

The BIPM key comparison database Newsletter – No 11 – June 2009

Dear Reader,

Welcome to the 11th KCDB Newsletter.

In this issue we highlight some updates related to the CIPM MRA, the JCRB, the contents of the KCDB and some events organized by the BIPM. General information on future meetings is provided from the BIPM main website: [calendar of meetings held at the BIPM, and other conferences, workshops and general assemblies](#). As usual, we begin with a novel success story related to the use of the CIPM MRA.

We wish you a pleasant time surfing our KCDB Newsletter No 11,
The BIPM KCDB Office

To improve future editions of the KCDB Newsletter, please send us feedback to BIPM.KCDB@bipm.org so that we may meet your specific interests and concerns.

The success story of the KCDB Newsletter No 11:

* "[CIPM MRA Singapore Case Study](#)" by Steven TAN Beng Chye, Director, National Metrology Centre, A*STAR, Singapore.

⇒ Prof. Michael Kühne, BIPM Deputy Director, BIPM Director Designate



Prof. Michael Kühne

Michael Kühne was born in 1949.

After receiving a doctoral degree in 1977 he joined the PTB in Berlin, where he participated in the development of the PTB laboratory for vacuum-ultraviolet radiometry at the Berlin electron storage ring BESSY, and was appointed Head of this laboratory in 1986.

In 1991 Michael Kühne moved to "Thermometry" and assumed the position of Head of the PTB's Department of Temperature and Heat.

In 1992 he was awarded the "Habilitation" (postdoctoral lecturing qualification) and was appointed lecturer in the Department of Physics of the University of Hannover; in 1996 he was appointed adjunct professor.

In 2001 Prof. Kühne moved from Berlin to Braunschweig to become Head of the Staff Office of the PTB's Presidential Board, and in 2003 he became a member of the Presidential Board in the post of second vice-president.

Michael Kühne is a member of the Editorial Board of the journal *Measurement Science and Technology* and a Fellow of the Institute of Physics, UK.

From June 2006 to March 2009, he was Chairperson first of EUROMET and then of EURAMET.

In November 2007, the CIPM elected Michael Kühne as Director Designate of the BIPM. He joined the BIPM as Deputy Director in April 2009.

Click [here](#) to see more

⇒ **BIPM Membership – Associates of the CGPM**

- The Republic of Croatia became a Member State of the BIPM on 23 December 2008, and the Republic of Kazakhstan on 31 December 2008. Both were previously Associates of the CGPM.
- The Republic of Paraguay became an Associate of the CGPM on 6 May 2009, and the Republic of Peru on 28 May 2009.

This gives a total of 53 Member States of the BIPM and 27 Associates of the CGPM. See the full list of [Member States and Associates](#)

As of 4 June 2009, the CIPM MRA has been signed by representatives of 74 institutes from 47 Member States, 25 Associates of the CGPM, and two international organizations, and covers a further 123 institutes designated by the signatory bodies as holders of specific national standards. Click [here](#) to access the full list of participants in the CIPM MRA.

⇒ **World Metrology Day – 20 May 2009**

<p>World Metrology Day 2009</p> <p>To mark the ten-year anniversary of the CIPM MRA, this year's theme was "Measurements in Commerce". We invite you to read the message from the Director of the BIPM, and download the promotional products in a choice of languages.</p> <p>http://www.worldmetrologyday.org</p> <p><i>(An initiative realized by Dr P. Espina, BIPM)</i></p>	
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⇒ **Feedback from the 22nd JCRB**

The 22nd meeting of the JCRB took place at the BIPM, on 17 and 18 March 2009.

CIPM MRA documents and policies

<p>Document <i>CIPM MRA-D-05 "Comparisons in the CIPM MRA"</i> was presented to the JCRB and a discussion was held on the requirements for comparisons. A new draft will be prepared and will be circulated among the RMOs for comments.</p> <p>Document <i>CIPM MRA-P-01 "Procedure for approval of new RMOs"</i> was discussed and will be submitted to the CIPM for final approval.</p>	<p>All open-access documents relevant to the CIPM MRA (policy documents, guidance on CMCs, guidance on comparisons, and complementary information) can be reached from the main BIPM website by clicking here:</p> <p style="text-align: center;"> </p>
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Feedback from the CCs and their Working Groups

To obtain formal feedback from the CCs and their Working Groups, a questionnaire was circulated in advance of the 22nd JCRB meeting. After analysing the responses, two main common problems were identified:

- There is a need to improve the communication of resolutions and policies related to the CIPM MRA to the CCs and their Working Groups.
The discussion of this issue led to resolution 22/1: *"The Executive Secretary will send an advance copy of the JCRB news section of the KCDB Newsletter to the RMO delegates."* This action was undertaken for this issue of the *KCDB Newsletter*.
- The inclusion of uncertainty components due to the device under test (DUT) is not done in a uniform way in all the CCs.

After a short discussion it was agreed that the CMCs should include the components of uncertainty due to the DUT, and only in those cases where the DUT is not included, the CMCs in the KCDB should include a note in the "comments" field stating this point. This conclusion will be included in document *CIPM MRA-D-04 "Calibration and Measurement Capabilities in the context of the CIPM MRA"*.

Periodic review of CMCs

The JCRB noting that:

- its statement about a five year review period for CMCs may have been misinterpreted,
- RMO review of quality systems occurs every five years, and
- recently a system of annual reports from NMIs and DIs was introduced in which NMIs and DIs report any changes which may affect CMCs,

resolves that:

the periodic review of published CMCs is performed by the RMOs and recommends that RMOs review the templates used for these annual reports to ensure that NMIs and DIs address this issue.

The JCRB further notes that in some areas the CCs may wish to make a specific decision on the review period and review procedure that apply to their community.

Accreditation of NMIs

The problems and advantages of harmonizing the processes for the review of quality systems of NMIs as used by the RMOs and by the accreditation bodies were discussed. The BIPM will continue to look for ways to harmonize the processes, to avoid unnecessary duplications of efforts.

Next JCRB meeting

The next JCRB meeting will be hosted by COOMET and held in Kazan, Republic of Tatarstan, on 23 and 24 September 2009.

(Reported by Prof. L. Mussio, JCRB Executive Secretary)

* [JCRB website](#)

Policy on traceability for CMCs
Follow-up of information given in the KCDB Newsletter No. 10

During the 2008 CIPM meeting, a policy was approved for establishing the traceability of CMCs in the context of the CIPM MRA. This was reported in the [KCDB Newsletter No 10](#).

However, comments have been received from CCs and from the RMOs on this text. Although the policy is accepted in general, the main point still under discussion is how to provide a clear statement for those quantities that do not have a clear path to the SI, like in some areas of Chemistry and materials properties.

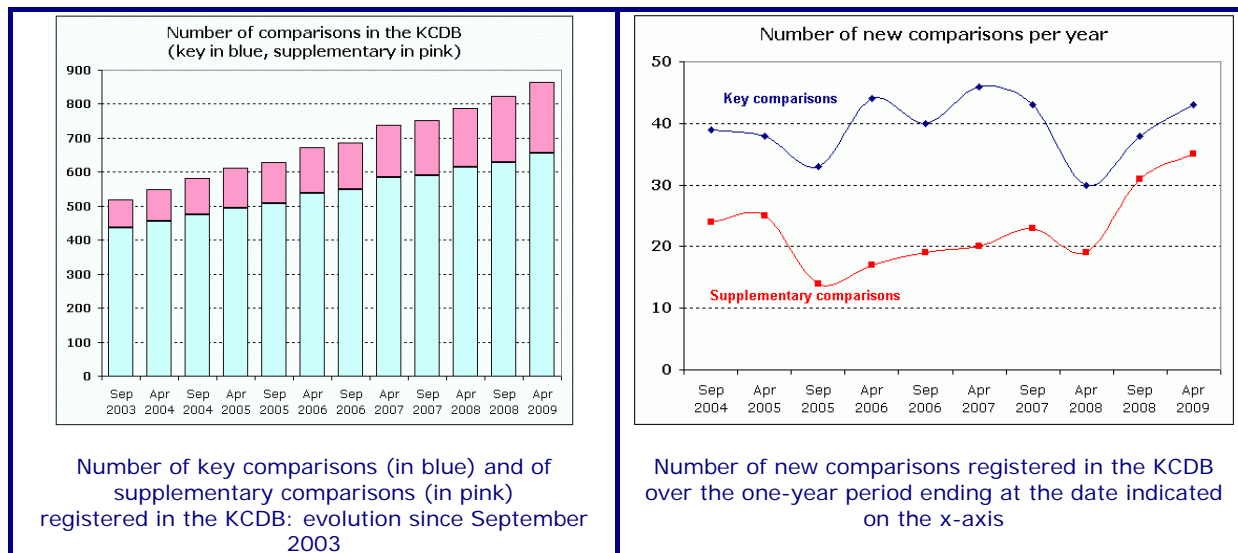
The JCRB have thus consulted with the CCs and drafted a new text that takes into consideration these problems. The new draft will be circulated among the RMOs through the JCRB representatives and it is planned to have the final text approved at the next JCRB meeting (September 2009) and presented to the CIPM in October 2009.

(Reported by Prof. L. Mussio, JCRB Executive Secretary)

⇒ **Key and supplementary comparisons**

The [key and supplementary comparisons](#) database now covers 659 key comparisons (81 from the BIPM, 328 from the CCs, 1 from AFRIMETS, 85 from APMP, 29 from COOMET, 104 from EURAMET, and 31 from SIM) and 211 supplementary comparisons.

Two new BIPM key comparisons were recently registered in the KCDB: [BIPM.RI\(II\)-K1.Cu-64](#) and [BIPM.RI\(I\)-K6](#). They correspond to novel work undertaken by the BIPM Ionizing Radiation Section.



One observes that 35 new supplementary comparisons have been registered over the last year. This is the highest rate ever observed, and reflects the awareness of the RMOs of the interest of declaring their internal exercises and posting the corresponding reports in the KCDB, mainly in support of their CMC claims. The number of newly registered key comparisons averages at about 40 per year.

Updated graphs illustrating the participation in [key](#) and [supplementary](#) comparisons were made available from the [Statistics page of the KCDB](#) on 2 June 2009.

On 5 June 2009, among the 659 key comparisons that were registered:

- 87 corresponded to exercises prior to the implementation of the CIPM MRA (they were “Approved for provisional equivalence”);
- 73 of the 81 ongoing BIPM key comparisons had results published in the KCDB; these are regularly extended when new data become available; and
- another 267 CC and RMO key comparisons had their final reports approved and posted in the KCDB website, and corresponding tables of numbers and graphs entered in the database.

All together, the KCDB currently displays a total of 1264 graphs of equivalence.

The results of some 97 RMO key comparisons are published in the KCDB. Linkage is also computed for bilateral key comparisons subsequent to full-scale CC key comparisons; their results are added on the appropriate graphs of equivalence. The final reports (or appropriate references) of about half of the supplementary comparisons registered in the KCDB are also posted in the KCDB.

Note that final reports of key and supplementary comparisons posted in the KCDB are also generally published in the series of [Metrologia Technical Supplements](#).

(Reported by Dr C. Thomas, BIPM KCDB Coordinator)

* [Latest KC results published](#)

**A new BIPM key comparison of
absorbed dose to water for high-energy x-ray beams
BIPM.RI (I)-K6**

In response to the immediate needs of NMIs with absorbed dose standards for high-energy x-ray beams from linear accelerators, as used in cancer treatment, the BIPM has been developing a primary standard that can be transported to each NMI for direct comparisons of absorbed dose. This important ongoing key comparison was registered this year in the KCDB as [BIPM.RI\(I\)-K6](#). The BIPM primary standard, based on a [graphite calorimeter](#), has been tested at the LNE-LNHB (France) and is presently at the NRC in Canada with a team from the BIPM for the first in this series of key comparisons.



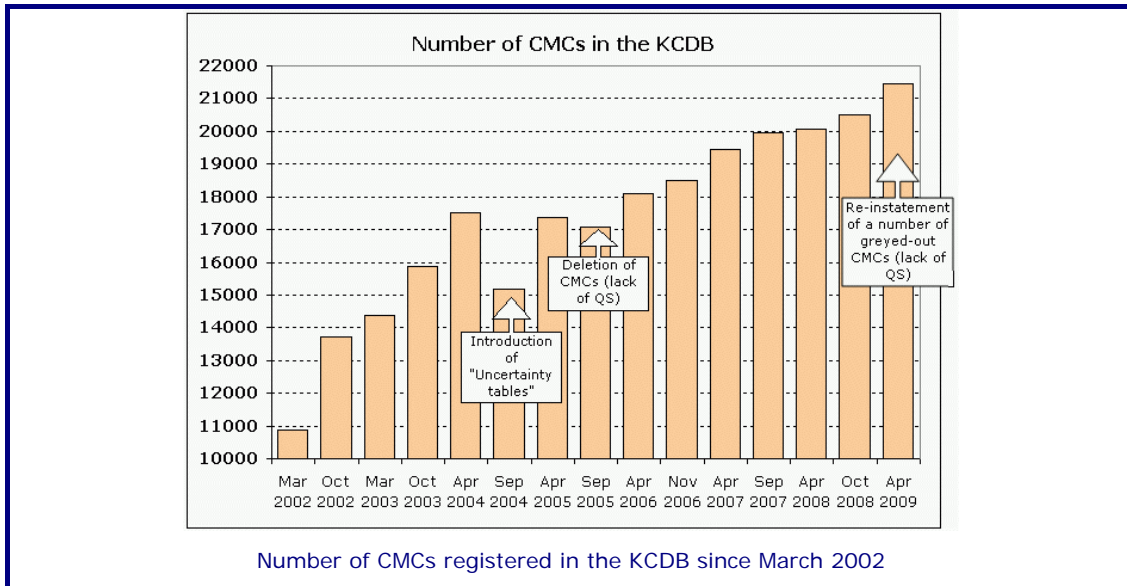
Graphite jacket housing the
parallel plate
ionization chamber.

Reference: Picard S., Burns D.T., Roger P., Construction of an absorbed-dose graphite calorimeter, [Rapport BIPM-2009/01](#), 12 pp.

(Reported by Dr P. Allisy-Roberts, Head of the BIPM Ionizing Radiation Section)

⇒ **Calibration and Measurement Capabilities (CMCs)**

As of the beginning of June 2009, about 21 500 CMCs were published in the KCDB. This represents an additional 1000 CMCs compared to the time of the last KCDB Newsletter (December 2008). Indeed, over the last six months a number of newly approved sets of CMCs have been published, but the main action was the re-instatement of hundreds of previously “greyed-out” CMCs following approval of the related Quality Systems. In particular we note that the 374 CMCs declared by Hungary deleted on 28 March 2008 were re-published on 10 March 2009.



Details on the number of CMCs currently published in the KCDB, per country and per metrology area, are available in real-time from the [Statistics page of the KCDB](#). In addition, a record of the history of CMC publications (including greying-out and re-instatement following QS approval) is kept in the form of an EXCEL file, which is made available in real-time from the restricted-access part of the JCRB CMCs website.

(Reported by Dr C. Thomas, BIPM KCDB Coordinator)

* [Latest CMCs published](#)

⇒ **A major event: the 10th Anniversary of the CIPM MRA**

The BIPM is to host an international symposium to mark a decade of the [CIPM MRA](#). This event – which is to be held on 8-9 October 2009 at the [OIE](#) in Paris – will aim to review the progress achieved by the CIPM MRA in reducing Technical Barriers to Trade (TBTs) and look into the future to determine how this technical framework could benefit other sectors of society. Over 200 government officials concerned with measurements in trade, representatives from international organizations whose mission benefits from the global uniformity of measurements, and many industrial representatives, will be in attendance. Among the speakers will be top-level officials from organizations like the [WTO](#), [UNIDO](#), [ISO](#), [ILAC](#), [Boeing Commercial Airplanes](#), the [Council for Chemical Research](#), the [University of Nottingham](#), and the directors of many of the prominent NMIs in the world.

(Reported by Dr P. Espina, BIPM)

⇒ **Workshops at the BIPM**

**Workshop on Physiological Quantities and SI Units
16-17 November 2009**

Chairman: Prof. Michael Kühne, BIPM
Scientific Secretary: Dr Claudine Thomas, BIPM

Draft agenda

Increasing demands are being placed on metrologists and other experts to quantify the effects of a multitude of factors on the human body, and this requires the resolution of a number of complex scientific issues – including assuring the traceability of the measurements to the International System of Units (SI). The BIPM is therefore organizing a Workshop on Physiological Quantities and SI Units, which will take place at the BIPM on 16-17 November 2009.

The aim is to bring together various interested communities – principally those concerned with traceable, reliable and comparable measurement, and those responsible for writing and applying specification standards and/or health and safety legislation.

The expected outcomes of the process initiated by the Workshop will be:

- a collaboration aimed at relating the effects on the human body to measurements traceable to the SI or to other internationally agreed standards;
- harmonization of terms and methods so that measurements made in different places can be related to each other, thereby enabling comparability of research work and a consistent approach to the estimation of effects on the human body;
- best practice guides and/or documents which may be adopted as the basis for the measurement aspects of international standardization, regulation and/or legislation; and
- a commitment by intergovernmental bodies and international organizations to work together and to encourage the application of the agreed best practices.

Participation at this event is restricted to experts nominated by the Intergovernmental Organizations, International Organizations, and National Metrology Institutes.

**Workshop on Metrology at the Nanoscale
18-19 February 2010**

Chairman: Dr Alan Steele, NRC
Scientific Secretary: Dr Joële Viallon, BIPM

The aim is to bring together representatives from the National Metrology Institutes (NMIs) with other communities involved in science, policy and standardization of nanotechnology to answer the following question: "What activities are required to establish an effective international infrastructure for metrology at the nanoscale?"

Further information regarding registration and the workshop programme will be made available as soon as possible through the *KCDB Newsletter* and on the [BIPM website](#).

⇒ **WMO-BIPM Workshop on Measurement Challenges for Global Observation Systems for Climate Change Monitoring**

The World Meteorological Organization ([WMO](#)) and the BIPM are to host an international conference on the topic of Measurement Challenges in Global Observation Systems for Climate Change Monitoring: traceability, stability and uncertainty. This event – which is to be held in spring 2010 at the WMO headquarters in Geneva – will seek to identify the activities and developments in future measurement science required to provide the

necessary underpinning for climate science, Numerical Weather Prediction (NWP) and Earth observation. Among the technical topics to be considered by this event are:

- Climate Trends from Satellite Sounding Data
- Stable Time-Series for key Greenhouse Gases and other trace species
- Radiation and Earth Energy balance
- Microwave Imagery Data in Climate and NWP
- Aerosol composition and radiative properties
- Earth surface (Land and Water) temperature
- Surface properties: albedo, land cover and ocean colour

Details on the technical programme for the Workshop will be announced as they become available via the [BIPM website](#).

⇒ **Advanced notice: CPEM'2010**



CPEM2010
 Conference on Precision Electromagnetic Measurements 2010
 June 13 - 18, 2010
 DCC, Daejeon, Korea

<p>News</p> <p>[2009-03-27] CPEM 2010 Web site open! 📰</p>	<p>Important Dates</p> <ul style="list-style-type: none"> ▪ Paper Submission Deadline January 15, 2010 ▪ Acceptance Notification March 12, 2010 ▪ Early Registration Deadline April 30, 2010 ▪ CPEM 2010 June 13-18, 2010
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[Access to the CPEM'2010 website](#)

* [Calendar of meetings held at the BIPM](#)

* [Other conferences, workshops and general assemblies](#)