ICT. The main part of this curriculum is Metrology in Chemistry and QA/QC. My graduates occupy high positions in various institutes and plants, e.g. quality managers in Czech NMI, in the pharmaceutical industry and in environmental inspection. During seminars on MiC students solve current problems, e.g. evaluation of measurement uncertainty at a predicted concentration supposing eligible uncertainties on both instrumental and concentration axes of the calibration curve.

My scientific career started in the sixties. At the beginning I tried to connect thermodynamic properties of complexes with their use in analytical chemistry. My PhD dissertation consists of the modelling of complexometric titration and estimation of uncertainty (former errors) in the end point determination. Our "velvet revolution" in 1989 gave me the opportunity to participate in international meetings and work in international organizations. I was one of the founders of Czech EURACHEM and an active Czech representative at ISO/REMCO. I also switched my scientific activities towards chemometrics and MiC.

Once again, I am very happy to be a member of CITAC and to participate in delivering to the chemical community the basic concepts of MiC such as traceability and uncertainty.

Prof. Miloslav Suchánek
Eurochem-CZ, ICT
Czech Republic

Message from Cathy Burns



It is an honor to have been elected as a new member of CITAC. I look forward in participating in CITAC activities in the coming years.

While I am new to CITAC, I have been involved in laboratory quality assurance/management systems for over thirty years in the areas of clinical, environmental, industrial hygiene, and most recently with food and pharmaceuticals.

I have achieved accreditation for these laboratories through various accrediting bodies such as College of American Pathologists (CAP), American Association for Laboratory Accreditation (A2LA), American Industrial Hygiene Association (AIHA), and DAP (Deutsches Akkreditierungssystem Prüfwesen) under BAM (Bundesanstalt für Materialforschung und Prüfung). I completed training required to be awarded certification as a Quality Systems Provisional Auditor with the US Registrar Accreditation Board (RAB).

My publications include "Setting a precedent in international accreditation" in the October 1997 journal, Accreditation and Quality Assurance: Journal for Quality, Comparability and Reliability in Chemical Measurement; Department of Laboratory Sciences' Quality Assurance Manual and Quality Manual Guideline; Mine Safety and Health Administration Laboratory Quality Manual.

I am currently responsible for assisting, coordinating, and reviewing quality assurance

issues and concerns with FDA (Food and Drug Administration) Regional and District laboratories, other government agencies and organizations, and expansion of the QMS program to all FDA Regional and District offices. Within FDA, I participate in the Agency's obligations, activities, and mission goals, particularly in the management of quality systems, laboratory accreditation, practical interpretations, and applied implementation.

Before coming to the FDA in 2001, I worked with Mine Safety and Health Administration where that agency achieved its first accreditation through AIHA. Prior to that I was the Quality Assurance Manager and Technical Director for the Center for Health Promotion and Preventive Medicine in Germany, which received first A2LA accreditation in conjunction with their first international DAP accreditation; and thereby established the first dual international accreditation in Germany or the United States.

After coming to FDA, I played an integral role in the major revision of the ORA (Office of

Messages from New Members

Regulatory Affairs) Laboratory Procedures Manual as a preliminary step in the pursuit of the FDA's stated mission goal for laboratory accreditation. I implemented an ISO quality system in the District as well as an ISO/IEC 17025 quality system in the laboratory over the course of the first thirteen months with the agency. Under my direction as Quality Assurance Manager, the Denver District Laboratory attained the first overall agency A2LA accreditation status. This

program is the standard being applied to the other FDA laboratories in order to achieve their accreditation through A2LA. In recognition of my efforts, I was awarded the FDA and ORA Scientific Achievement Award, Outstanding Support Scientist in 2004.

I am a member of A2LA's Life Science Advisory Council as well as the Criteria Council (which establishes interpretation of the ISO 17025

Standard) and a member of the AOAC Laboratory Proficiency Testing Advisory Committee, the AOAC Technical Division for Laboratory Management Executive Committee, and the AOAC Analytical Laboratory Accreditation Criteria Committee (ALACC).

Mrs Cathy Burns
FDA
USA

Message from Hendrik Emons



By heading programmes on the development, production and certification of reference materials for a very broad range of application areas, from impact toughness of steel to proteins in human serum, from elemental to microbiological analysis, the issue of metrological traceability is in the centre of many of my current scientific activities. The exchange of views and the discussion of concepts with scientists from very different disciplines make it visible over and over again, that establishing, documenting and explaining traceability of results in analytical chemistry is a demanding, still often not sufficiently understood (and partially not fully developed) exercise. Because of my keen interest in driving forward and facilitating the further common understanding and international harmonization of such generic analytical concepts I am very happy to participate now

also as CITAC member in corresponding discussions and to cross-link them with relevant activities in the other scientific bodies and organizations with which I am already affiliated.

I have been engaged over the years in a variety of research programmes and 'scientific steering' tasks. I have studied chemistry and gained a PhD in Physical Chemistry and Electrochemistry at the Martin-Luther University of Halle, Germany, in 1984 and a Habilitation in Analytical Chemistry at the University of Leipzig in 1988. I was Docent for Analytical Chemistry at the University of Leipzig and in 1991/92, Humboldt Fellow and Visiting Professor at the University of Cincinnati, OH, USA. Afterwards I was in charge of the German Environmental Specimen Banking Project at the Research Centre Jülich, and 2001/2002 Deputy Head of the newly founded Institute for Phytosphere Research there. Since 2003 I am the Head of the Reference Materials Unit of the European Commissions' Joint Research Centre, Institute for Reference Materials and Measurements (IRMM), located in Geel, Belgium.

Moreover, I am enjoying teaching as Associate Professor at the University of Duisburg-Essen, Germany, organising conferences and symposia and serving as member of a number of scientific boards and advisory groups. This includes, for instance, my duties as Vice-Chairman of ISO REMCO, EC Representative in the Steering Committee of VAMAS (The Versailles project on Advanced Materials And Standards) and in

EURACHEM, IRMM delegate at CCQM and in the EUROMET-TC "Quality", but also in the Panel of the ERM® co-operation, the Advisory Group "Analysis of biological materials" of the German Research Community (DFG) and as of January 2007 in the Scientific Advisory Council for Analytical Chemistry of the BAM, Germany. I gained interesting experiences as one of the founding editors of RCS's "Journal of Environmental Monitoring" and provide currently input at the boards of journals such as "Accreditation and Quality Assurance" and "Analytical and Bioanalytical Chemistry".

My research interests developed over the years are spanning a wider range of topics covering Analytical Chemistry (from electroanalysis and trace element speciation to quality assurance and reference materials), Environmental Chemistry (from biomonitoring concepts to specimen banking) and Electrochemistry (from molecular interfacial structures to sensors).

My current duties in the European Commission provide interesting opportunities to apply many of these accumulated experiences, but also to extend the networking and co-operation with scientific colleagues all over the world. Therefore, I am looking forward to a fruitful collaboration within CITAC and between CITAC and other organisations.

Prof. Hendrik Emons
IRMM-JRC, European Commission
Belgium

CITAC TERMS OF REFERENCES

1. MISSION

To improve traceability of the results of chemical measurements everywhere in the world.

2. OBJECTIVES

- To facilitate the practical realisation of traceability in chemistry: to develop concepts that can be applied broadly at analytical laboratories and to disseminate those concepts;
- To foster collaboration in metrology in chemistry as a mean of effecting technology transfer and cost sharing;
- To promote the metrological principles through guidelines and other tools for analytical laboratories.
- To promote and harmonise quality practices in the analytical laboratories.

3. STRATEGIES

- To provide a truly international forum for the exchange of information with respect to worldwide traceability of results of chemical measurements;
- To provide tools for analytical laboratories for establishing traceability to "stated references";
- To share views, clarify important concepts and raise the awareness of the needs and possibilities leading to traceability in chemical laboratories;
- To develop, distill and disseminate globally the key traceability concepts and issues;
- To prepare guides, discussion papers and scientific papers for journals in relation to traceability, uncertainty and quality assurance issues;
- To organise seminars, symposia and workshops and participate in conferences to promote the message of traceability;

- To play a bridging role between industry, governments, universities, metrologists and accreditation bodies and provide guidance to the analytical community;
- To work closely with other groups - e.g. CCQM, ISO-REMCO, IUPAC, ILAC, AOAC, regional and national professional chemistry societies and institutions, like EURACHEM and DAC/FECS, - without duplicating work already being conducted by other groups - using these societies and institutions to act as a conduit to the field laboratories ;
- To initiate and, where needed, coordinate work for the harmonisation and validation of analytical methods based on traceability and other metrological concepts.

4. CONSTITUTION

4.1 The members declare their common intention to actively take part in the work of CITAC and commit themselves to assisting in achieving its aims and objectives.

4.2 CITAC membership will be open to experts from any organisations which are actively interested in achieving the objectives of CITAC.

4.3 CITAC will meet to review and discuss specific tasks and will form its own rules of procedure. Sub-committees and task groups may be established as necessary to address identified areas of work or facilitate collaboration on tasks of mutual interest. A formal CITAC member meeting be held once per year, at which action plans are put in place for CITAC for the following twelve months, and a venue and date set for the next annual meeting. Additional meetings should be convened if (a) there is a useful agenda to address, and (b) at least 10 members are interested to participate. Such additional meetings should be proposed by the CITAC secretary at least three months in advance to give time for suggestions to be made for the agenda and to verify the number of the members interested to participate.

4.4 The CITAC members will elect a chairman, a vice-chairman and a secretary from its members

for a period of three years. The secretary will normally provide the necessary administrative support.

4.5 In order to ensure breadth of expertise, the membership will be reviewed at each meeting and any new nominations will be considered.

4.6 All members can put forward proposals to CITAC for specific tasks to be carried out.

4.7 These Terms of Reference

- may be amended subject to 3 months' notice of the proposed amendments being given to all members and by the agreement of at least 10 members.

- remain in operation for an initial term of 3 years and will automatically continue in operation, providing at least 10 members support their continuance.

- are of an exclusively recommendatory nature. They do not create a binding legal effect on members.

5. FINANCIAL MATTERS

5.1 Members will normally cover the cost of their attendance at meetings and their contribution to any tasks being progressed by CITAC.

5.2 CITAC members will be required to contribute an annual membership fee, which shall be used solely and exclusively for CITAC business (e.g. operation of the Secretariat, publication of the newsletter, etc.). The fee shall be agreed by at least 10 members.

5.3 In the situation where two or more CITAC members are employed by the same organisation, only one annual membership fee shall be levied and these members will only have one voting right.

CITAC Members List

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New EURACHEM/CITAC Guide "Use of Uncertainty in the Assessment of Compliance"

Many, possibly most, analytical measurements are carried out to assess compliance with a specification or a regulation, for example in the control of contaminants in food or the detection of performance enhancing substances in sport. When making an assessment of compliance the presence of unavoidable measurement uncertainty introduces the risk of making incorrect decisions, i.e. of accepting a batch of material which is outside the specification or rejecting one that is within. This often leads to

controversy over whether or not the compliance decision is correct. This guide shows that the key to making reliable assessment decisions with an acceptable risk, is the use of decision rules that lead to an unambiguous interpretation of the measurement result and its uncertainty. The guide describes how to design and use decision rules to ensure that requirements of the specification or regulation are met. It recommends that ideally these decision rules should form part of the specification or

regulation but when this is not the case they should be defined as part of the analytical requirement. Examples are given showing the use of decision rules in food testing and on control of drugs in sport. The guide will be published in 2007.

Dr. Alex Williams
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Guides under development

- EURACHEM/EUROLAB/CITAC/Nordtest Guide. Estimation of measurement uncertainty arising from sampling. WG Chairman - **Prof. Michael H. Ramsey**, e-mail: mm.h.ramsey@sussex.ac.uk
- EURACHEM/CITAC Guide. Assessing performance in qualitative analysis.

The expression of uncertainties in qualitative analysis and testing. WG Chairman - **Dr. Stephen L.R. Ellison**, e-mail: S.Ellison@lgc.co.uk

- EURACHEM/CITAC Guide. The fitness for purpose of analytical methods: A laboratory guide to method validation and related

topics (revision). WG Chairman - not available at time of publication.

- IUPAC/CITAC Guide. Selection and use of proficiency testing schemes for a limited number of participants. WG Chairman - **Dr. Ales Fajgelj**, e-mail: A.Fajgelj@iaea.org

Documents available at the CITAC website: www.citac.cc

- CITAC mission, objectives and strategies (2004)
- EURACHEM/CITAC Guide "Traceability in Chemical Measurement. A guide to achieving comparable results in chemical measurement" (2003)

- EURACHEM/CITAC Guide "Guide to Quality in Analytical Chemistry, the Second Edition" (2002)
- EURACHEM/CITAC Guide "Quantifying Uncertainty in Analytical Measurement, the

Second Edition" (2000)

- EURACHEM/CITAC Guide "Quality Assurance for Research and Development and Non-routine Analysis" (1998)

Erratum

1. In CITAC News 2006, the paper by P. De Bievre "The Avogadro Constant ...", p. 7, Fig. 3 (A scheme of a measurement by comparison) replace "0.210 kg of ²¹C" by "0.012 kg of ¹²C".

2. In CITAC News 2005, the paper by P. De Bievre "The Terms we Use ...", p. 8, column 1, line 22 from the bottom, replace "late 2005" by "late Spring 2007".

On the same page, column 3, lines 3-4 from the top, delete the words "being the quantity intended to be measured".