

**PROTOCOL**  
**of the meeting of COOMET Technical Committee 1.8 “Physics-Chemistry”**

**REPORT ON ACTIVITIES**  
**from June 2017 to May 2018**  
**WORK PROGRAMME**  
**for June 2018 – May 2019**

**May 23 – 24, 2018**

Meeting of COOMET Technical Committee 1.8 “Physics-Chemistry” was held in D.I. Mendeleev Institute for Metrology (St. Petersburg, Russia) on May 23-24, 2018.

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The meeting was held in accordance with the Work Programme of Technical Committee 1.8 “Physics-Chemistry”, approved by its participants.

### **I. In the course of work of the Technical Committee 1.8 “Physics-Chemistry”**

1. The Chairman of TC 1.8 “Physics-Chemistry” Leonid A. Konopelko the participants of the meeting,
2. Results of the TC 1.8 work in the period from June 2017 to May 2018 were discussed, including works on the current topics of COOMET comparisons.

#### *VNIIM as the Coordinator:*

- COOMET Project No. 678/RU/15 (COOMET.QM-K111) – Key Comparison “Propane in nitrogen C<sub>3</sub>H<sub>8</sub>/N<sub>2</sub> 1000 μmol/mol”. Participants: KazInMetr, BelgIM, Ukrmetrteststandart, VNIIM. Final report is prepared.
- COOMET Project No. 622/RU/13 (COOMET.QM-S4.2015) – Supplemental Comparison “C<sub>3</sub>-C<sub>5</sub> components in mixtures of liquefied hydrocarbons”. Participants: VNIIM, BelgIM, Ukrmetrteststandart. Measurements are ongoing.
- COOMET Project No. 611/RU/13 – Pilot comparison “Melamine in milk”. Participants: UNIIM, Ukrmetrteststandart. Draft A is prepared.
- COOMET Project No. 654/RU/14 – «Pilot comparison “Cholesterol in human serum”. Participants: VNIIM, VNIIOFI, Center for Standardization and Metrology of the Ministry of Economy of the Kyrgyz Republic. Draft A is prepared.
- COOMET Project No. 691/RU/16 – Pilot comparison “Determination of polychlorinated dibenzo-p-dioxins and dibenzofurans in fat matrices (pork fat)”. Participants: VNIIM, BVL (Germany), other laboratories. Draft B is prepared.
- COOMET Project No. 708/RU/16 – Pilot comparison “Purity of anthracene (100 minus admixtures)”. Participants: VNIIM, UNIIM. Draft A is prepared.

#### *UNIIM as the Coordinator:*

- COOMET Project No. 645/RU/14 – Pilot comparison in the field of measuring the mass fraction of copper and impurities in the oxygen-free copper wire rod KMB M001b brand for determination of copper purity. Participants: UNIIM, BelgIM, Ukrmetrteststandart, VNIIOFI, and TŮBĪTAK UME. Final report is prepared.
- COOMET Project No. 672/RU/14 – Pilot comparison in the field of measuring the mass fraction

of Fe in high purity iron. Participants: UNIIM, Ukrmetrteststandart, VNIIOFI, BelGIM. Draft A is prepared.

- COOMET Project No. 650/RU/14 – Pilot comparison in the field of measuring the mass fraction of metals (Cu, Zn, Pb, Al, Ca, Sb, Mg, Au, Ag, As, Ni) smelter slag (Part II). Participants: UNIIM, VNIIOFI, BelGIM, Ukrmetrteststandart, KazInMetr». Measurements are ongoing.
- COOMET Project No. 613/RU-a/13 – Pilot comparison in the field of measuring porosity properties (specific absorption, specific surface, specific pore volume, pore diameter) of nanoporous materials. Participants: UNIIM and non-NMI laboratories. Final report is prepared.
- COOMET Project No. 692/RU/16 – Pilot comparison in the field of measuring of moisture content in wood. Participants: UNIIM, Ukrmetrteststandart, BelGIM, KazInMetr, INM (Romania). Final report is prepared.
- COOMET Project No. 696/RU/16 – Pilot comparison in the field of measuring of mass fraction of Au and Ag in gold ore using high-precision methods: inductively coupled plasma mass spectrometry, inductively coupled plasma-atomic emission, etc. Participants: UNIIM, BelGIM, CGL (Mongolia). Draft A is prepared.

*VNIIFTRI as the Coordinator:*

- COOMET Project No. 655/RU/15 – Pilot comparison on measuring pH of phosphate buffer (pH~7.0). Participants: VNIIFTRI, PTB, TUBITAK, GEOSTM, KazInMetr, BelGIM, VNIIM, NIM (Moldova), Center for Standardization and Metrology of the Ministry of Economy of the Kyrgyz Republic, UNIIM. Draft B is prepared.

*VNIIOFI as the Coordinator:*

- COOMET Project No. 618/RU/13 – Pilot comparison in the field of composition of nickel-based alloys. Participants: UNIIM, BelGIM, UNIIM. Measurements are ongoing.

3. The following reports were made:

- Deputy Chairman of TC 1.8 Yuri A. Kustikov on participation in the Plenary meeting of the Consultative Committee for Amount of Substance (CCQM),
- Anatoliy I. Krylov on participation of his employees V. Smirnov and Yu. Mikheeva in the Working Group on Organic and Inorganic Analysis,
- Elena V. Kulyabina on participation in the Working Group on Protein Analysis,
- Olga V. Efremova on participation in the Working Group on key Comparisons and Measuring Capabilities and in the Working Group on Gas Analysis,
- Yan K. Chubchenko on participation in the Working Group on Gas Analysis and in the Workshop on Isotope Ratios Measurements,
- Maksim S. Vonskiy on participation in the Working Groups on Cell Analysis and Nucleic Acids Analysis.

4. The following reports were made:

- Mikhail V. Okrepilov (VNIIM) on results of the 16th Meeting of the COOMET Joint Committee on Measuring Standards and 28th Meeting of the COOMET Committee (April 10-12, 2018, Sarajevo),
- Chairman of TC 1.8/SC 1 “Electrochemistry” Vladimir I. Dobrovolskiy and Sergey V. Prokunin (VNIIFTRI) on activities (including participation of VNIIFTRI in CCQM comparison in the field of electrochemical analysis and in the field of measuring particle size and charge) and on proposals for new works,

- Chairman of TC 1.8/SC 2 “Metals and Alloys” Aleksandr V. Ivanov (VNIIOFI) on activities and proposals for new works,
  - Chairman of TC 1.8/SC 3 “Pure inorganic substances” Egor P. Sobina with the report on activities (including participation of UNIIM in CCQM comparisons both as a participant and as the Coordinator) and on proposals for new works.
5. Report of the NIM Representative Wang Haifeng (China) with the proposal of new bilateral comparison on determination of moisture in crude oil (VNIIM – NIM) was discussed.
  6. Reports of the TC 1.8 Participants from Belarus, Moldova, Kazakhstan, and Kyrgyzstan were discussed.

## **II. Following the discussion of the reports, participants of the Meeting of COOMET Technical Committee 1.8 “Physics-Chemistry” have decided:**

1. to approve activities of COOMET TC 1.8 “Physics-Chemistry” during the reporting period and results of works in June 2018 – May 2018,
2. to approve activities of TC 1.8/SC 1 “Electrochemistry” during the reporting period,
3. to approve activities of TC 1.8/SC 3 “Pure inorganic substances” during the reporting period,
4. to approve activities of TC 1.8/ SC 2 “Metals and alloys” during the reporting period,
5. to ask TC 1.8 Correspondents to prepare proposals on making changes to the MRA and other CIPM documents related to the features of some new measured values (in the field of bio analysis in particular) that do not fit the traditional scheme for traceability of measurement results to the SI units.
6. to ask TC 1.8 Correspondents from Russia to prepare proposals for submission to CCQM based on the above mentioned and following the discussion at the meeting of the Coordination Board on Traceability in Chemistry,
7. to continue works on the current COOMET topics,
8. to approve the following suggestions:

### to transfer the date of reference materials distribution for the following comparisons in 2019:

- xxx/RU/18 Key comparison “Natural gas”, Coordinator: VNIIM, participants: BELGIM (Belarus), KazInMetr (Kazakhstan), Ukrmetrteststandart (Ukraine), etc.;
- xxx/RU/18 Supplementary comparison “Ethanol in aqueous solution, 1.2 mg/cm<sup>3</sup>”; Coordinator: VNIIM, participants interested in the comparison: NIM of Moldova;
- xxx/RU/18 Pilot comparison “Ethanol in aqueous solution, mass fraction 40%”; Coordinator: VNIIM; participants interested in the comparison: NIM of Moldova;

### to establish new COOMET subjects:

- xxx/RU/18 Pilot comparison in the field of pX measurements of sodium ions activity, pNa  $\approx$  1.1; Coordinator: VNIIFTRI;
- xxx/RU/18 Key comparison in the field of pH measurements of phosphate buffer, pH  $\approx$  7.0; Coordinator: VNIIFTRI; participants interested in the comparison: NIM of Moldova;
- xxx/RU/18 Key comparison “CO<sub>2</sub> in air, atmospheric level”; Coordinator: VNIIM, participants interested in the comparison: BELGIM, KazInMetr, Ukrmetrteststandart;
- xxx/RU/18 Pilot comparison on determination of electric conductivity of potassium chloride solutions of 25 S/m and 10  $\mu$ S/cm; Coordinator: VNIIM; participants interested in the comparison: ?;
- xxx/RU/18 Pilot comparison on the topic “Development of an Interstate Standards Material of formed elements (number concentration of erythrocytes and leukocytes)”; Coordinator: VNIIM; participants interested in the comparison: ?;

- xxx/RU/18 Pilot comparison on quantitative determination of mycoplasma DNA; Coordinator: VNIIM; participants interested in the comparison: ?;
- xxx/RU/18 Pilot comparison in the field of measuring the porosity of aluminum oxide by mercury porosimetry; Coordinator: UNIIM; participants interested in the comparison: BAM (Germany);
- xxx/RU/18 Pilot comparison in the field of measuring the porosity and gas permeability of rock formations; Coordinator: UNIIM; participants interested in the comparison: ?;
- xxx/RU/18 Pilot comparison in the field of measuring the mass fraction of oxygen and nitrogen in steel; Coordinator: UNIIM; participants interested in the comparison: BAM (Germany);
- xxx/RU/18 Pilot comparison in the field of measuring the mass fraction of fat in milk powder; Coordinator: UNIIM; participants interested in the comparison: ?;
- xxx/RU/18 Pilot comparison in the field of measuring the mass fraction of nickel in pure nickel; Coordinator: VNIIOFI, participants interested in the comparison: Ukrmetrteststandart, BAM (Germany);
- xxx/RU/18 Pilot comparison in the field of measuring the mass fraction of titanium in pure titanium; Coordinator: VNIIOFI, participants interested in the comparison: Ukrmetrteststandart, BAM (Germany);
- xxx/RU/18 Pilot comparison in the field of measuring the mass fraction of aluminum in pure aluminum; Coordinator: VNIIOFI, participants interested in the comparison: Ukrmetrteststandart, BAM (Germany);
- xxx/RU/18 Pilot comparison in the field of measuring the mass fraction of magnesium in pure magnesium; Coordinator: VNIIOFI, participants interested in the comparison: Ukrmetrteststandart, BAM (Germany);
- xxx/RU/18 Pilot bilateral comparisons in the field of measuring water content in crude oil; Coordinator: NIM, participant: ВНИИМ.

Participants that are interested in taking part in those comparisons should send a confirmation to the Coordinators and the Chairman of COOMET TC 1.8 no later than August 31, 2018.

Coordinators should prepare and register COOMET topics no later than December 15, 2018.

8. In accordance with the request of the TC 1.8 Correspondent from Kyrgyzstan, Tamara V. Savina, a document to be prepared with reference information on 655/RU/18 comparison (Coordinator: VNIIFTRI) and recalculation of the pH reference value for the secondary method from the reference value of acidity function obtained by the participants using the primary method. Deadline – no later than August 25, 2018.
9. To schedule the next Meeting of COOMET Technical Committee 1.8 “Physics-Chemistry” in May 2019 at VNIIM (St. Petersburg).

TC 1.8 participants were given the following documents:

- TC 1.8 “Physics-Chemistry” Work Programme
- TC 1.8 “Physics-Chemistry” Annual Work Report 2017-2018
- Draft Protocol of the Meeting of COOMET Technical Committee 1.8 “Physics-Chemistry”

Chairman  
COOMET TC 1.8 “Physics-Chemistry”



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