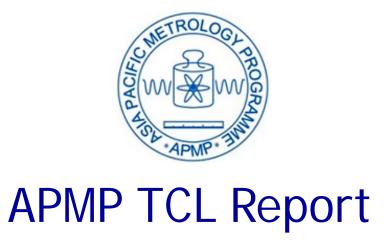
Consultative Committee for Length (CCL) 17th meeting 14 -15 June 2018



Jariya Buajarern

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Members

- Total 33 member economies in APMP
 - ▶ 24 Members (22 with contact persons)
 - Australia (AU), Bangladesh (BD), China (CN), Chinese Taipei (TW), Cambodia (KH), Fiji (FJ), Hong Kong China (HK), India (IN), Indonesia (ID), Japan (JP), TCL/TCTF JWG, Korea, Democratic People's Republic of (KP), Korea, Republic of (KR), Malaysia (MY), Mongolia (MN), Nepal (NP), New Zealand (NZ), Pakistan (PK), Papua New Guinea (PG), Philippines (PH), Russia (RU), Singapore (SG), Sri Lanka (LK), Thailand (TH), Vietnam (VN)
 - ▶ 9 Associate Members (6 with contact persons)
 - ► Egypt (EG), Iran (IR), Jordan (JO), Kazakhstan (KZ), Kenya (KE), South Africa (ZA), Syria (SY), United Arab Emirates (AE), United States of America (US)
- Chair: Jariya Buajarern (NIMT, Thailand)
- Vice Chair: Makoto Abe (NMIJ, Japan)

Summary of All Comparisons (Up to June 2018)

| Status | Number | |
|-------------|-------------------------|--|
| Completed | 18 | |
| On-going | 4 (4-Draft A) | |
| In planning | 1 | |
| Total | 23 | |

Comparisons Completed (Since 16th CCL)

| No. | Identifier | Description | Pilot Lab | No. of labs | Period or status |
|-----|---------------------------------------|--|--------------------------|----------------|--------------------------|
| 1 | APMP. L-K3 | Angle Standards | NMISA, KRISS | 12 | Published 2016 |
| 2 | APMP.L-S6 (Bi-lateral) | Long Gauge Blocks by Comparative Method | NIMT | 2 | Published 2016 |
| 3 | CCL-K11 at APMP (NIMT) | Laser Frequency: 633 nm He-Ne Laser | BEV (NMIJ at APMP) | 3 | Published 2017 |
| 4 | APMP.L- K5.2006.1 (Bi- lateral) | Step Gauge | NMIJ | NPLI | Published May 2017 |
| 5 | APMP.L-S8 | Optical Flat | NIMT | 7 | Published 2018 |

Comparisons on going (Since 16th CCL)

| No. | Identifier | Description | Pilot Lab | No. of labs | Period or status |
|-----|----------------|---|--------------|----------------|------------------|
| 1 | APMP.L-K5.2014 | Calibration of a step gauge | KRISS | 5 | Draft A |
| 2 | APMP.L-K7.2014 | Calibration of a linescale | KRISS | 5 | Draft A |
| 3 | APMP.L-S5 | Nano particle measurements | CMS/NMIJ | 13 | Draft A |
| 4 | APMP.L-S7 | Comparison of step height measurements | KRISS | 5 | Draft A |

Comparisons in planning

| No. | Identifier | Description | Pilot Lab | No. of labs | Period or status |
|-----|----------------|--|------------------|----------------|------------------|
| 1 | APMP.L-K1:2018 | Gauge blocks by optical interferometry | KRISS | (TBD) | In planning |
| 2 | TBD | EDM | NIM | 8 or more | In Planning |
| 3 | TBD | Micro CMM | NMISA | 5 or more | In Planning |
| 4 | TBD | 2D CMM | (NMIJ, INRIM) | ? | In planning |
| 5 | TBD | Thread Plug/Ring Gauge | NIM | ? | In planning |
| 6 | TBD | Angle gauge | NIMT | 3? | In Planning |

Summary of Intra-RMO CMC Reviews (May 2006 - June 2018)

| Status | Number |
|-----------|---|
| Published | 27 (0 published from Nov 2016 to Nov 2017) |
| Inter-RMO | 4 |
| Intra-RMO | 2 (2+0) |
| Total | 33 (Inter-RMO: 4 submitted from Nov 2016 to Nov 2017, Intra-RMO: 0 submitted from Nov 2016 to Nov 2017) |

CMC Review (May 2006 - June 2018)

| No. | Identifier | NMI | Status |
|-----|----------------|-------------|-----------|
| 1 | APMP.L.1.2003 | CMS & SIRIM | Published |
| 2 | APMP.L.2.2004 | NMIJ | Published |
| 3 | APMP.L.3.2006 | NPLI | Published |
| 4 | APMP.L.4.2006 | KIM-LIPI | Published |
| 5 | APMP.L.5.2008 | CMS-1 | Published |
| 6 | APMP.L.6.2008 | SCL-1 | Published |
| 7 | APMP.L.7.2008 | NMIJ-1 | Published |
| 8 | APMP.L.8.2009 | NMIJ-2 | Published |
| 9 | APMP.L.9.2009 | SCL-2 | Published |
| 10 | APMP.L.10.2009 | NIM | Published |

CMC Review (2)

| No. | Identifier | NMI | Status |
|-----|----------------|------------|-----------|
| 11 | APMP.L.11.2009 | NMIJ-4 | Published |
| 12 | APMP.L.12.2009 | MSL | Published |
| 13 | APMP.L.13.2009 | NMIJ-3 | Published |
| 14 | APMP.L.14.2010 | NIMT-1 | Published |
| 15 | APMP.L.15.2010 | KRISS | Published |
| 16 | APMP.L.16.2010 | NMC/A*Star | Published |
| 17 | APMP.L.17.2010 | VMI | Published |
| 18 | APMP.L.18.2010 | NPLI | Published |
| 19 | APMP.L.19.2011 | CMS-2 | Published |
| 20 | APMP.L.20.2011 | NIMT-2 | Published |

CMC Review (3)

| No. | Identifier | NMI | Status | |
|-----|------------------|----------|-----------|--|
| 21 | APMP.L.21.2011 | NIM-4 | Published | |
| | (APMP.L.22.2013) | SCL-3 | Abandoned | |
| 22 | APMP.L.22.2013 | KRISS-2 | Published | |
| 23 | APMP.L.22.2013 | SCL-4 | Published | |
| 24 | AFRIMET.L.2.2014 | NMISA | Published | |
| 25 | APMP.L.23.2014 | NMIJ-5 | Published | |
| 26 | APMP.L.24.2014 | NIM | Published | |
| 27 | To be assigned | NPLI | Intra-RMO | |
| 28 | To be assigned | RCM-LIPI | Intra-RMO | |
| 29 | APMP.L.25.2015 | CMS/ITRI | Published | |

CMC Review (4)

| No. | Identifier | NMI | Status |
|-----|--------------------|------------|-----------|
| 30 | APMP.L.26.2017 (1) | NMC/A*STAR | Published |
| 31 | APMP.L.26.2017 (2) | SCL | Published |
| 32 | APMP.L.26.2017 (3) | MSL | Published |
| 33 | APMP.L.26.2017 (4) | NIMT | Published |
| 34 | APMP.L.27.2018 | KRISS | Inter-RMO |
| 35 | APMP.L.28.2018 | NMIA | Inter-RMO |
| - | - | - | _ |
| - | - | - | |
| - | - | - | - |

Focus Group

| Focus Group | Possible Activities | Liaison |
|----------------------|--|----------------|
| Energy Efficiency | Alignment and measurement of the turbine and large turbine blade Increase efficiency of the production line (efficient energy usage) such as in-line measurement Deformation measurement of the battery for electric vehicles to enhance battery efficiency, increase lifetime of battery Measurement of the 3D printed objects | A. Tonmueanwai |
| Medical Metrology | Calibration/verification of phantoms for CT. MRI, PET scanners | P.E. Hsu |
| Climate Change | Measurement of height of the cloud (*by TCT) Measurement of ash particles | CS. Kang |
| Food Safety | NA | Z. Xue |
| Clean Water | NA | N. Alfiyati |

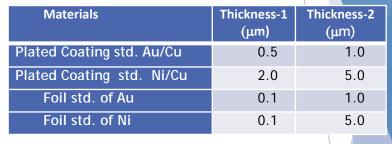
- ► No special activity since last TCL meeting
- ► Any activity to be reported?

MEDEA project

- ► Follow-up Training of the Workshop on Laser Interferometers for Length Measurement
- 1. Original workshop: 2016. 10. at NMIJ
- 2. Follow-up training at the site of the participants by length experts from NMIJ (April 2017 to December 2017).

TC Initiative

- ▶ 1 proposal accepted in 2017
 - ▶ Pilot study on foil/film thickness comparison
 - Proposed by NIM, China
 - Possible co-study with TCMM
 - ▶ Budget: 8,000 USD
 - Period: 2017. 5. 2019. 5. (2 years)
 - Study in harmonizing film thickness measurements with various methods
- > Status:
 - Purchased specimens
 - ► Planning a Technical Meeting in 2018 at NIM





Thank you for your attention!