



# NEWSLETTER

## IMEKO Technical Committee 12

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Dear Colleagues,

Please find the first 2013 issue of the TC12 Newsletter. This is a short issue, in preparation of a forthcoming special issue for the TEMPMEKO 2013 Symposium. We provide recent news on thermal metrology, hygrometry and thermophysical properties.

*Andrea Merlone*

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### **TEMPMEKO 2013** **Deadlines reminder**

TEMPMEKO 2013, the 11<sup>th</sup> *Symposium on Temperature and Thermal Measurements in Industry and Science* will be held in the island of Madeira from 14<sup>th</sup> to 18<sup>th</sup> October 2013.

Updated information can be found on the official web site: <http://www.tempmeko2013.pt>

First call for papers	<b>December 2012</b>
Abstracts due	<b>28 February 2013</b>
Notification of acceptance	<b>30 April 2013</b>
Submission of papers	<b>30 June 2013</b>
Start of registration	<b>31 January 2013</b>
Conference start	<b>14 October 2013</b>

### ***Mise en pratique for the kelvin***

The Mise en Pratique for the definition of the kelvin (MeP-K) was created in 2006 by the Consultative Committee for Thermometry (CCT) to give definitive guidance for the practical realization of the unit in accordance with the International System of Units (SI). The MeP-K opens a new and flexible means of updating and expanding the range of recognized thermometry methods beyond those currently in use. In addition future versions of the MeP-K will include the redefinition of the kelvin in terms of the Boltzmann constant, the realization (and where possible dissemination) of the kelvin by primary methods and by indirect approximations capable of exceptionally low uncertainties or increased reliability. The expected outcome is greater flexibility in traceable temperature measurement. It is also foreseen that the International Temperature Scale of 1990 (ITS-90), the current temperature scale in use throughout the world will continue to be in use because it is a robust and reliable tool. Nevertheless it has some limitations and some pending questions that need to be solved; a number of the most pressing of these are addressed in this project.

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## **EMPIR**

EURAMET is developing a successor programme to the European Metrology Research Programme (EMRP): the European Metrology Programme for Innovation and Research (EMPIR). EMPIR, if approved, will be delivered by EURAMET members and partners with substantial financial support from Europe's forthcoming initiative Horizon 2020. For EMPIR to be implemented it is reliant on the European Commission (EC) putting forward a proposal that must pass the European Parliament and Council of the European Union's co-decision process.

To pursue the uptake of EMPIR, the EC recently held a meeting for key stakeholders in the context of its Public Consultation. Representatives from governments, industry, standardisation and accreditation bodies along with the European and international metrology community met at the EC in Brussels. Angus Hunter (OPTIMAT), the rapporteur of the independent experts in charge of the mid-term evaluation of the EMRP, gave a very positive statement on the programme based on the report. The report says for example that "the EMRP is an excellent example of a joint programme aimed at creating critical mass to address complex, interdisciplinary social challenges and minimize duplication of research efforts."

Details are available at:  
<http://www.euramet.org/index.php?id=homepage>

## **TC-T Survey on stakeholders engagement in EMRP Research projects**

The Euramet Technical Committee for Thermometry TC-T launched a survey for the project coordinators and partners, for monitoring the effective stakeholders engagement in the several running EMRP projects, dealing with thermal metrology. We expect to present the results of this survey at the next TC-T meeting in Prague, Czech Republic, on 10-12 April 2013. The survey is intended to monitor the participation and the needs of the main stakeholders of the thermal metrology community. It also responds one of the WG2 CCT scopes, aiming at monitoring and responding to the needs of relevant Institution, and manufacturers, directly working in temperature, humidity and thermophysical quantities subjects.

## **2013 EMRP Call open**

The EMRP Call 2013 addresses the topic areas Metrology for Energy and Metrology for Environment. Specifically for the Environment topic, from the EMRP call scope, we provide the following report:

The Flagship initiative under the Europe 2020 strategy for "A resource-efficient Europe" sets out the key challenges facing Europe in its overuse of natural resources and on the benefits to come from addressing those challenges. The associated roadmap encourages Member States to "focus public research funding on key resource efficiency

objectives” supporting innovative solutions for: sustainable energy, transport and construction and management of natural resources.

Metrology research contributes particularly to the management of natural resources by developing the ability to measure our environment. The 9 projects funded from the 2010 Environment Call were directed at climate change, air quality, water quality and radioactive waste.

This Call3 again focuses on metrological research to improve the quality of data for policy making and regulation, underpin other environmental research initiatives through collaborative efforts.

This Targeted Programme will enable collaborative research for large and transnational monitoring systems. EURAMET wishes to put a focus on climate control and especially welcomes proposals enabling the establishment of a long-term European NMI/DI network coordinating the measurement infrastructure in this area and links to a potential global network. This Targeted Programme Environment II is related to the call on metrology for environment in the year 2010 and will allow projects that further the aims of existing projects.

Stage 1 of the Call, for Potential Research Topics (PRTs), is open from 31 January 2013 to 17 March 2013. From the list of PRTs, a group of Selected Research Topics (SRTs) will be generated in order to define the requests to be fulfilled in the Joint Research Projects (JRPs) proposals.

Stage 2 of the Call, for proposals for JRPs and associated Researcher Excellence Grants (REGs), will open on 18 June 2013. Single Researchers, groups, NMI and DIs, stakeholders are all encouraged to submit ideas for Potential Research Topics in order to receive a wide variety of proposals.

Information on the Call is available at [www.emrponline.eu/call2013](http://www.emrponline.eu/call2013).

## **Synopsis on actions and decisions arising from the 26<sup>th</sup> meeting of the CCT (2012)**



The Consultative Committee for Thermometry (CCT) held its 26th meeting from 24 to 25 May 2012 at the BIPM headquarters. As the field of thermometry covers a wide range of different technologies to satisfy needs in low-, medium- and high temperatures, the CCT is based on ten different working groups and two task groups. These groups met prior to the CCT meeting.

At present, the main issue of concern to the CCT is the redefinition of the kelvin based on the Boltzmann constant. A task group has been set up to study this subject and its implications. Different methods are being applied at different National Metrology Institutes (NMIs) to determine the Boltzmann constant. However, a fixed limit of uncertainty must be attained using two different methods before a redefinition can be engaged.

Two monographs, “Supplementary information for the international temperature scale of 1990” and “Techniques for approximating the international temperature scale of 1990”, and the “*Mise en pratique* for the kelvin”, which are accessible on the CCT web pages, are being revised.

The impact of Bayesian statistics on thermometry and its potential implementation in the GUM is of great concern to the CCT.

The main outcomes of the *ad hoc* Working Group on the role, mission, objectives, long-term financial stability, strategic direction and governance of the BIPM established by the CIPM in accordance with

Resolution 10 adopted at the 24<sup>th</sup> meeting of the CGPM (2011) were summarized, and the needs for a strategic planning process were emphasized. [...]

Prof. Huseyin Ugur will leave his function as President of the CCT after twelve years of devoted service. The presidency has passed to Dr Duan Yuning, Vice Director and Chief Metrologist at NIM, China, and member of the CIPM.

The essential actions and decisions arising from the 26<sup>th</sup> meeting of the CCT (2012) are summarized:

#### Actions

- CCT/A1. **WG1** is to complete the revision of “Supplementary information for the international temperature scale of 1990” before the next CCT meeting in **2014**.
- CCT/A2. **WG1** is to complete the revision of the “*Mise en pratique* for the kelvin” in **2013** and subsequently submit it to the Consultative Committee for Units (CCU) for advice and to the CIPM for approval.
- CCT/A3. **WG2** is to include radiation thermometry approximations to ITS-90 in the revised version of “Techniques for approximating the international temperature scale of 1990”.
- CCT/A4. The **SI Task Group** will provide a document on the subject of the SI revision by **April 2013**.
- CCT/A5. **WG5** will communicate information on thermal imagers to the International Electrotechnical Commission (IEC) committee.
- CCT/A6. **WG6** will liaise with other bodies where there is a shared interest in moisture in materials, including the Consultative Committee for Amount of Substance (CCQM) and the World Health Organization (WHO).
- CCT/A7. **WG9** will develop a Calibration and Measurement Capability (CMC)

review protocol to allow appropriate Key and Supplementary Comparisons of thermal conductivity of insulating materials, thermal diffusivity of dense materials, and normal spectral emissivity of solids.

- CCT/A8. The **Working Group on Strategy** will produce a CCT strategic plan, based on the input of all CCT WGs by March 2013.

#### Decisions

- CCT/D1. The CCT President will propose to the CIPM that INMETRO (Brazil) should become a full member of the CCT.
- CCT/D2. The CCT President will propose to the CIPM that the institute HMI/FSB-LPM (Croatia) obtains observer status at the CCT.
- CCT/D3. The revised terms of reference of WG2 were approved by the CCT and were extended to monitor new perspectives, needs, projects and activities on secondary thermometry that the WG2 is facing.
- CCT/D4. The revised terms of reference of WG7 were approved by the CCT, and were extended to include reviewing and commenting on supplementary comparison draft-B reports.
- CCT/D5. The appointment of the Chairs for WG2 and WG7 were approved by the CCT:

**Andrea Merlone** (INRIM) will chair WG2  
**Ken Hill** (NRC) will chair WG7

- CCT/D6. Stephanie Bell, Chair of WG6, will liaise with the International Association for the Properties of Water and Steam (IAPWS) Joint Committee on Seawater (JCS) and the BIPM-WMO cooperation partner, within the framework of climate issues and interactions of the oceans with the atmosphere that require both humidity and temperature measurements.