CCT-TG-ThQ

Thermophysical Quantities

Report to the CCT

01-02 June 2017

BIPM - Sèvres

Jean-Remy Filtz

Laboratoire commun de métrologie LNE-CNAM

Outlines

1. **Members**
2. **Meetings between 2014-2017**
3. **Terms of Reference**
4. **Supplementary Comparisons – Status Overview**
   a. S1 : Emissivity
   b. S2 : Thermal Conductivity
   c. S3 : Thermal Diffusivity
5. **Towards Future Comparisons**
   a. Thermal Expansion Coefficient
   b. Calorific Value
6. **Other topic**
7. **Next Meeting - Proposals**

Members

Member	Country	NMI
Jintao Zhang	China	NIM
Jean-Remy Filtz, Chair	France	LNE-CNAM
Bruno Hay	France	LNE-CNAM
Jörg Hollandt	Germany	PTB
Ferruccio Girard	Italy	INRIM
Naofumi Yamada	Japan	AIST/NMIJ
Leonel Lira-Cortés	Mexico	CENAM
Sergey Kondratev	Russia	VNIIM
Su Yong Kwon	South Korea	KRISS
Jiyu Wu	UK	NPL
Leonard Hanssen	USA	NIST

2014 - 2017 : 11 Members

Meetings between 2014-2017

Date	Place	Event
May 2014	Sèvres, France	BIPM-CCT
September 2014	Porto, Portugal	ECTP 2014
June 2015	Boulder, Colorado, USA	Boulder Symposium
July 2016	Zakopane, Poland	Tempmeko'16
May 2017	Sèvres, France	BIPM-CCT

2014 - 2017: 5 Meetings

2017: 16 attendees

Terms of Reference: update

Tasks:

- Reviewing the service categories and identify research topic priorities in the field;
- Suggesting new comparisons useful for supporting the grand challenges of Industry and Society;
- Coordinating and performing ongoing and future comparisons useful for the preparation of CMC entries related to the field;
- …..

Suggestion issued from the WG-SP discussions

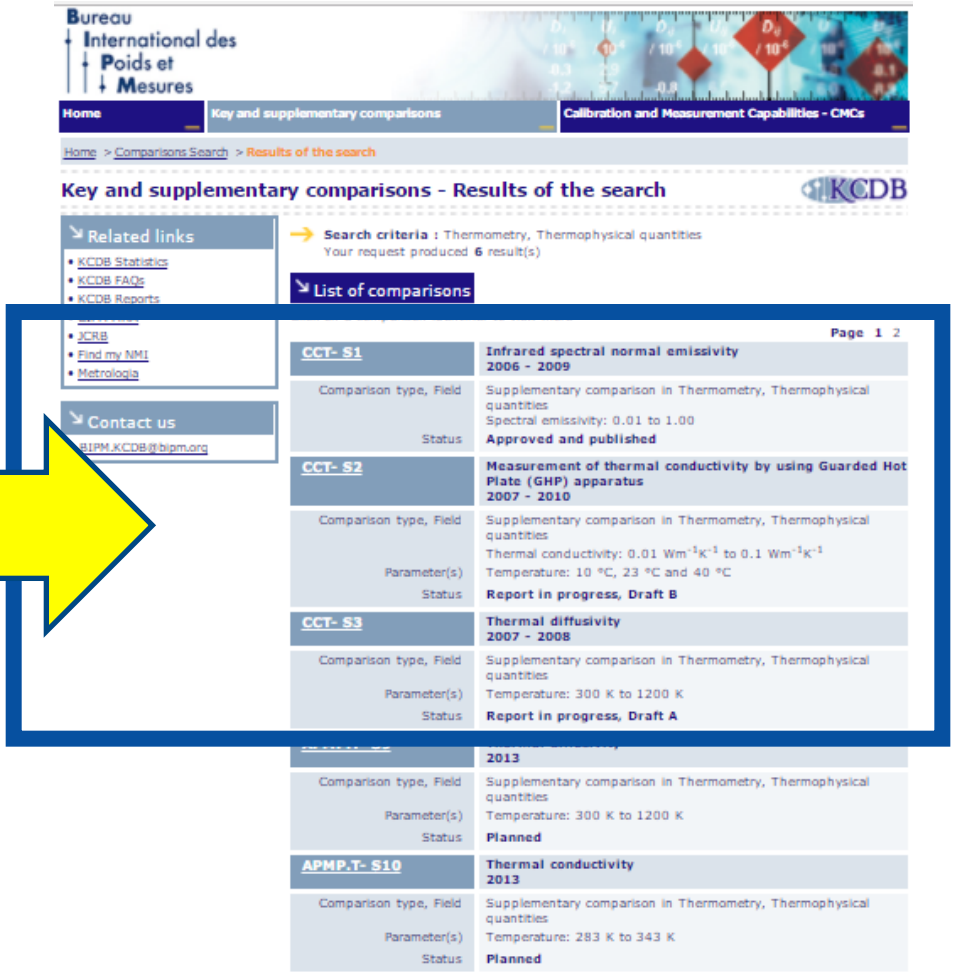
Supplementary Comparisons - Overview

Progress / CMC protocol status

CCT-S1 : Emissivity

CCT-S2 : Thermal Conductivity

CCT-S3 : Thermal Diffusivity



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Key and supplementary comparisons – Information

KCDB

CCT-S1

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Related links

- KCDB Statistics
- KCDB FAQs
- KCDB Reports
- CIPM MRA
- JCRB
- Find my NMI
- Metrologia

Contact us

- BIPM.KCDB@bipm.org

CCT-S1

Information

Metrology area, branch	Thermometry, Thermophysical quantities
Description	Infrared spectral normal emissivity
Time of measurement	2006 - 2009
Status	Approved and published
Reference(s)	*Metrologia*, 2016, **53**, *Tech. Suppl.*, 03001 CCT-S1 registration and progress form
Measurand	Spectral emissivity (dimensionless): 0.01 to 1.00
Transfer device(s)	Three materials
Comparison type	Supplementary comparison
Consultative Committee	CCT (Consultative Committee for Thermometry)
Conducted by	CCT (Consultative Committee for Thermometry)

CMC Protocol: draft in progress

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Key and supplementary comparisons – Information

KCDB

CCT-S2

- Information
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Related links

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CCT-S2

Information

Metrology area, branch	Thermometry, Thermophysical quantities
Description	Measurement of thermal conductivity by using Guarded Hot Plate (GHP) apparatus
Time of measurement	2007 - 2010
Status	Report in progress, Draft B
Reference(s)	CCT-S2 registration and progress form
Measurand	Thermal conductivity: 0.01 $Wm^{-1}K^{-1}$ to 0.1 $Wm^{-1}K^{-1}$
Parameter(s)	Temperature: 10 °C, 23 °C and 40 °C
Transfer device(s)	Three couples of specimens of insulating materials (one mineral wool and two expanded polystyrene boards)
Comparison type	Supplementary comparison
Consultative Committee	CCT (Consultative Committee for Thermometry)
Conducted by	CCT (Consultative Committee for Thermometry)

Draft CMC Protocol : Reviewing process within TG-ThQ

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Key and supplementary comparisons – Information

KCDB

CCT-S3

- Information
- Pilot / Contact
- Participants
- Results
- Print out

Related links

- KCDB Statistics
- KCDB FAQs
- KCDB Reports
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- JCRB
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- Metrologia

Contact us

- BIPM.KCDB@bipm.

CCT-S3

Information

Metrology area, branch	Thermometry, Thermophysical quantities
Description	Thermal diffusivity
Time of measurement	2007 - 2008
Status	Report in progress, Draft A
Reference(s)	CCT-S3 registration and progress form
Measurand	Thermal diffusivity in m^2s^{-1}
Parameter(s)	Temperature: 300 K to 1200 K
Transfer device(s)	Specimens (isotropic graphite)
Comparison type	Supplementary comparison
Consultative Committee	CCT (Consultative Committee for Thermometry)
Conducted by	CCT (Consultative Committee for Thermometry)
Comments	Measurements using laser flash method for dense materials

Draft CMC Protocol: Submitted to CCT WG-CMC, Review in progress

Towards Future Comparisons

1. **Thermal Expansion Coefficient (TEC)**

VNIIM (S. Kondratev) will prepare and circulate within TG-ThQ a questionnaire in order to collect Capabilities, Range, Interest, Grand challenges driver, Detailed needs

2. **Calorific Value**

VNIIM (E. Korchagina) will prepare and circulate within TG-ThQ a questionnaire in order to collect Capabilities, Range, Interest, Grand challenge driver, Detailed needs

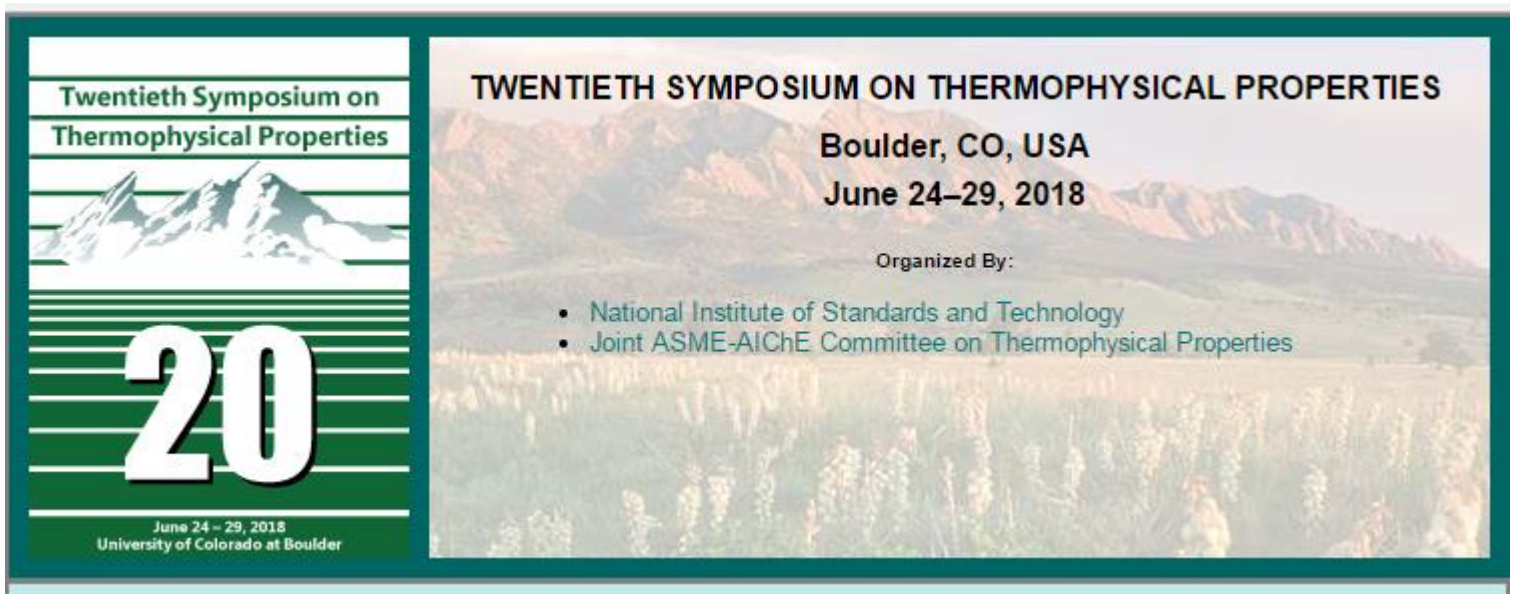
Other Topic discussed

1. **Topic connected to the field of Thermal Quantities**
   a. **Heat flux density**

NIST (H. Yoon) will prepare and circulate within TG-ThQ a questionnaire in order to collect Capabilities, Range, Interest, Grand challenge driver, Detailed needs

Next Meeting - Proposals

2018



D.I. Mendeleyev Institute for Metrology (VNIIM)

State Scientific Centre of the Russian Federation
State Test and Measurement Instrument Certification Centre

Thank you !

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