

Activity Report of COOMET TC 1.6 "Mass and Related Quantities"

Irena Kolozinska Chair of COOMET TC-M (1.6)

18th meeting of the CCM 20-21 May, 2021 online

COOMET TC-M 1.6

24th Meeting of COOMET TC-M, October, 1 – 2, 2019,

St. Petersburg, Russia

Agenda:

- reports of the participants of the meeting;
- discussion of the current state of affairs in TC on the submission and review of CMCs, both intra- and interregional;
- discussion of the redefinition of kilogram;
- information on the progress of the current projects.



Participants:

More than 38 representatives from 18 NMIs from COOMET and EURAMET

25th Meeting of COOMET TC-M

October, 6, 2020, online Agenda:

- discussion of the current state and progress of COOMET TC-M projects;
- The webinar

"Redefinition of the kilogram and its impact on mass metrology";

•The webinar "About KCDB 2.0. How to start working"

Participants:

More than 50 representatives from 18 NMIs from COOMET and EURAMET

Fundamental constants from the point of view of fundamental physics

Andrey Surzhyhkov, PTB, Germany

Traceability in mass measurements with a new SI implementation

Nieves Medina Martín, CEM, Spain

Impact of the new definition of the kilogram on NMI and BIPM

Michael Stock, BIPM, France

COMPARISONS

Mass

Identifier	Description	Pilot	Participants	Status
COOMET.M.M-S2	Supplementary bilateral comparison in the field of mass measurements Mass of 200 mg, 1g, 50 g, 200 g and 1 kg	NSC "IM", Ukraine	NMI (MD), Moldova	Report in progress, draft A
COOMET.M.M-S3	Comparison of mass standards	NMI (MD), Moldova	INM, Romania PTB, Germany	Report in progress, draft B
COOMET.M.M-S4	Comparison of mass standards Mass: 5 kg, 500 g, 20 g, 2 g and 100 mg	AzMI, AZ, Azerbaijan	CMI, Czechia	Approved CMCs published
COOMET.M.M-S5	Comparison of mass standards Mass: 50 mg, 50 g, 1 kg and 2 kg	NSC "IM", Ukraine	BelGIM , Belarus GEOSTM,Georgia INIMET, Cuba KazStandard, Kazakhstan PTB, Germany UME, Turkey VMC, Lithuania VNIIM, Russia	Report in progress, draft A

Pressure

COMPARISONS

Identifier	Description	Pilot	Participants	Status
COOMET.M.P-K15	Pressure measurements (absolute mode) Absolute pressure: 0.3 mPa, 0.9 mPa, 0.003 Pa, 0.009 Pa, 0.03 Pa, 0.09 Pa, 0.3 Pa, 0.9 Pa	UME, Turkey	VNIIM, RU	Report in progress, draft A
COOMET.M.P-S1	Comparison of standards of gauge pressure Gauge pressure: 1 MPa to 10 MPa	NSC IM, Ukraine		Report in progress, draft A
COOMET.M.P-S2	Pressure measurements (absolute mode) Absolute pressure: 0.03 Pa, 0.09 Pa, 0.3 Pa, 0.9 Pa, 3 Pa, 9 Pa, 13 Pa		VNIIM, Russia	Abandoned
COOMET.M.P-S3	Comparison of pressure standards in the range from 250 MPa to 1500 MPa Germany		VNIIFTRI, Russia	Report in progress, draft A
COOMET.M.P-S4	MET.M.P-S4 Pressure measurements (absolute (0 MPa to 7 MPa) and gauge mode (0 MPa to 2 MPa) CEO		CMI, Czechia, EURAMET	Approved CMCs published
COOMET.M.P-S5	Gauge pressure Pressure from 0 kPa to 34000 kPa	AzMI, Azerbaijan	CMI, Czechia, EURAMET	Approved CMCs published

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Hardness

COMPARISONS

Identifier	Description	Pilot	Participants	Status
COOMET.M.H-S2	Bilateral comparison of national reference instruments for nanoindentation Martens hardness (0.1 GPa, 3 GPa and 12 GPa) Indentation hardness (0.2 GPa, 9 GPa and 23 GPa)	VNIIFTRI, Russia	PTB, Germany	Report in progress, draft A
COOMET.M.H-S3	Comparison of national hardness standards of Superficial-Rockwell scales Hardness: Superficial-Rockwell 90-94 HR15N, 40-50 HR30N, 76-84 HR30N, 43-54 HR45N, 45- 55 HR30TW, 70-82 HR30TW	NSC "IM", Ukraine	BelGIM , Belarus KazStandard, Kazakhstan PTB, Germany CMI, Czechia	Report in progress, draft B
COOMET.M.H-S4	Brinell Hardness Hardness levels: 100 HBW, 200 HBW, 400 HBW	VNIIFTRI, Russia	NSC "IM", Ukraine BelGIM , Belarus KazStandard, Kazakhstan	Approved CMCs published (BelGIM)
COOMET.M.H-S5 (COOMET.M.H-K3 earlier)	Key comparison of national hardness standards of Rockwell scales Hardness: Rockwell A: 80 - 86 HRA; Rockwell B: 80 - 100HRBW; Rockwell C: 20 - 30 HRC, 40 - 50 HRC, 60 - 70 HRC. 25 HRC, 45 HRC, 65 HRC	NSC "IM", Ukraine	BelGIM , Belarus KazStandard, Kazakhstan PTB, Germany CMI, Czechia	Approved CMCs published (BelGIM)

Density

COMPARISONS

Identifier	Description	Pilot	Participants	Status
COOMET.M.D-S1	Density of liquids Liquid density: 750 kg/m³, 757 kg/m³, 761 kg/m³, 890 kg/m³, and 998 kg/m³ Temperature range: 15 °C to 30 °C	VNIIM, Russia	AzMI, AZ, Azerbaijan KazStandard, Kazakhstan NMI(MD), Moldova	Report in progress, draft B

Volume

Identifier	Description	Pilot	Participants	Status
COOMET.M.FF-S7	Liquid volume Volume at 10 μL and 1000 μL	GEOSTM, Georgia	VNIIM, Russia NMI (MD), Moldova NSC "IM", Ukraine IMBIH, Bosnia and Herzegovina	Measurement s in progress
COOMET.M.FF-S8	Liquid volume Volume at 0.5 μL to 10 μL; 10 μL to 100 μL; 100 μL to 1000 μL; 50 mL	GEOSTM, Georgia	IPQ, Portugal	Approved CMCs published
COOMET.M.FF-S6	Comparison of the determination of static volume of reference metallic tanks Volume of liquid: 5 L, 10 L and 20 L	NSC "IM", Ukraine	BelGIM, Belarus GEOSTM, Georgia INIMET, Cuba INM, Romania INSM, MD, Moldova KazStandard, Kazakhstan VNIIM, Russia	Measurement s in progress

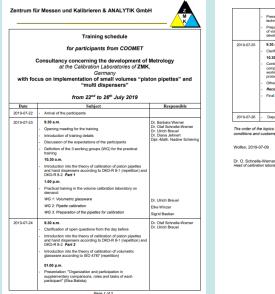
CCMs

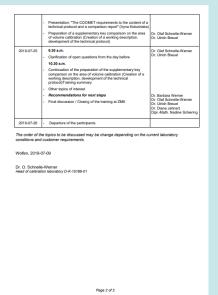
NMI	Sub-field	Status
AzMI (Azerbaijan)	Mass	Published
AzMI (Azerbaijan)	Pressure	Published
BelGIM (Belarus)	Hardness	Published
Geostm (Georgia)	Pressure	Published
Geostm (Georgia)	Small Volume	Published
NSC IM (Ukraine)	Hardness	Under intra-regional review

WORKSHOPS & CONFERENCE

COOMET-PTB workshop on the volumes "piston pipettes" and "multidispensers"

22 - 26, July, 2019, Germany







EURAMET - COOMET training course on small volume comparisons

GEOSTM, Georgia, March, 2020 - postponed

Subject: Uncertainty budget and calculation for small volume

Planned: 2021 online

COOMET TC-M 1.6

WORKSHOPS & CONFERENCE

27th International Conference on Vacuum Technique and Technology 2020

on October 27 – 29, 2020 (online)

Conference Sections:

Vacuum technique Physics of vacuum. Getting a vacuum. Measurement of total and partial pressures. Design of elements of vacuum systems.

Technological vacuum installations

Leakage control

Tightness of vacuum systems. Leak detection. Search and localization of defects in product. Gas flow measurements and

leak quantification

Vacuum technology Surface treatment. Creation of advanced materials and coatings

(2D materials, nano-materials, films, heterostructures, etc.).

Vacuum technology in industry and research

Organizers:











