

ANNUAL REPORT
ON WORK OF COOMET TC 1.8 “PHYSICAL CHEMISTRY”
FOR 2011

I GENERAL CHARACTERISTIC OF THE COOPERATION IN THE FIELD OF PHYSICAL CHEMISTRY

COOMET TC 1.8 Members:

The TK 1.8 consists of the representatives from national metrological organizations of the COOMET member-countries: Azerbaijan (AZSTANDART), Armenia (ZAO “NIM”), Belarus (BelGIM), Germany (PTB, BAM), Georgia (GeoStandMetrology), Kazakhstan (KazInMetr), Kyrgyzstan (NISM), KNDR (CIM), Cuba (INIMET), Lithuania (VMT), Moldova (INSM), Rumania (NIM), Russia (VNIIM, VNIIMS, VNIIFTRI, VNIIOFI, UNIIM), Slovakia (SMU), Uzbekistan (SE “CNS”), Ukraine (Ukrmetrteststandart).

In 2011 the work of COOMET TC 1.8 “Physical Chemistry” was carried out in the following directions:

- Organization and realization of the work on the preparation of the NMI CMC data of the COOMET Member States that have signed the MRA.
- Organization and realization of the internal review of CMC for COOMET NMIs and the interregional review of NMI CMCs for other regional metrological organizations.
- Planning and organizing of international comparisons and interlaboratory researches.
- Getting the TC 1.8 Members acquainted with the CCQM and COOMET documents aimed at the realization of the MRA.
- Promotion in rendering metrological services in the field of physical-chemical measurements.

II TC WORKS ON THE COOMET PROJECTS

VNIIM is the coordinator of:

- 1 COOMET Project 375/RU/06 Pilot comparisons «Determination of gene-modified objects in food». Participants: VNIIM (Russia), Institute of cytology of the Russian Academy of Sciences (Russia), BelGIM (Belarus), Ukrmetrteststandart (Ukraine). The final report is prepared.
- 2 COOMET Project 362/RU/06 «Pilot comparisons in the field of measuring the aqueous glucose standards». Participants: VNIIM (Russia), Ukrmetrteststandart (Ukraine) and BelGIM (Belarus). Participants completed investigations of the aqueous glucose samples for comparison.

3 COOMET Project 483/RU/09 (COOMET.QM-S1) «Key comparison of primary standards of concentration of components in gas media – NO in Nitrogen (50 mkmol/mol)». Participants: VNIIM (Russia), BelGIM (Belarus), Ukrmetrteststandart (Ukraine), FMI (Finland), SMU (Slovakia), INMETRO (Brazil). The samples for comparison (gas mixtures in cylinders) are prepared.

4 COOMET Project 484/RU/09 (COOMET.QM-K76) «Key comparisons of primary standards of concentration of components in gas media – SO₂ in Nitrogen (100 mkmol/mol)». Participants: VNIIM (Russia), BelGIM (Belarus), Ukrmetrteststandart (Ukraine), SMU (Slovakia). The samples for comparison (gas mixtures in cylinders) are prepared.

5 COOMET Project 435/RU/08 «Pilot comparisons in the field of aerosol particles mass concentration measurement». Participants: VNIIM, VNIIFTRI (Russia) and KazInMetr (Kazakhstan). The draft A report of the comparison between VNIIM and KazInMetr is prepared.

6 COOMET Project 367/RU/06 «Pilot comparisons in the field of blood elements studies». Participants: VNIIM (Russia), BelGIM (Belarus), NISM (Kyrgyzstan). Participants completed investigations of the comparison samples on the blood base.

UNIIM is the coordinator of:

7 COOMET Project 211/RU/06 «Carrying out interlaboratory comparison on the determination of toxic microimpurities in vodkas». Participants: UNIIM (Russia), VNIIM (Russia), FGU «Uraltest» (Russia), BelGIM (Belarus), UkrNIIsprirbioprod (Ukraine), NISM RM (Moldova). The final report is prepared.

8 COOMET Project 479/RU/09 «Supplementary comparisons in the field of moisture mass fraction measurements in cereal grain and cereal products». Participants: UNIIM (Russia), BelGIM (Belarus), Ukrmetrteststandart (Ukraine) and others. Project's state is proposed.

9 COOMET Project 520/RU/10 «Pilot comparisons in the field of hydrogen ions concentration measurements in hydrochloric acid solutions (mol/kg)». Project's state is proposed.

10 COOMET Project 508/RU/10 «Pilot comparisons in the field of nitrogen mass fraction measurements in milk food». The project's state is proposed.

UKRMETRTESTSTANDART is the coordinator of:

11 COOMET Project 540/UA-a/11 (COOMET.QM-K36) Key comparison «Electrical conductivity 0,5 Sm/m». Participants: Ukrmetrteststandart (Ukraine), BelGIM (Belarus), GEOSTM (Georgia), KazInMetr (Kazakhstan), INDECOPI (Peru), SMU (Slovakia), VNIIM (Russia), VNIIFTRI (Russia). Project is agreed.

III RESULTS OF THE LAST MEETING OF TC 1.8

The last meeting of TC 1.8 “Physical Chemistry” was held in VNIIM in May 25-26, 2011.

The representatives from Russia (VNIIM, VNIIFTRI, VNIIOFI), Kyrgyzstan (NISM), Belarus (BelGIM), Ukraine (Ukrmetrteststandard), Kazakhstan (KasInMetr), Moldova (INSM).

The meeting decisions were included into the Protocol (attached).

IV REVIEW OF THE PROJECTS COMPLETED

Two Projects were completed in 2011:

- COOMET Project 375/RU/06;
- COOMET Project 211/RU/06.

V COOPERATION WITH INTERNATIONAL AND REGIONAL ORGANIZATIONS

Participation of the representatives of TC 1.8 “Physical chemistry” was organized in the following events:

CCQM:

- 17-th meeting of the CCQM - 1 specialist from VNIIM (Paris, April, 2011)
- meetings of the Working Groups of the CCQM - 5 specialists of VNIIM:
 - on Key Comparisons and CMC Quality (KCWG) (Paris, April 2011)
 - on Gas Analysis (Paris, April 2011)
 - on Organic Analysis (Paris, April 2011)
 - on Inorganic Analysis (Paris, April 2011)
 - on Bioanalysis (Paris, April 2011, Mexico, October 2011)
- CCQM workshop on role for the reliable traceable microbiological measurements to ensure food quality and safety (Paris, April 2011)

VAMAS:

- meeting of the steering committee – 1 specialist of VNIIM (Rio de Janeiro, May, 2011г.)
2011г.)

VI ACTIVITIES FOR IMPLEMENTATION OF MRA

1. Organization and realization of works on preparation of the CMC data:

1.1 The CCQM review of cycle XI “non fast track” and cycle XII CMCs was completed, the results were published in Appendix C (MRA) of BIPM database.

There were published within these 2 cycles

by VNIIM:

in Gas Analysis - 24 CMCs (44 lines), which include 14 new CMCs (34 new lines) and 10 revised CMCs (lines);

in Inorganic Analysis - 15 new CMCs (lines), 13 revised CMCs (lines), 3 CMCs (lines) deleted;

in Electrochemical Analysis - 1 revised CMC (line);

by UNIIM:

in Inorganic Analysis – 1 new CMC (line);

by VNIIFTRI

in Electrochemical Analysis - 5 revised CMCs (lines); 2 CMCs (lines) deleted;

by BelGIM:

in Gas Analysis - 1 new CMC (6 lines);

in Electrochemical Analysis - 1 revised CMC (line);

By Ukrmetrteststandart:

in Gas Analysis - 3 new CMCs (9 lines);

in Electrochemical Analysis – 3 new CMCs (lines), 6 revised CMCs (lines).

1.2 At present, the International CMC Database (Appendix C) contains 436 lines of VNIIM, 9 lines of UNIIM, 5 lines of VNIIFTRI, 21 lines of Ukrmetrteststandard, 11 lines of BelGIM.

Distribution of the COOMET CMCs according to measurement categories is the following: Gas Analysis – 383 lines, Organic Solutions – 25 lines, Inorganic Solutions– 15 lines, Metals – 14 lines, Sediments, Soils, Ores and Particles – 9 lines, High Purity Chemicals – 10 lines, Food – 5 lines, Water – 1 line, Electrochemical Analysis – 16 lines, Advanced materials – 4 lines.

II. PARTICIPATION IN INTERNATIONAL COMPARISONS AND INTERLABORATORY STUDIES

Planning and organization of participation of the active COOMET member-states in the international (key and pilot) comparisons are provided.

CCQM, EUROMET, APMP and SIM comparisons:

Comparison	COOMET NMI	Status
CCQM-K66 – Purity analysis of Methane	VNIIM (Russia)	Draft B
CCQM-K68 – Nitrous Oxide at ambient level	VNIIM (Russia)	Final report
CCQM-K74 – Nitrogen Dioxide in Nitrogen at 10 µmol/mol	VNIIM (Russia)	Draft B
CCQM-K76 – Sulfur Dioxide in Nitrogen at 10 µmol/mol	VNIIM (Russia)	Draft B
CCQM-K77 – Synthetic Refinery Gas	VNIIM (Russia)	Draft A
CCQM-K93 – Ethanol in nitrogen	VNIIM (Russia)	The research is completed
CCQM-P102 – Quantification of cells with specific phenotypic characteristics	VNIIM (Russia)	Draft A
CCQM-P103 – Measurement of multiplexed biomarker panel of RNA transcripts	VNIIM (Russia)	Final report
CCQM-P94.1 – Quantification of DNA meth-	VNIIM (Russia)	Draft A

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CCQM-K86 – Relative Quantification of Genomic DNA Fragments Extracted from a Biological Tissue	VNIIM (Russia)	Draft B
CCQM-K79 – Value-assignment of CRMs and Proficiency Testing Materials for Ethanol in Aqueous Matrix	VNIIM (Russia)	Draft B
CCQM-K55.b – Purity assessment of high purity organic materials: Aldrin	VNIIM (Russia)	Draft B
CCQM-P100.3 – Mercury in natural water	VNIIM (Russia)	Final report
CCQM-K87 – Monoelemental calibration solutions	VNIIM (Russia)	Draft A
CCQM-K88 – Pb in lead-free solder	VNIIM (Russia)	Draft B
CCQM-K95–Mid-Polarity Pesticides in Tea	VNIIM (Russia)	The sample is delivered
CCQM-K89 - Trace and essential elements in Herba Ecliptae	VNIIM (Russia)	The research is completed
CCQM-P128 - Pb, As and Hg in a cosmetic material	VNIIM (Russia)	The research is completed
CCQM-K92 - Electrolytical conductivity (20 and 0.05 S/m)	Ukrmetrteststandart (Ukraine) VNIIFTRI (Russia) VNIIM (Russia)	Draft A
APMP.QM-K41 – Hydrogen Sulfide in Nitrogen	VNIIM (Russia)	Draft B
APMP.QM-P14 – Pesticides in carry-paste	VNIIM (Russia)	Final report
APMP.QM-P19 – Melamin in milk powder	VNIIM (Russia)	Draft A
SIM.QM-S2 – Metals in drinking water	VNIIM (Russia)	Draft A

VII INFORMATION ON A PROSPECTIVE PLACE AND DATE FOR THE FOLLOWING MEETING

The next meeting of TC 1.8 “Physical chemistry” will be held in Saint-Petersburg, VNIIM. The date of the meeting will be specified later.

Chairman of COOMET TC 1.8 “Physical chemistry”, Prof.  L.A.Konopelko

Enclosure:

Protocol of the COOMET TC 1.8 “Physical Chemistry” meeting held in May, 25 - 26 2011.