Working Group on Viscosity

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PTB

Working Group on Viscosity

Terms of Reference

- to improve the realization of viscosity standards (scale of viscosity),
- to review and make recommendation for fulfilling the traceability in viscosity,
- to identify and support future needs for key and supplementary comparisons,
- to establish and maintain CMC service categories list,
- to coordinate and conduct the CMC review process.

Membership

Members: 21

EURAMET	9
APMP	6
SIM	4
COOMET	1
AFRIMETS	1

A*STAR, BEV, Cannon, CENAM, GUM, INRIM, INMETRO, IPQ, KRISS, LNE, NIM, NIS, NIST, NMi, NMIJ, NPLI, PTB, SMU, SPRING, UME, VNIIM

Guest NMIs: INTI, NMISA, SIRIM

CMC: 17 NMIs have entries

Program of work for the next years

- Report on Key Comparison CCM.V-K3,
  draft April 2013
  final report latest in spring 2014

- Simplification (reduction) of the CMC entries: until 2016

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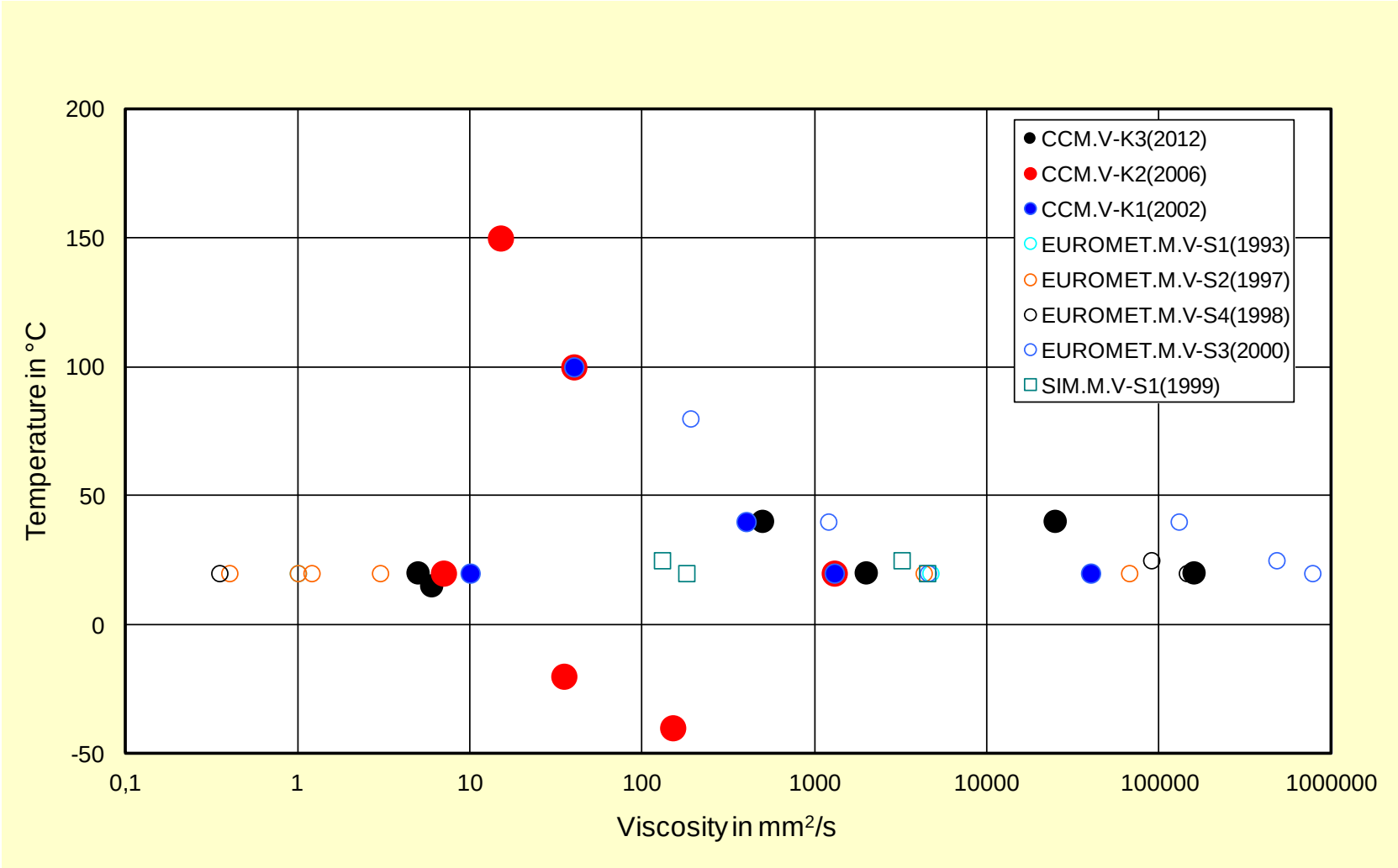
Key Comparisons

EUROMET.M.V-S1 (1993)
EUROMET.M.V-S2 (1997)
EUROMET.M.V-S3 (1998)
SIM.M.V-S1 (1999)
EUROMET.M.V-S4 (2000)
CCM.V-K1 (2002)
COOMET M.V.S1
CCM.V-K2 (2006)
CCM.V-K2.1 (2008)

Small comparison especially to connect Egypt and South Africa to the community.

CCM.V-K3 (2012)

Range of Viscosity Intercomparison Measurements



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Future Key Comparisons

Alternating
one KC with broad viscosity range at moderate temperatures
and
one KC at extreme viscosities and/or temperatures

There are only very few RMO KCs, most partner participate in the CCM KCs.

Period between KCs: about 6 years

Next KC planned:
2018: Moderate viscosity range, broad temperature range

Remarkable activities

Absolute measurements of viscosity

Falling ball experiments at LNE and NMIJ

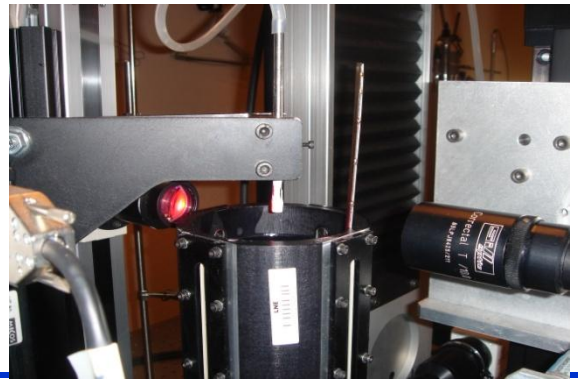
NMIJ apparatus is designed for viscosity about 1000 mPa s.

Improvements, not finished.
Results are expected for the next meeting.

LNE apparatus was designed for viscosities larger than 100 mPa s. Some liquids were measured. The work was stopped 2005.

Since 2009 LNE is rebuilding its apparatus for doing **absolute** measurements.

- at temperatures between -30 C and +50 C
- at pressures up to 10 MPa
- at viscosities lower than 10 mm^2/s.



Target materials: e. g. fuels

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Meetings

- three years turn, preferably attached to the CCM meeting

- last meeting 2011 at last CCM meeting
- next meeting 2014 or moved to be attached to the next CCM meeting

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Technology trends and challenges in the viscosity area

- Absolute viscosity measurements at intermediate viscosity (1000 mm^2/s)
- Implementing viscosity measurements under pressure up to 100 MPa
- Implementing viscosity measurements using viscometers other than glass capillaries (rotational viscometers are the most used industrial devices)
- Implementing non-Newtonian liquids

Thank you for your attention!