Intercomparison of Condensation Particle Counter

Project No.:	***CPC-2016-5-4***
Principal Investigator:	Ivo Kalapov
Home Institution:	INRNE-BAS
Participant:	Ivo Kalapov
Candidate:	**BG-INRNE-BAS-BEO**
Counter (SN):	TSI CPC Model 3772; SN: 70734059
Location of the quality assurance:	TROPOS Leipzig, lab 130
Comparison period:	September 27, 2016
Last Intercomparison (with Project No.):	
TROPOS Reference Instrument:	Electrometer: TSI model 3068B #70838596, Last calibration in April 2016
Additional Equipment:	Bubble flow meter 'Gilibrator', Gilian (Sensidyne)

Summary of Intercomparison

Pre-Status:
The Dp50 is at 9.6 nm. It was necessary to check the CPC and do a second run.

Final Status:
The candidate passed the quality standards of ACTRIS and GAW. The candidate reached 100% efficiency at 40 nm. The Dp50 is at 8.4 nm. The CPC efficiency curve corresponds to the standard.

Status of the candidate:

CPC status	Pre-Status	Final Status
power/status	LED green	LED green
saturator temp	39 °C	39 °C
condenser temp	22 °C	22 °C
optics temp	40 °C	40 °C
cabinet temp	34.1 °C	34.1 °C
ambient pressure	100.9 kPa	100.9 kPa
orifice pressure	77.6 kPa	77.6 kPa
nozzle pressure	2.1 kPa	2.1 kPa
laser current	36 mA	36 mA
liquid level	full	39 °C
Aerosol flow (l/min)	0.978 l/min	0.984 l/min

Special Information regarding to the Candidate:

Was it necessary to:	yes/no	information
do a second run	Yes	
clean the optics	No	
clean the nozzle	Yes	
clean the saturator	Yes	
change the wick	Yes	We used a new one
change the laser	No	
change internal settings	No	

CPC efficiency curve of the candidate: Pre-Status

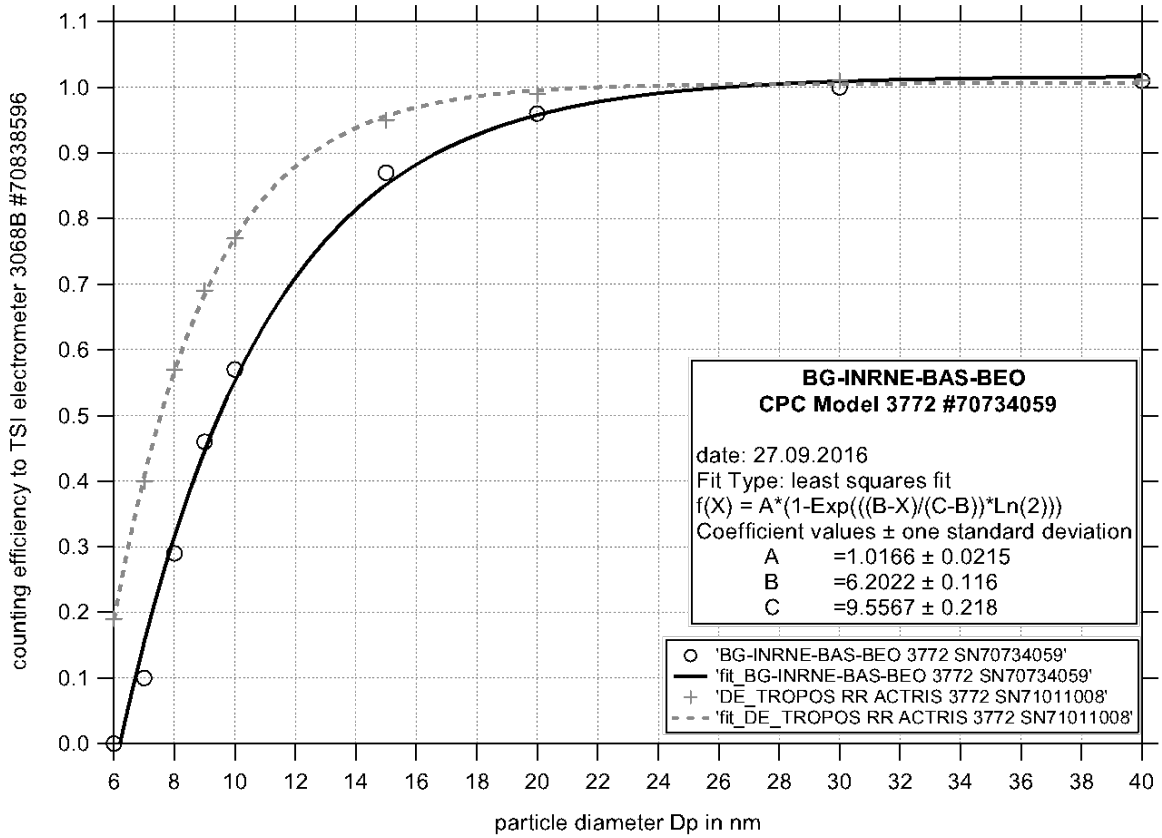

Figure 01: CPC efficiency curve. Based on Electrometer TSI 3068B. Serial number: 70838596

measured data of the candidate: Pre-Status

Dp in nm	counting efficiency
40 nm	**1.01**
30 nm	**1.00**
20 nm	**0.96**
15 nm	**0.87**
10 nm	**0.57**
9 nm	**0.46**
8 nm	**0.29**
7 nm	**0.10**
6 nm	**0.00**

CPC efficiency curve of the candidate: Final-Status

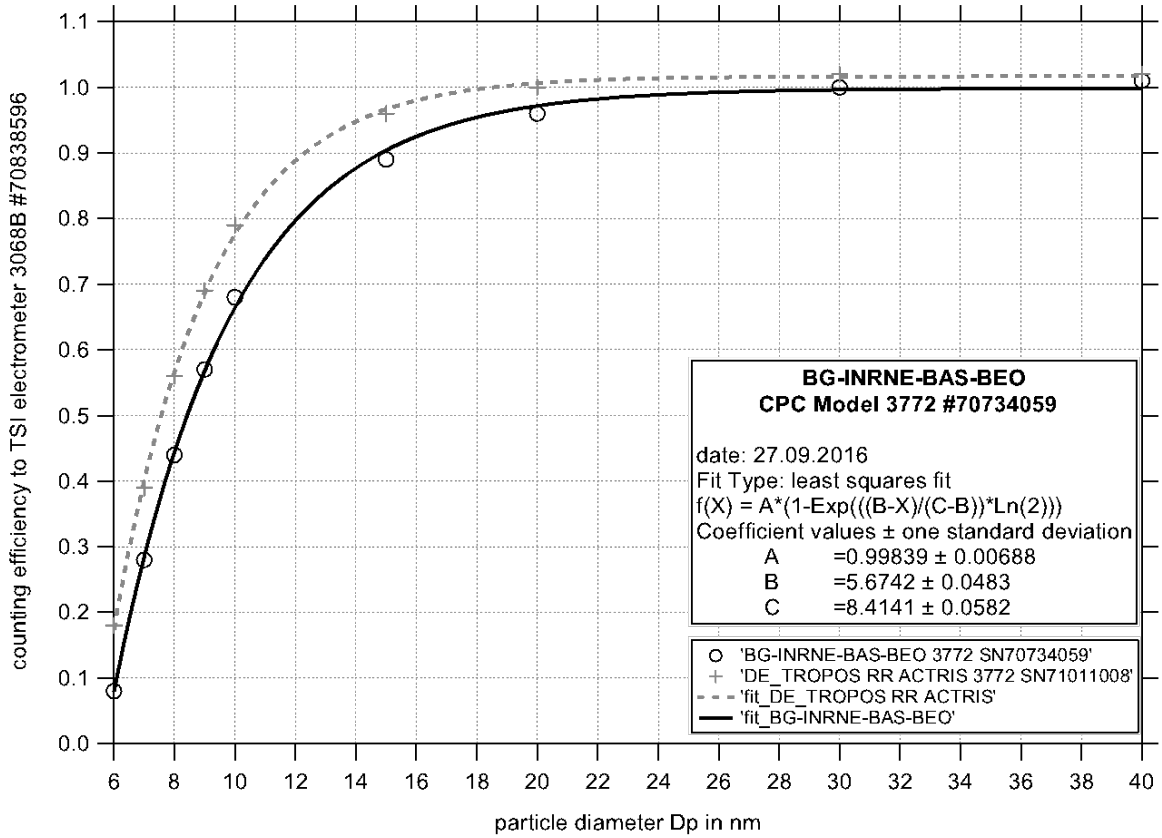

Figure 02: CPC efficiency curve. Based on Electrometer TSI 3068B. Serial number: 70838596

measured data of the candidate: Final-Status

Dp in nm	counting efficiency
40 nm	**1.01**
30 nm	**1.00**
20 nm	**0.96**
15 nm	**0.89**
10 nm	**0.68**
9 nm	**0.57**
8 nm	**0.44**
7 nm	**0.28**
6 nm	**0.08**

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

Kalibrierschein
Calibration Certificate

Gegenstand: *Object:*	Aerosol Elektrometer ID-Nummer: TSI_3068B_70838596
Hersteller: *Manufacturer:*	TSI Incorporated
Typ: *Type:*	3068B
Kennnummer: *Serial No.:*	70838596
Auftraggeber: *Applicant:*	AG 3.23 - Herr Nowak, Tel.: 3228
Anzahl der Seiten: *Number of pages:*	4
Geschäftszeichen: *Reference No.:*	PTB AG 2.11-1461323527-0327
Kalibrierzeichen: *Calibration mark:*	20790 PTB 16
Datum der Kalibrierung: *Date of calibration:*	22.04.2016

Im Auftrag:
On behalf of PTB:

Dr. B. Schumacher

Braunschweig, 04. Mai. 2016

Siegel
Seal

Im Auftrag:
On behalf of PTB:

C. Rohrig

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