



31th SESSION BIPM-CCT TG-ThQ REPORT

JEAN-REMY FILTZ





le c**nam**

OFFICIAL PARTICIPANTS : 15 MEMBERS



Bureau International des Poids et Mesures

Jean-Remy	Filtz	LNE	France	Chairman
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Naofumi	Yamada	NMIJ	Japan	Member
Megumi	Akoshima	NMIJ	Japan	Member
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Sergei	Kondratev	VNIIM	Russia	Member
Peter	Pavlasek	SMU	Slovakia	Member
Suyong	Kwon	KRISS	South Korea	Member
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Jiyu	Wu	NPL	UK	Member
Howard	Yoon	NIST	USA	Member



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OUTLINES

Status of the different Supplementary Comparisons



A

LNE

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S	Торіс	Pilot	Status	Reviewing process	Publication
S1	Emissivity	NIST (L. Hanssen)	finished	Closed	Metrologia, Volume 53, Nr 1A
S2	Thermal Conductivity	LNE (B. Hay)	finished	Closed	Metrologia, Volume 57, Nr 1A
S3	Thermal Diffusivity	NMIJ (M. Akoshima)	finished	Draft B reviewed. update to be made and submitted to ad-hoc WG < end 2024	To be published





Status of the different CMC Protocols



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CMC Protocol	Торіс	Pilot	drafting	Reviewing process	Publication
S1	Emissivity	NIST (L. Hanssen)	finished	finished	Should be published. To be checked with CCT secretary
S2	Thermal Conductivity	LNE (B. Hay)	To be checked	To be done	To be published
S3	Thermal Diffusivity	NMIJ (M. Akoshima)	finished	finished	Published





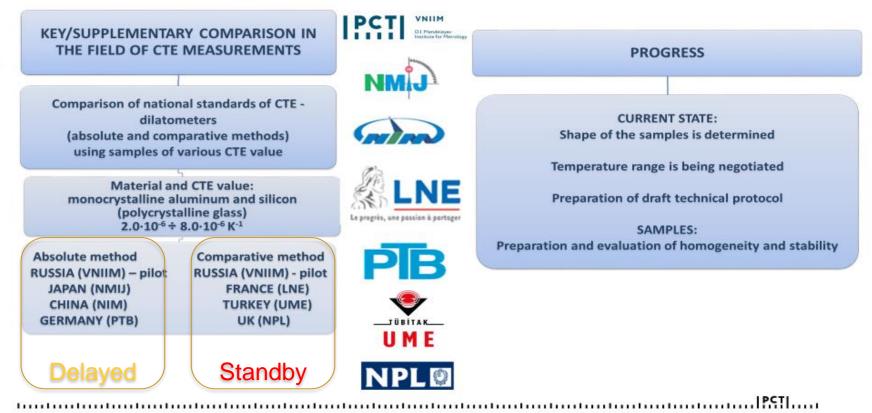


Status of the new proposed comparisons

- Gas Calorimetry (Pilot VNIIM-Russia) (stopped/abandoned)
- Thermal Expansion Coefficient (Pilot VNIIM-Russia) Absolute measurements (delayed) Relative measurements (standby)



Thermal Expansion Coefficient





INTER-LABORATORY COMPARISON ON ENTHALPY OF FUSION MEASUREMENT

- Proposal of inter-laboratory comparison
 - Measurements of enthalpy of fusion of pure materials (e.g. indium, tin, silver...)
 - Temperature range from RT to 800 °C
 - Absolute measurement methods
 - Measurements directly traceable to SI
 - No use of reference materials for the calibration of the calorimeters
- LNE is willing to pilot this comparison if there are other NMIs interested to participate
 - Preparation of the inter-laboratory comparison protocol
 - Sourcing of the selected materials and preparation of the batches of specimens
 - Checking of the homogeneity of the batches







Technical and Scientific News

- APMP (M. Akoshima)
- COOMET (S. Kondratiev)
- EURAMET (B. Hay)
- SIM (H. Yoon)









Supplemental Comparisons

- ✓ APMP T-S9 Thermal diffusivity (Pilot: NMIJ)
 - 4 laboratories are finished measurements and reported results.
 (2 laboratory not yet.)
 - Draft A is under construction.
- ✓ APMP T-S10 Thermal conductivity (Pilot: KRISS)
 - laboratories are almost finished measurements and reported results. (2 laboratory not yet.)
 - Draft A is under construction.



COOMET PROJECT № 744/RU-a/18 (COOMET.T-S4) COMPLETED





COOMET PROJECT № 780/RU-a/19 COMPLETED

Comparison of national reference gas PCT calorimeters using samples of gas mixtures PROGRESS **Pilot Comparison in** вниим Thermometry, Thermophysical quantities Technical Protocol – November 2021 Draft A Report – April 2022 JÜBİTAK Draft B Report – February 2023 Gas mixtures: UME 1) H₂: 10,101 %, CH₄: balance Final Report – April 2023 2) CO₂: 40,22% , CH₄: balance CURRENT STATE: VNIIM, Russia - pilot The project was completed in **TÜBİTAK UME, Turkey** Le progrès, une passion à partager 2023 LNE, France

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Report on the activities of WG TQ



Action 2023-4

Action 2023-5

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 Title: Comparison on thermal diffusivity measurements of high conductive materials by laser flash method

EURAMET project 1524

Objective : Supplementary comparison Temperature range : from 23 °C to 1400 °C	
3 "unknown" materials selected by the pilot : 1 isotropic graphite + 2 metallic alloys	
5 participating partners : LNE-Cnam (FR), NPL (UK), PTB (D), VINS (RS), NMII (JP)	

- B. Hay sent information about this comparison to K. Anhalt / PTB (May 2023)
- Comparison protocol sent to EURAMET TC-T WG CMC for review (June 2023)
 - Protocol validated by TC-T (July 2023)
 - Supplementary comparison registered in KCDB as EURAMET.T-S8 (Sept 2023)
- · LNE-Cnam prepared the specimens and tested the homogeneity of the batches (cf. next slide)
- · Specimens sent to participants in March (metallic alloys) and April (graphite)

B. Hay

BIPM-CCT-TG-ThQ meeting - 14th May 2024



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Thank you for your attention!



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