# Intercomparison of Condensation Particle Counter

| | |
|---|---|
| *Project No.:* | *CPC-2017-2-21* |
| *Principal Investigator:* | Angela Marinoni |
| *Home Institution:* | CNRS CPC |
| *Participant:* | - |
| *Candidate:*<br>*Counter (SN):* | ACTRIS BOX3<br>TSI CPC Model 3772; SN70944151 |
| *Location of the quality assurance:* | TROPOS Leipzig, lab 130 |
| *Comparison period:* | March 10, 2017 |
| *Last Intercomparison (with Project No.):* | |
| *TROPOS Reference Instrument:* | Electrometer: TSI model 3068B<br>#70838596, Last calibration in April 2016 |
| *Additional Equipment:* | Bubble flow meter 'Gilibrator', Gilian (Sensidyne) |

## Summary of Intercomparison

*Status:*
The candidate passed the quality standards of ACTRIS and GAW. It was necessary to clean and recalibrate the candidate. The CPC efficiency curve corresponds to the standard. The candidate reached 98% efficiency at 40 nm. The Dp50 is at 8.97 nm. The Box3 is going back to the last station for a second intercomparison.



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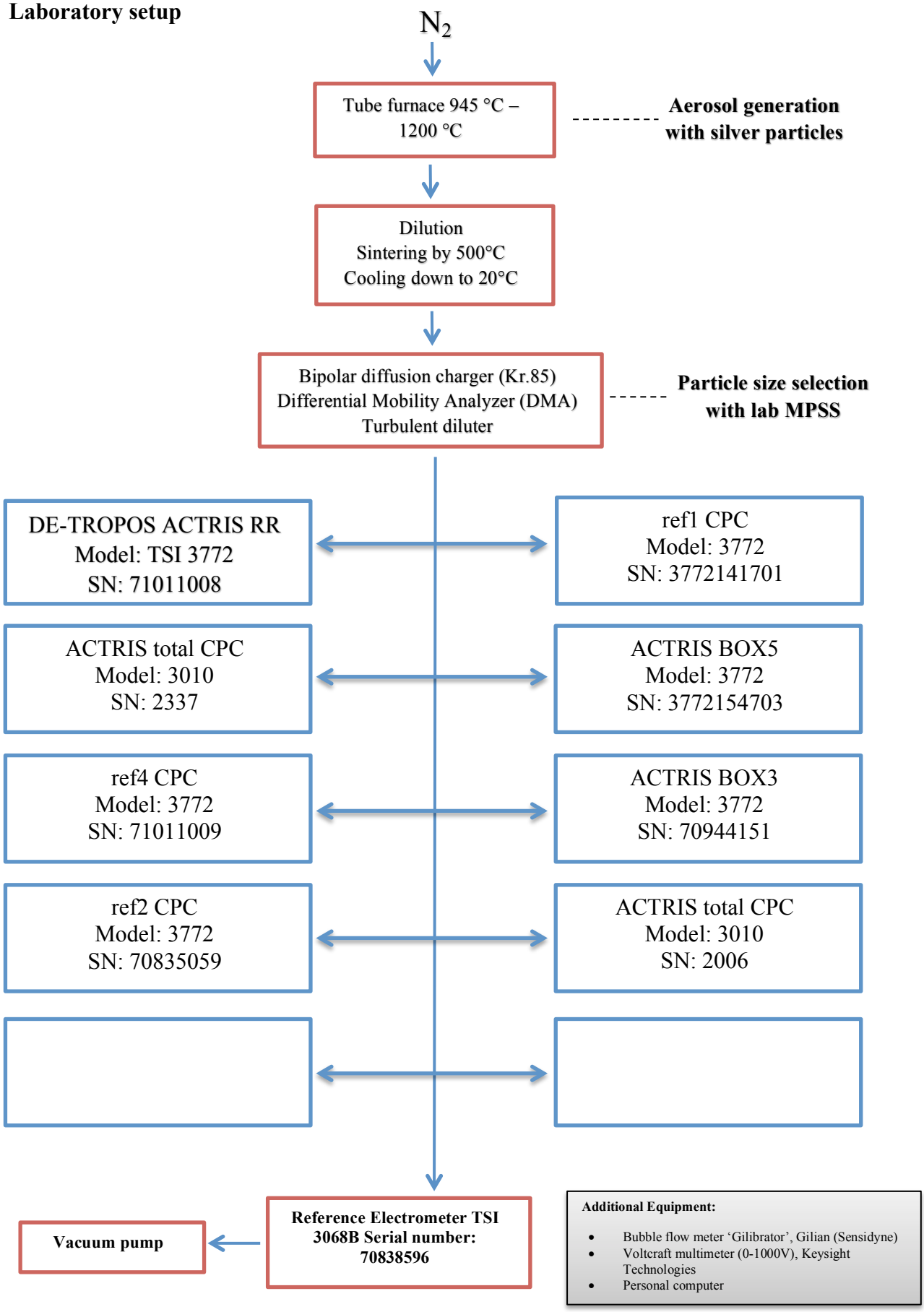
## Laboratory setup



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## Status of the candidate:

| *CPC status* | Pre-Status | |
|---|---|---|
| *power/status* | *LED green* | - |
| *saturator temp* | *39* | °C |
| *condenser temp* | *22.4* | °C |
| *optics temp* | *40* | °C |
| *cabinet temp* | *30.6* | °C |
| *ambient pressure* | *100.8* | kPa |
| *orifice pressure* | *72.0* | kPa |
| *nozzle pressure* | *3.1* | kPa |
| *laser current* | *37* | mA |
| *liquid level* | *full* | - |
| *Aerosol flow (l/min)* | *1022* | l/min |

## Special Information regarding to the Candidate:

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



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## CPC efficiency curve of the candidate: Status

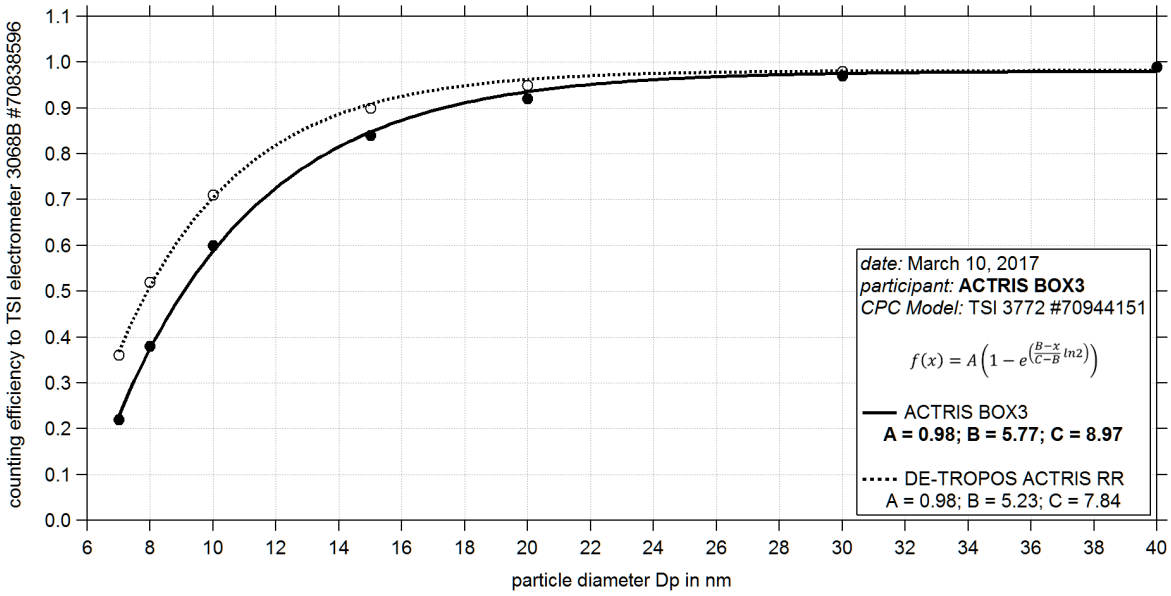


**Figure 01:** CPC efficiency curve. Based on Electrometer TSI 3068B. Serial number: 70838596

## Measured data of the candidate: Status

| *Dp in nm* | counting efficiency |
|---|---|
| *40 nm (start)* | *0.99* |
| *30 nm* | *0.97* |
| *20 nm* | *0.92* |
| *15 nm* | *0.84* |
| *10 nm* | *0.60* |
| *8 nm* | *0.38* |
| *7 nm* | *0.22* |
| *40 nm (end)* | *0.99* |



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**Physikalisch-Technische Bundesanstalt**
**Braunschweig und Berlin**
Nationales Metrologieinstitut

# Kalibrierschein
*Calibration Certificate*

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

391 00B n

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