The BIPM Organic Metrology Programme focuses on the international equivalence of primary reference materials and calibrators, the basis of SI traceability in chemical analyses. Outputs from the current programme include:

**Technical Coordination**
- 98 NMI participations in 6 Comparisons coordinated by the BIPM in the 2016-2019 programme to date in support of CCQM strategy
- 21 visiting scientists working on organic metrology projects in BIPM laboratories for a total of 114 person-months
- 3 key comparison final reports published in Metrologia
- 3 Reference data documents published for application of qNMR

**Science**
- 6 papers published in peer reviewed journals
- 1 review article on Small and Large Molecule Organic Standards published
- Methodology for impurity identification and quantification in straight-chain peptide standards developed
- Ensemble of internal standards for qNMR characterized and cross-validated for development of reference data

**Reference**
- Represented chemical metrology at WADA, Codex, ISO TC 212, ISO REMCO, IUPAC, JCTLM
- Contributed to guidelines on organic purity developed within IUPAC
- Supported regional activities on capacity building on standards for food analysis in Asia, South America and Africa

**Metrology for safe food: knowledge transfer to NMIs**
- Training of NMI scientists on mycotoxin standard preparation and value assignment and demonstration of competence in follow up comparisons in response to request from AFRIMETS
- Sponsorship of CBKT programme by NIM, NMISA, UME and PTB

**Metrology at the BIPM**

**Reference Measurement Systems in Laboratory Medicine**

**Reducing false positives in Newborn Blood Screening**
BIPM coordinated comparison on amino acids (CCQM-K78.a) supports NMI contribution to Newborn Blood Spot Screening Programme

- 775,000 babies born in the UK each year
- tests for rare and serious conditions
- minimize false positive rate
- Example provided by: LGC and NHS England

**Diabetes diagnostics: standardizing measurements world-wide**
BIPM comparison on C-peptide CRM (CCQM-K115) supports NMI CRM production activities for the in vitro Diagnostics (IVD) industry

- The impact on measurement compatibility of IVD kits for C-peptide measurement after implementing an SI traceable calibration hierarchy

**Supporting the establishment of metrological traceability for chemical measurements**
BIPM and NMIJ collaborative project on Quantitative Nuclear Magnetic Resonance (qNMR)

- Increased uptake of qNMR as method used by NMIs for organic purity characterization
- Reference data for seven ‘universal’ internal standards produced
- Impact: increasing number of organic calibration materials available world-wide for SI traceable measurements

**Growing number of NMIs participating with regional events in Asia (2017), Africa (2018) and South America (2018)**

- 3rd meeting 13 April 2018 joined by: ZEN (2017), AFB1 (2019)
- 4th meeting 15 April 2018 joined by: ZEN (2018), AFB1 (2019)
- 2nd meeting 3 May 2019 joined by: DON (2020)
- 3rd meeting 3 May 2020 joined by: DON (2021)
- 4th meeting 20 May 2021 joined by: DON (2022)

**CCQM-K115 coordinated by the BIPM and NIM (China)**

- C-peptide is a biomarker for insulin secretion and the body’s ability to regulate blood sugar levels

**Chemical metrology at the BIPM**

26th meeting of the CGPM (2018)