



TNA User Report

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Project title	Instrument Intercomparison workshop – Condensation Particle Counter
Name of the accessed calibration center	World Calibration Center for Aerosol Physics (WCCAP)
Number of users in the project	1
Project objectives (max 100 words)	The goal of this interlaboratory comparison was to verify the technical competence of our laboratory and to validate our measurement methods and uncertainty statements against reference laboratory - WCCAP.
Description of work (max 100 words):	Intercomparison measurement of condensation particle counter TSI 3772 belonging to Czech Metrology Institute was successfully performed using silver aerosol particles at World Calibration Center for Aerosol Physics. Details of this work can be found in this report.

Principal Investigator's and group's information	
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Institution legal status ²	RES
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Gender	Male
User status ³	Other (metrologist)
New user	No

User 1 Information ⁴	
First name	
Family name	
Nationality	
Activity domain	
Home institution	
Institution legal status	
Email	
Gender	
User status	
New user	

User 2 Information	
First name	----
Family name	----
Nationality	----
Activity domain	----
Home institution	----
Institution legal status	----
Email	----
Gender	----
User status	----
New user	

¹ Physics; Chemistry, Earth Sciences & Environment; Engineering & Technology; Mathematics; Information & Communication Technologies; Material Sciences; Energy; Social sciences; Humanities.

² UNI= University and Other Higher Education Organisation;

RES= Public Research Organisation (including international research organisations and private research organisations controlled by public authority);

SME= Small and Medium Enterprise;

PRV= Other Industrial and/or Profit Private Organisation;

OTH= Other type of organization.

³ UND= Undergraduate; PGR= Post graduate; PDOC= Post-doctoral researcher; RES= Researcher EXP= Engineer; ACA= Academic; TEC= Technician.

⁴ Reproduce the table for each user who accessed the infrastructure

Trans-National Access (TNA) Scientific Report

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Instructions

Please limit the report to max 5 pages, you can include tables and figures. Please make sure to address any comments made by the reviewers at the moment of the project evaluation (if applicable, in this case you were informed beforehand). Please do not alter the layout of the document and keep it in Word version. The report will be made available on the eurochamp.org website. Should any information be confidential or not be made public, please inform us accordingly (in this case it will only be accessible by the European Commission, the EUROCHAMP-2020 project partners, and the reviewers). Please include:

- Introduction and motivation
- Scientific objectives
- Reason for choosing the calibration facility
- Method and experimental set-up
- Data description
- Preliminary results and conclusions
- Outcome and future studies
- References

Name of the PI:

Jiří Šperka

Calibration center's name and location:

WCCAP Calibration Centre
Leibniz Institute for Tropospheric Research
Permoserstraße 15
04318 Leipzig, Germany
E-Mail: info@tropos.de

Campaign name and period:

Instrument Intercomparison Workshop (Condensation Particle Counter)
Project title: CPC-2019-4
Period: September 17, 2019 - September 18, 2019 (two days)

Text:**Introduction and motivation**

Condensation particle counter TSI CPC Model 3772 (serial number 3772133801) belonging to Czech Metrology Institute is used as a reference for aerosol measurements in our laboratory. We also use this device for research purposes. We are interested in intercomparison measurements, in knowledge transfer during intercomparison workshops and in networking with other colleagues in aerosol community.

Scientific objectives

The goal of this interlaboratory comparison was to verify the technical competence of our laboratory and to validate our measurement methods and uncertainty statement against reference laboratory.

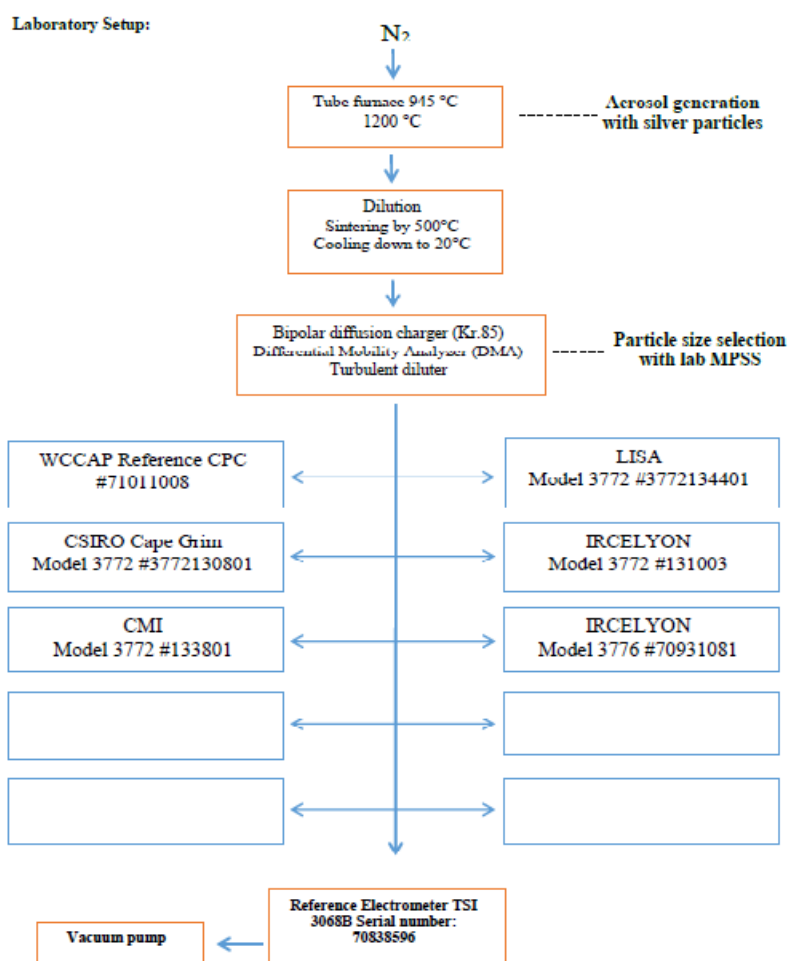
Reason for choosing the calibration facility

We choose this interlaboratory comparison at WCCAP because this center has experiences with large number of tested instruments, which is very appropriate from metrology point of view. They have also experience with Condensation Particle Counter Model 3772, TSI.

Method and experimental set-up

Condensation particle counter TSI 3772 belonging to Czech Metrology Institute was transported to WCCAP. Instrument was checked after the transport, the status of the instrument was archived for the report (no damages or problems were found) and comparison measurement was performed using silver aerosol particles. There were six instruments taking part in this comparison measurement on September 17, 2019 including WCCAP reference CPC . TSI electrometer was used as a reference. Results of the measurement were discussed after finished workshop, condensation particle counter TSI 3772 was prepared for transport.

Scheme of experimental setup can be found in figure below, this figure is copied from Intercomparison of Condensation Particle Counter report provided after calibration by WCCAP [1] .



Data description

Measured counting efficiency curve can be found in figure below, this figure is copied from Intercomparison of Condensation Particle Counter report provided after calibration by WCCAP [1].

Special Information regarding to the Candidate:

Was it necessary to:	yes/no	information
do a second run	no	-
clean the optics	no	-
clean the nozzle	no	-
clean the saturator	no	-
change the wick	no	-
change the laser	no	-
change internal settings	no	-

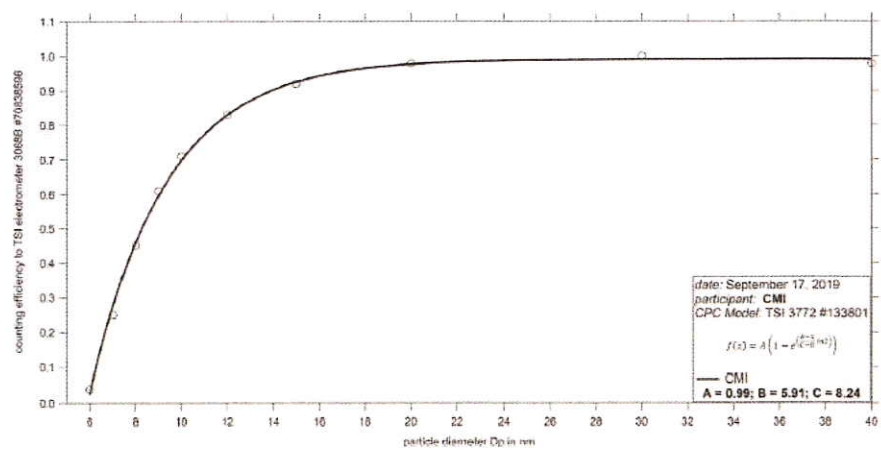


Fig. 1: Counting efficiency for TSI CPC Model 3772 #3772133801 against aerosol electrometer 3068 S/N 70838596; silver particles between 6 and 40 nm were used for calibration; the calculated Dp50 is 8.24 nm.

Status information:

Status	T SAT	T CON	T OPT	T CAB	P AMB
from display	39	22	40	32.2	99.9
Status	P OR	P NO	Laser	LV	flow
from display	80.3	2.7	41	full	1.001

Preliminary results and conclusions

The final result is that the instrument passed the quality standards of ACTRIS and GAW. The candidate reached 99% efficiency at 40 nm. The Dp50 was at 8.65 nm. The CPC efficiency curve corresponds to the standard of ACTRIS and GAW.

Outcome and future studies

Intercomparison measurement was successful, instrument belonging to Czech Metrology Institute doesn't exhibit any problem according to the results. In the future, we would like to return to WCAPP again for the same intercomparison workshop.

References

[1] Intercomparison of Condensation Particle Counter report provided after calibration by WCCAP, Reviewed by TROPOS / Kay Weinhold, four pages intotal, 2019

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October 23, 2019
Brno, Czech republic