

CCT WG NCTherm meeting

Date: 5 September 2018

Location: IMEKO World Congress, Waterfront Conference centre

Attendees: Graham Machin (Chair, NPL), Dave Lowe (NPL) (invited expert, for Helen McEvoy), Jose Manuel Mantilla (CEM) (invited expert), Maria Jose Martin (CEM), Mikhail Matveyev (VNIIM), Mohamed Sadli (CNAM), Dieter Taubert (PTB) (invited expert, for Klaus Anhalt), Andrew Todd (NRC), Yoshiro Yamada (NMIJ), Howard Yoon (HY)

Apologies: Pieter Bloembergen (NIM), Daniel Cardena (CENAM) Ferruccio Girard (INRIM), Peter Saunders (MSL)

Visitors: Jovan Bojkovski (UL), Radek Strnad (CMI), Lenka Sindelarova (CMI), Seungnam Park (KRISS), Seung Kwan Kim (KRISS), Allison Sibley (NRC), Dubhaltach Maclochlainn (NSAI), Pavel Neyezmakov (NSC IM), Ahmed Kharaz (University of Derby), Sergio Carvajal (INM, Colombia), Beni Adi Trisna (RCM-LIPI), Soren Lindholt Anderson (DTI), Abraham Mejia (EURAC), Daisuke Terada (Chino), Marc Pressler (TUI), Christina Junger (TUI), Andrei Galomoz (TUI), Maik Rosenberger (TUI)

Meeting minutes:

The meeting ran according to the agenda given in Annex 1. Below are notes from the meeting.

Workshop on InGaAs detectors in Radiometry and Radiation Thermometry.

The workshop attracted a good number of visitors from outside of the CCT community – their names and affiliations are given in the above list.

Presentations were given by:

CEM (JMM) "Testing irradiance and radiance methods for absolute radiation thermometry based on InGaAs detectors in the NIR at CEM/CSIC.

PTB (DT) Status of the InGaAs detector based absolute thermometry at PTB.

NIST (HY) Thermodynamic measurements of Zn and Al freezing temperatures using an InGaAs based near infrared radiation thermometer 3 (NIRT3).

CNAM (MS) Progress thermodynamic assignment to the Zn, Al and Ag points.

There was significant discussion about a number of aspects of how best to use InGaAs detectors for primary radiometry. It was felt that the relative method is probably the best way of achieving lower uncertainties, compared to the direct calibration approach.

The presentations are found on the restricted area of the CCT WG NCTherm BIPM website.

Action 01: GM arrange for the presentations to be uploaded onto the restricted area of the CCT WG NCTherm BIPM website.

HTFPU document – discussion and finalisation (AT)

AT introduced the work that had performed by the HTFPU Task Group. His presentation, and the final document, can be found on the CCT WG NCTherm restricted area. The Task Group has, for now, completed its tasks and can be closed. Two areas in particular needed more work, the furnace effect and also thermodynamic temperature assignment other HTFPs (on these latter two points see next item).

Action 02: GM to inform Executive Secretary of CCT of the completion of this TG

The work will be published and the CCT WG NCTherm document will be kept on the restricted area until the paper is published. This will occur after Tempmeko 19.

Action 03: AT to send HTFPU presentation and final HTFPU document

Action 04: GM to arrange upload of document in Action 02 onto BIPM CCT WG NCTherm restricted area website

Real-K WP1 proposed work (MS)

An EMPIR project is being proposed to make the first steps in “realising the redefined kelvin” (Real-K). The proposed research in WP1 is directly related to the work of CCT WG NCTherm. MS gave an overview of the WP objectives. Construction and determination of the thermodynamic temperature of new HTFPs namely WC-C, Pd-C, Ru-C and Fe-C. There will be an experimental study of the furnace effect. There will be trial dissemination to the users/NMIs who are not equipped with radiometric techniques. If successful the plan is for Real-K to start in September 2019.

Progress with K10 (DL)

K10 is a comparison of ITS-90 above the silver point. DL gave a progress report, explaining that the last round of measurements are underway. The presentation will be found of the CCT WG NCTherm website.

Action 05: GM to arrange upload of K10 presentation to the CCT WG NCTherm website.

YY reminded participants that APMP is running a parallel comparison of ITS-90 above the Ag point that NMIJ coordinating. This is coming to completion with the last NMI undertaking measurements.

CMC review document (YY)

It was decided at a previous WG meeting that the cmc review protocol should be revised to include thermodynamic temperature measurement capabilities. YY described the progress to date and expected that by end of this year there will be a final version.

AOB

It was decided to hold a WG meeting at Tempmeko 2019.

Action 06: GM to arrange meeting of CCT WG NCTherm meeting at Tempmeko 2019

Summary Action Record

Action 01: GM arrange for the presentations to be uploaded onto the restricted area of the CCT WG NCTherm BIPM website.

Action 02: GM to inform Executive Secretary of CCT of the completion of this TG

Action 03: AT to send HTFPU presentation and final HTFPU document

Action 04: GM to arrange upload of document in Action 02 onto BIPM CCT WG NCTherm restricted area website Done

Action 05: GM to arrange upload of K10 presentation to the CCT WG NCTherm website. Done

Action 06: GM to arrange meeting of CCT WG NCTherm meeting at Tempmeko 2019

Annex1: Agenda of CCT WG NCTherm meeting

Date: 5 Sep 2018

Location: Belfast Water front centre

- 1) InGaAs detectors in Radiation Thermometry and Radiometry workshop
- 2) HTFPU document – discussion and finalisation (AT)
- 3) Real-K WP1 proposed work (MS)
- 4) Progress with K10 (DL)
- 5) CMC review document (YY)
- 6) AOB