



Asia Pacific Metrology Programme

APMP Technical Committee for Mass and Related Quantities Report to CCM

Sheng-Jui CHEN
APMP TCM Chairman

**17th meeting of CCM, 16-17 May 2019,
BIPM, Sèvres, France**

TCM Related Workshops & Conferences

- **9th APMP Pressure & Vacuum Workshop**, Singapore (23 Nov 2018)
- **Si-kg Workshop**, Singapore (24 Nov 2018)
- **Kibble Balance Workshop**, (24 Nov 2018)
- **TCM Workshop & Meeting**, Singapore (26-27 Nov 2018)
- **17th meeting of the CCM**, BIPM, Paris, France (16–17 May 2019)
- **Asia Pacific Symposium on Mass & Force (APMF)**, Niigata, Japan (17-21 Nov 2019)
(New Name : **Asia Pacific Measurement Forum on Mechanical Quantities**)



TCM Comparisons

S/n	Area	Total	Completed	In-Progress	Planned
1.	Mass	13	8	4	1
2.	Force	9	2	4	3
3.	Pressure	27	18	8	1
4.	Hardness	8	3	3	2
5.	Density	1	-	1	-
6.	Torque	2	1	-	1
7.	Gravity	1	-	1	-
Total		61	32	21	8

S/n	Type	Total	Key	Supplementary
1	New Applications	1	0	0
2	Approved for Equivalence	0	1	0
3	Awaiting Approval for Equivalence	5	2	3



CMC Review

APMP Submission	Total	In-Progress	Approved
Intra-RMO (APMP)	6	3	3
Inter-RMO (Reviewed by other RMOs)	3	2	1

RMO Submission	Total	Approved	In-Progress	Rejected
CMC from other RMOs reviewed	8	3	4	1



9th Pressure & Vacuum Workshop 2018

- Theme : Pressure & Vacuum Measurements for Advanced Manufacturing
- Friday 23 November
- Resorts World Sentosa, Singapore
- 20 Participants
- KRISS, NMIA, NMIJ, CMS, ITDI, LSM, NIMT, NBSM, RCM-LIPI, MSSD, PNG NISIT, SASO, NIM, NMC A*STAR
- Past Host : Japan (2001), Korea (2004), India (2006), Indonesia (2008), Thailand (2010), New Zealand (2012), Korea (2014) and Vietnam (2016), Singapore (2018)
- Next Host in 2020 : To be confirmed



Si-kg Workshop

- Saturday 24 November
- Resorts World Sentosa, Singapore
- 30 Participants
- Conducted by PTB
- Speakers :
 - Dr.-Ing. Prof. h. c. Frank Härtig (Head of Division Mechanics and Acoustics, PTB, Germany)
 - Dr. Kenichi Fujii (Prime Senior Researcher, National Metrology NMIJ/AIST)
 - M. sc. Katharina Lehrmann (Dissemination of the Unit Mass, PTB, Germany)
- Practical Session on Cleaning of Si-kg



TCM Guidance Document on Redefinition of kg

- Proposal : For TCM to provide guidance to APMP NMIs on consequences of kg redefinition
- Background : APMP is the largest RMO, contains NMIs at various levels of development
- The kg redefinition has consequences for APMP NMIs in regard to
 - Timeline of the implementation of kg redefinition
 - Resources
 - Availability of measurement comparisons for ongoing support or improvement of CMCs



TCM Guidance Document on Redefinition of kg

- Currently available guidance :
 - Mise en pratique for the definition of the kilogram – BIPM (<https://www.bipm.org/utils/en/pdf/si-mep/MeP-kg-2018.pdf>)
 - CCM WG Strategy 2017-2027 (<https://www.bipm.org/utils/en/pdf/CCM-strategy-document.pdf>)
 - CCM short note on the dissemination process after the proposed redefinition of the kilogram (<https://www.bipm.org/utils/en/pdf/si-mep/short-note-kg-dissemination-2018.pdf>)
- APMP TCM to produce a short guidance document that includes
 - Website links to Mise en pratique and CCM Strategy documents
 - Brief summary of relevant content of these documents
- APMP TCM to provide regular updates to this guidance document as redefinition plan and timeline develops



Joint Meeting with TCMM

- TCM & TCMM conducted a joint meeting on 27 Nov 2018
- Purpose : To better understand each other TC's work to explore future collaborative projects
- Presentations :
 - TCMM Chair - Dr Victoria Coleman, NMIA, Australia
 - APMP M.MM.-S1 “Comparison of tensile strength measurements” (Tensile strength measurement at the 600 MPa level) by Dr Yong-Hak Huh, KRISS, Korea
- Discussion & Proposal for joint TCM & TCMM projects :
 - Circulate APMP M.MM.-S1 comparison report for TCM for information
 - Differences in evaluating comparison results
 - No WG under CCM - Submission of CMCs & comparison route needs further clarification (through TCM or TCMM ?)



TCM Related Issues

- Comparison
 - Difficult to find pilot lab
 - Established NMIs have been bearing most of the load
 - Larger NMIs constrains in resources e.g. budget, time etc.
 - Smaller NMIs lack capability
 - Long process
 - Delays e.g. transportation, custom issue, overload pilot etc.
 - Continuity e.g. organization & staff changes etc.
 - Approval for Equivalence
 - Delays at the review at the CC level for certain areas



TCM Chairs

Previous TCM Chair	NMI	Year
1. Dr C. Sutton	MSL	2000 - 2004
2. Dr Bignell	NMIA	2005 – 2008
3. Dr Bandyopadhyay	NPLI	2009 – 2011
4. Dr S-Y Woo	KRISS	2012 - 2013
5. Dr T Kobata	NMIJ	2013 - 2015
6. Mr Lee S. M.	A*STAR	2016 - 2018
7. Dr S.-J. Chen	CMS/ITRI	2019 - 2021



Thank you for your attention!

