



METCHEM

**Metrology in Chemistry Technical Committee
- Plenary Session -**

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Bucharest – Romania

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1 Welcome address

Bernd Güttler, chairman of TC-MC thanks INM to welcome the METCHEM representatives, and in particular *Mirella Buzoianu* for the organisation of the meeting.

Mirella Buzoianu (INM) welcomes the participants of METCHEM meeting and gives an overview of the Romanian metrological infrastructure.

2 Introduction and approval of agenda

The agenda of the 2009 TC MC meeting is approved.

3 Tour de table

The chairman asks the delegates of the plenary session to introduce themselves.

4 TC Chair's report on EURAMET TC Chair's meeting and EURAMET GA (*B. Güttler*)

Bernd Güttler summarizes the main topics of the 2nd Euramet General Assembly, held from 2 to 4 June in Marseille, France.

He illustrated the governance board of Euramet consisting of three chairpersons and six elected members. The GA elected Leslie Pendrill (SP, Sweden) as the new Euramet chairperson for the period 2009-2012, succeeding Michael Kühne.

The GA has established Euramets future strategy which includes cooperation with EU, EA (European Accreditation), and WELMEC. Furthermore, a membership in organisation with the European Forum on Conformity Assessment is to be arranged.

The Euramet GA also decided to establish a focus group on “Facilitating National Metrology Infrastructure Development”, whose aims are (1) the promotion and development of the metrology infrastructure in the countries of its members, (2) the facilitation and acceleration of the integration of its member NMIs into EURAMET activities, and (3) a raising awareness about the development in metrology and quality infrastructure in the countries.

New guides can be found at the Euramet website (<http://www.euramet.org>) the guides “Euramet procedures and review criteria for CMCs”, “Euramet and the operation of NMIs”, and “Metrology – In Short” are available.

The EMRP as Article 169 programme is in preparation and could be launched end 2009 with a total budget of 400 M€ (50 % co-funding by the EC) over an approximately seven year period.

TC Chair's report on status of EURAMET QM CMCs (*B. Güttler*)

The final decisions at the 2008 KCWG meeting were (1) a commitment from KCWG not to use any key comparisons that are not on the list of completed key comparison

from the WG chairs and (2) to discuss the review of existing CMCs in light of new intercomparison results.

In terms of regional activities, 49% of the 336 CMC claims were submitted by APMP, 34% by SIM and 13% (42) by Euramet. In terms of working group activities, the Euramet distribution (IAWG 50%, GAWG 31%, OAWG 14%, EAWG 5%) differs from the international distribution (OAWG 37%, GAWG: 33%, IAWG 29%, EAWG 1%).

Bernd Güttler pointed to the fact, that 222 claims (2/3!) were assigned to the non-fast-track process and 131 ($\approx 40\%$) claims are still pending at the end of 2008. The main problems are: (1) Many claims are made prior to the availability of supporting evidence, (2) evidence is there, but not made available to KCWG, and (3) evidence is there, but not made available in the review period. This makes discussions during the KCWG meeting impossible

5 Convenors report on subcommittees activities

SC Inorganic Analysis (*C. Quétel*)

The Euromet project No. 894 is completed; the draft report is in preparation and will be circulated for review soon.

The main subject was the Euramet project 924 supporting the EU water framework directive. In 2008, a project meeting was held at PTB with 23 participants from 8 European countries.

During the first step of the project, a link between NMIs and PCLs (Potential Calibration Laboratories) should be established. This step was divided into two parts covering the analysis of pure water (CCQM-P100.1) and natural water (CCQM-P100.2). The measurements are now completed and the draft report is scheduled for September 2008.

A supplementary comparison (Euromet.QM.S2) is concerned with the analysis of Ni, Cd and Pb. While the results obtained for Ni are satisfying, the determination of Cd reveals two distinct groups of NMIs. Therefore, the participants are invited to go back to their uncertainty estimation in order to provide a revised uncertainty on the KCRV. Since there are still question marks on conclusions reached so far, the organisers will conduct further consultations with participants, and the publication of the final report is postponed to April. The immediate consequence is that CMCs introduced on the basis of this supplementary comparison are put on hold and can be re-submitted within the frame of Cycle XI in 2010.

Step 3 of the project is concerned with the analysis of Hg, Ni, Cd and Pb in natural water at a concentration level required by the European environmental quality standard (EQS). As a result, a link between PCLs and NMIs should be established.

For the new cycle X, 54 CMC claims have been submitted; 43 of them are accepted as "fast-track", 7 CMCs (MIRS, NCM-BIM, BRML-INM) have to be postponed to a

future cycle, and 4 CMCs (IRMM) depend on the approval of the CCQM-K44 final report.

SC Electrochemistry (*P. Spitzer*)

The Euromet project 843 is completed. The resulting protocol is intended for the calibration and the evaluation of on-site measuring equipment for the determination of pH in water. It gives guidance to the end-user on how to estimate the measurement uncertainty of the pH value following standard procedures.

The vast majority of responses were very positive and the document should be translated to put it at disposal of users. Possibly, a similar protocol shall be developed for multi-parameter instruments in a future project.

Euramet project 1051: The measurements are finished and report was received from IPQ. The results indicate equivalence between IPQ and DFM, however there are some remaining questions. The draft report of the comparison is in progress and is expected to be finished in February 2009.

A preliminary evaluation of the results of CCQM-P111 is presented.

In total, 5 CMC claims from have been submitted for cycle X and were discussed. The claims from DFM (1) and INRIM (2) were accepted while those from INML (2) were postponed to a future cycle.

SC Gas Analysis (*R. Wessel*)

17 participants from 13 countries attend the meeting. The main subjects are the EURAMET projects and the cycle X CMC claims.

In total, 14 projects were discussed; 5 final reports are due very soon; 4 projects started in 2008. Euramet projects differ from CCQM-GAWG projects:

- 934 Tilsam; laser based spectroscopy

- 937 Trace purity

- 1003 ultra trace water vapour

- 1027 Combustion particles

New project proposals were presented:

- Comparison on mixtures of ethanol in water saturated air (PTB)
(OIML recommendation)

- BTEX loaded on adsorption tubes (LNE)

- Ethanol preparative (NPL)

- Ethanol analytical (NMI-VSL)

During the 20th GAWG meeting in Bangkok, several decisions concerning debated cycle IX gas CMC claims from CEM, NPL and VNIIM have been made. Now, all CMCs (with some minor changes) are included in the database.

New or revised claims for cycle X have been submitted from Metas (2 lines), INRIM (1 line), VSL (7 lines; 3 multicomponent), NPL (11 lines; 2 multicomponent), SMU (3 lines), UBA (1 line), and FMI (5 lines).

From these, 7 lines were accepted, 14 lines need to be supported by additional evidence, and 9 lines were rejected. In particular, claims whose support is based on key comparisons not yet accepted to be used for review (K51, K53) were rejected.

SC Organic Analysis (*F. Ulbert*)

CMC claims for cycle X have been submitted from LGC (new: 3 lines, revisions: 10 lines), BAM (1 line) and PTB (2 lines). All lines were accepted.

A new proposal for comparison was made by LNE and is concerned with herbicides in water as a support to the EU WFD. LNE has developed materials for the determination of herbicides in water stable for three years, namely pesticides in acetonitrile (in vials), and pesticides concentrated on a solid phase extraction. LNE proposes to organise an inter-laboratory comparison campaign with these materials in order to evaluate the intra and inter laboratory precision of this type of determination.

A possible contribution to the upcoming EMRP TP Energy measurements to characterize quality criteria of biofuels (biodiesel) are suggested.

6 Information from President of CCQM (*Robert Kaarls*)

The current CCQM WG chais are *L. Mackay* (NMIA, KCWG), *W. May* (NIST, OAWG), *M. Sargent* (LGC, IAWG), *M. Milton* (NPL, GAWG), *M. Mariassy* (SMU, EAWG), *W. Unger* (BAM, SAWG), and *H. Parks* (LGC, BAWG). These permanent WGs are currently supported by 3 ad hoc WGs.

Due to the fact that Metrology in Chemistry has received a fast growing interest in many countries, a couple of meetings/workshops were held in addition to the regular CCQM WG meetings. The main topics of the CCQM/USP Pharma and Bio Pharma workshop and the JCTLM EC and members and stakeholders meeting (both held at BIPM in December 2008) are presented.

While summarizing the recent work and future tasks of the KCWG, *Robert Kaarls* emphasized the need to stick to agreed time schedules of the annually CMC review process and that a correct implementation of the procedures is essential. He also remarks that a check on coverage of CMCs by QS is a weak point.

The CIPM MRA has now been signed by the representatives of 81 Member and Associate States and Economies and 2 international organizations (IAEA and EU JRC IRMM). Some 20.500 CMCs (4.300 chemistry) and 630 KCs (71 chemical KCs) are now listed in KCDB registering ~5.000 hits/month both for CMCs and KCs.

National Metrology Institutes (NMIs) and Designated Institutes (DIs) publishing Calibration and Measurement Capabilities (CMCs) in the BIPM Key Comparison Database (KCDB) have two choices for establishing their traceability routes to the SI: (1) via a primary realization of the unit of measurement concerned or by applying primary “higher-order” methods, in which case traceability must be declared to its

own demonstrable realization of the SI, or (2) via another NMI or DI having CMCs published in the KCDB or through calibration and measurement services offered by the BIPM, in which case the level of uncertainty in the relevant area must be appropriate. Traceability is always to the SI, or if not yet possible, to another internationally agreed reference but NOT to an institute.

New guidance documents have been released: (1) A guide to the implementation of the CIPM MRA, giving links to all other CIPM and JCRB documents giving rules and guidance with respect to the CIPM MRA, and (2) “Calibration and Measurement Capabilities in the context of the CIPM MRA”, a detailed guide describing the whole process of claiming, reviewing, approving and publishing CMCs.

Finally, an overview of CCQM subjects of current interest and a schedule for the upcoming CCQM WG meetings is presented.

7 Workshop EMRP

Bernd Güttler opens the workshop that was organized to initiate discussion among major European stakeholders in the EURAMET TC-MC community for a preliminary discussion of chemistry-related ideas for a TP Energy within the EMRP.

The main aims of the workshop are (1) to establish common areas of interest in the chemistry-related field of metrology for energy, (2) to trigger discussion among possible partners (also including partners from outside the TC-MC community), and (3) to foster the formation of interest groups which might become active in the EMRP process.

7.1 Report: “Recent developments of the EMRP programme” (*Jörn Stenger*)

Jörn Stenger summarized the recent developments leading to the European Metrology Research Programme, EMRP.

EMRP is a Euramet programme, open to the European NMIs and Designated Institutes (DI) that integrates the national programs of 22 participating countries by pooling the excellence in metrology research. The main activity of the EMRP consists of joint research and technological development activities in the fields of fundamental and applied metrology.

Several “Grand Challenges” have been identified. and shall be supported in Targeted Programmes (TPs) . Examples are multidiscipline metrology research in the fields *health* (call in 2008, projects in progress), *energy* (call expected in April 2009), *environment* and *new technologies*.

The EMRP programme is based on Article 169 of the European treaty that allows co-financing a programme of the member states. The EC does not decide which research projects should be funded but expects scientific, management, and financial integration.

Each TP is expected to comprise a spectrum of 10-15 “Joint Research Projects” (JRPs), which are developed by NMI/DI consortia and reviewed by external experts.

Five call cycles are planned at 12 month intervals. Each call comprises a two-stage procedure, namely (1) the call for topics and (2) the call for proposals for Joint Research Projects (JRPs).

The EMRP budget is 400 M€ over a 7-year period including a 50% co-funding by the EC. Proposed Joint Research Projects may also include proposals for Researcher Excellence Grants (10%) for non NMI/DI partners. Annual national commitments are calculated from the number of votes in the EMRP committee following the “Square Root Law”.

The start of the call procedure for the TP “Energy” is expected for June/July having a budget of ≈34 M€ to be committed.

Jörn Stenger emphasizes the unique features of the EMRP programme whose results shall lead to an advanced, integrated European metrology infrastructure.

Questions:

R. Wielgosz: Which are the eligibility criteria for external researchers?

J. Stenger: External researchers must be from a country of the FP7 programme.

P. Charlet: Are partners from outside EU allowed to participate?

J. Stenger: This should be an exception.

B. Güttler: Can we expect a call for a TP “Environment” next year?

J. Stenger: The EMRP committee has to make a final decision but the TP “Environment” is very likely to come in 2010. Another TP “Health” is also likely to come in the near future, but TPs like “Chemistry” or “Ionizing Radiation” are not planned. A useful idea might be thinking about JRPs that are linked between succeeding TPs (Energy ↔ Environment).

B. Güttler, R. Kaarls: Is a TP “Food” planned in the future? Food plays an important role in the “rest of the world”

J. Stenger: A TP “Food” is not yet planned but food-related research might be integrated into other TPs like “Health”.

7.2 Preparation for an EMRP Targeted Programme “Energy”

Several chemistry-related ideas for the TP “Energy” are related to the metrology of biofuels, such as:

- Quantifying the calorific value of biofuels
- Tracing the regional origin of biofuels
- Identification of the origin of biofuels
- Quantifying the quality of biofuels

Contributions from various NMIs/DIs are presented to highlight their possible role in a JRP consortium.

Stefan Sarge (PTB) points out the importance to quantify the caloric value of biofuels in order to determine their energy content. These data are necessary for the

determination of the commercial value, for the calculation of the efficiency, for defining conversion rates from, e. g. solar radiation to biomass, biofuel, or heat/power, and for the calculation of carbon dioxide equivalents necessary for the international trade of CO₂ certificates.

Biofuel-related problems to be solved involve the identification of fatty acids, the establishment of reliable field measurement techniques, and the development of calibration facilities such as reference materials (fatty acid methyl esters), reference instruments (calorimeters), and a traceability chain.

Jochen Vogl (BAM) presents the background and possible analytical tools to trace back biofuels of different raw materials and from different origin.

The need for traceability results from several social, political, and economical problems related to biofuels which are, e. g. the fact that some biofuels are made from staple foods, the growing requirement of farmland, and climate protection.

Possible tools for establishing traceability are elemental fingerprints (e. g. rare earth elements), molecular fingerprints of either impurities or main components like the fatty acids profile, or the determination of (stable) isotope ratios (e. g., $\delta^2\text{H}$, $\delta^{18}\text{O}$, or $\delta^{13}\text{C}$).

Christophe Quétel (IRMM) proposed the use of isotope abundance ratios of light elements as a diagnostic tool to trace origins and processes in biofuel metrology. These ratios are often used for tracing the origin of foods, e.g. the $\delta^{18}\text{O}$ isotopic signature can help to trace the origin of water while the $\delta^{13}\text{C}$ isotopic signature can trace the origin of plant or plant related products.

Applied to biofuels, the determination of isotopic signatures could improve the authentication of products and additives, the quantitation of components, and the understanding of production and transformation processes.

Rob Wessel (NMI) presents a proposal for identifying and quantifying the claimed content of biofuels in fossil fuels according to existing or forthcoming EU directives.

Major tasks are the Development of methods and CRMs for analyses of biofuels in fossil fuels including isotope ratio measurements. The feasibility of producing SI traceable measurements (CRMs and reference methods) of several classification parameters shall be investigated.

Considering the long period between production and use of biofuels, the long term stability of some instable parameters also need to be studied.

Rob Wessel (NMI) suggested to determine the moisture and water dew point in gaseous and liquified fuels. The rationale for this proposal is the changing moisture content during production, transport and storage. The moisture content effects the calorific value and needs to be determined and subtracted before final metering but reliable measurement methods and reference materials are scarce or even lacking.

Reference materials for moisture in natural gas, LPG and LNG shall be developed to be used for calibration of dew point meters in the metering stations. Novel analytical techniques based on visible and infrared spectroscopy shall be developed.

Phillipe Charlet (LNE) emphasized the role of metrology in biofuel analysis and characterization. He suggested the establishment of a metrological infrastructure which comprises the development of reference methods and materials, cooperation between NMIs, and involvement in proficiency testing schemes.

Bioethanol is a single chemical compound whereas biodiesel is derived from several types of feedstocks. That's why specifications and need for harmonization are different. Bioethanol specifications are more closely aligned amongst the three regions than biodiesel specifications.

The role of metrology in proficiency testing schemes on bioethanol is also highlighted. A new scheme was set up recently and several interlaboratory comparisons have been organized with participation of an increasing number of laboratories. On a long term basis, calibrants and certified reference materials for instruments calibration and methods validation shall be developed.

Andrea Held (IRMM) pointed out some challenges related to biofuels. She suggested the development of reference methods for the determination of FAMES and glycerides/glycerol able to provide SI-traceable reference values, to improve the precision of EN 14103 and EN 14105 via link to the reference method (traceable results => better comparability). Finally, EN 14103 and EN 14105 shall be updated to reflect the improvements.

Martin Milton (NPL) proposed two projects related to (1) hydrogen quality and (2) alternative hydrocarbon fuels.

The use of hydrogen in fuel cells requires the availability of cost-effective fuel cells, and hydrogen storage technologies, as well as an infrastructure across Europe for the generation and supply of hydrogen. A critical factor in the supply of hydrogen is the specification of its "quality" in terms of the concentrations of trace contaminant species. Thus, a European metrology infrastructure for Hydrogen quality and storage shall be established.

The trend towards alternative hydrocarbon fuels such as LPG, LNG and CNG is building a requirement for a robust metrology infrastructure that is able to address fuel versatility. This can be provided by building on the established system used to provide traceability for measurements of the energy content of natural gas.

Petra Spitzer (PTB) presents a proposal for quantifying the salinity of seawater for energy efficient water power and drinking water generation.

To improve the energy efficiency and safety of salinity gradient processes the transport properties of seawater have to be quantified. In particular, primary methods to measure parameter traceable to the SI must be developed, artificial seawater as matrix reference material has to be investigated, and calibration hierarchies

especially for salinity over the entire range of interest (up to 120 °C and high salinity) have to be built up.

Furthermore, solubility limits of seawater components under different conditions of temperature, salinity and pressure shall be described, and fast/reliable in-situ sensors for monitoring a variety of parameters shall be developed.

8 Reports on CCQM WG meetings

EAWG (*M. Mariassy*)

Meetings were held at BIPM (Sevres, 31 March to 1 April, 20 participants) and at IAEA (Vienna, 8-10 October, 11 participants).

The results of CCQM K20 (pH of oxalate buffer), K36.1 (assessing the measurement capabilities for electrolytic conductivity), and CCQM-K48 (amount content of chloride, jointly with IAWG) are presented and discussed.

Runing studies and comparisons are K34.2 (assay of KHP), CCQM-P83 (electrolytic conductivity @ 0.5 mS/m), and CCQM-P112 (assay of EDTA).

New studies and comparisons are agreed and planned addressing HCl (CCQM-P19.2/Kxx), pH (CCQM-P37.1), pH 7 preparation study (P93), and seawater (CCQM-P111.1).

Technical presentations adresses different issues of electrochemical analysis such as problems with pH measurement in biofuels (INMETRO), recent NMIJ's activities on pH measurement (NMIJ), correlations between AF slope and deviation from KCRV (NIST), Impedance-frequency relationships and their effects on resistance extrapolations in conductivity cells (NIST), and a Coulometry workshop (BAM, KRISS, NIST, NMIJ, SMU, UNIIM).

IAWG (*M. Sargent*)

Meetings were held at BIPM (Sevres, 31 March – 1 April) and IAEA (Vienna and Seibersdorf, 8-10 October). Both included joint meetings with CCQM EAWG. Also, a joint workshop with IAEA was held on technical challenges of standards and CRM production.

The results of the second IAWG Benchmarking Study on Cd and Cr in polypropylene are reported. The objectives were to benchmark equivalence between all IAWG laboratories through participation in the same comparison and to demonstrate that NMIs achieve good results even with analyses outside their existing experience (*how far does the light shine for an NMI?*).

Results from 22 participants confirmed the first study, with mostly excellent agreement even by laboratories where sample was not typical. In general, the most experienced NMIs were in closer agreement (majority within +/- 1 or 2%), and the capability of IDMS/ICP-MS was clearly demonstrated.

Another on-going development of IAWG strategy is to refine and extend the core competencies matrix, a systematic summary of the scope of each KC and the competencies required to deliver each CMC. It provides a simple, consistent basis for RMOs and KCWG to test claimed CMCs against performance in (several) KCs. Furthermore, the knowledge of the IAWG wrt capabilities of each NMI and competencies required for specific tasks will be encapsulated. Recent IAWG discussions have refined the approach and a third benchmarking study will be designed to test use of the Core Competences Matrix.

GAWG (*M. Milton*)

A brief overview of the on-going GAWG Key comparison reveals that five projects have reached the “draft A” state (K46 ammonia, K51 CO, K53 oxygen (prep), K54 nC6, K65 mercaptans), whereas four projects (K66 purity of methane, K68 nitrous oxide in air, K71 multi-component emissions, K74 nitrogen dioxide in air) are still in progress.

Addressing the present challenge for CCQM, it is now discussed what is the most efficient way for GAWG to move forward, with the minimum number of KCs to underpin the maximum number of CMCs, and how the system should be updated.

A classification of the GAWG key comparisons results in 3 distinct groups, namely the “Core”, the “Analytical challenge”, and the “natural gas” species and concentrations.

A couple of GAWG comparisons are of species for which there is no special “analytical challenge”. Questions to be addressed are whether the performance in these “core” comparisons represents a long-term measure of the performance of an NMI, and if the performance in these “core” key comparisons can be linked to a corresponding set of “core CMCs”?

The concept of “core” species brings together species for which performance is similar. Although their performance varies with concentration, it is much less than the spread of results. Molecules to be covered in a “core approach” are CO, CO₂, O₂, propane, CH₄ (>10 ppm), and NO, SO₂, NO₂ (>100 ppm) as binary components in N₂ and air and in natural gas.

OAWG (*G. O'Connor*)

Meetings were held in 2008 at BIPM (Sevres, 31 March - 1 April) and Bangkok, Thailand (19-21 November). These meetings were attended by over 40 participants at each meeting representing 28 different institutes.

A summary of completed and on-going OAWG studies 2008 is presented. Results and present status are summarized for the Key Comparisons CCQM-K50a,b (P69.1, PAHs in soil/sediment/particulate), K62 (P78.1, Nutrients in infant/adult formula), K63a,b (Non-Peptide hormones in serum), K69 (P115, Anabolic Steroids in urine) and for the Pilot Studies CCQM-P20F (Organic Purity Assessment, Digoxin), P88 (Antifungals in food), P90 (Chloramphenicol in milk), P91 (Pesticides in food), P109

(Acrylamide in cooked high-carbohydrate food), and P114 (Brominated flame retardants in plastic).

New studies are proposed on Quinolones (P, enrofloxacin, ciprofloxacin and oxolonic acid) in pork (Chile), Tetracyclines (P, chlortetracycline, tetracycline and oxitetracycline) in poultry (Chile), Acetylcholine in Microdialysate (P, China), and on the mass fraction composition of a calibration solution containing a single major organic analyte representative of relatively polar organic compounds in a polar solvent (KC and P, BIPM).

To cope with increasing workload, OAWG discussed and agreed to a new “three-track strategy” with the goal of approaches and implementation for “way forward” in each of the three tracks being: 1. Key comparisons that test core competencies for providing primary calibration reference services and for providing accuracy control reference services. 2. Key comparisons that assess the equivalence of measurement services provided for Certified Reference Materials and value-assignment of PT samples and 3. Pilot studies in emerging areas of interest and/or strategic importance.

BAWG (*H. Parks, G. O'Connor*)

During the two 2008 meetings in Paris (April) and Bangkok (November), several finalized and ongoing studies were reported and discussed.

In CCQM-K61 (Q PCR Calibration), laboratories used quantitative Real-Time PCR to quantitate the DNA unknowns using a variety of platforms and reagents. The results were good and bracketed the KCRV but there is some evidence for unaccounted factors in the uncertainty estimates.

The results of CCQM-P94 (Quantitative Analysis of DNA Methylation) exhibit good agreement between four of the five participating laboratories.

The results of the CCQM-P55 study (Quantification of a peptide in solution) on Proline and Angiotensin I were presented. The values determined for the amino acids have been shown to be comparable within 2-7% at the mg/g level. It was decided, to proceed to P55-1 using new peptides but the same amino acids with the main aim to reduce the uncertainty.

In the P101 pilot study, relative quantities of glycan species present in a mixture typical of that released from therapeutic glycoproteins were identified and determined. From 52 joined participants, 32 submitted data, only few NMIs have the resources and expertise to undertake the study. The most accurate results are from industry, not from NMIs since the methodology largely parallels that applied in industry.

Furthermore, the highlights and progress in the ongoing studies P58.1 (Comparability of Fluorescence in ELISA, NPL, NIST), P59.1 (Protein structural measurements by Circular Dichroism, NPL), P102 (Quantification of cells with specific phenotypic characteristics, NIBSC, NIST), P103 (Measurement of multiplexed panel of RNA transcripts, LGC, NIST), and P113 (Relative Quantification of Genomic DNA Fragments Extracted from a Biological Tissue, IRMM) were discussed.

Other issues were Study monitoring, CMC claims (BAWG representation on KCWG), Collaboration / joint activities with OAWG (analytical expertise (MS) - aa / peptide) and SAWG (interface of disciplines: Bionanotechnology measurements (chip array) and Biomarker imaging).

9 Information on activity of the JCTLM (R. Wielgozs)

JCTLM has delivered a quality assured database of *Higher Order Reference Materials*, *Reference Measurement Procedures* and *Laboratory Reference Measurement Services*, primarily for IVD industry and regulators. The search engine can be found at <http://www.bipm.org/jctlm/>.

A JCTLM Member's and Stakeholder's meeting on International and National Systems for Traceability in Laboratory Medicine was held in Paris (12/12/2008). The main topics were current global activities and future challenges concerning the implementation of traceability, new initiatives for reference measurement systems and establishing comparability for non-SI analytes in clinical chemistry and laboratory medicine.

10 Report on EURACHEM Activity

On behalf of *M. Suchánek* (vice-chair member of Eurachem Executive Committee), *Bernd Güttler* recapitulates the organization structure of Eurachem and summarizes the main goals of this network of organizations in Europe.

The Last important event was the *6th Eurachem workshop on Proficiency Testing in analytical chemistry, microbiology and laboratory medicine*, Rome, 6-7 October 2008. The next GA and EC meeting will be held in Bratislava, Slovakia, May 2009 with celebration EURACHEM's 20th anniversary.

Recent developments and activities are bi-annually published in the EURACHEM Newsletter (www.eurachem.org).

11 Mandate of Convenors

Bernd Güttler briefly summarizes the EURAMET rules of procedure regarding the TC chairs and convenors. Than he introduces *Gavin O'Connor* (LGC) as the new convenor of the technical subcommittee on Organic Analysis, following *Franz Ulberth* (IRMM). The convenors of the TC MC subcommittees are now as follows:

GAS:	<i>Rob Wessel</i> (NMI-VSL, until 2012)
Organic:	<i>Gavin O'Connor</i> (LGC, until 2013)
Inorganic:	<i>Christophe Quérel</i> (IRMM, until 2010)
Electrochemistry:	<i>Petra Spitzer</i> (PTB, until 2011)

The Chairman thanks the convenors for their work.

12 The "Measurement Science in Chemistry" consortium

Ivo Leito announces the *International Consortium on Measurement Science in Chemistry*. Coordinated by the University of Tartu, Estonia, 9 universities from 7 countries contributed to the Master's programs of Analytical Chemistry whose aims are: To achieve high quality of teaching, to harmonize teaching of MiC concepts, to share ideas and to pool resources and to promote education in chemical measurement science.

13 Any other business

There was no other business.

14 Next Meeting and Closure

Michela Sega welcomes all delegates to the next annual meeting of the TC-MC, to be held at INRIM, Torino (ITA), from 2 to 5 of February 2010.

Bernd Güttler thanks the delegates for their contribution and INM for their excellent organization and hospitality.