

Joint Research Centre (JRC)

PMP VPR Round Robin:
Calibration of the Golden CPC

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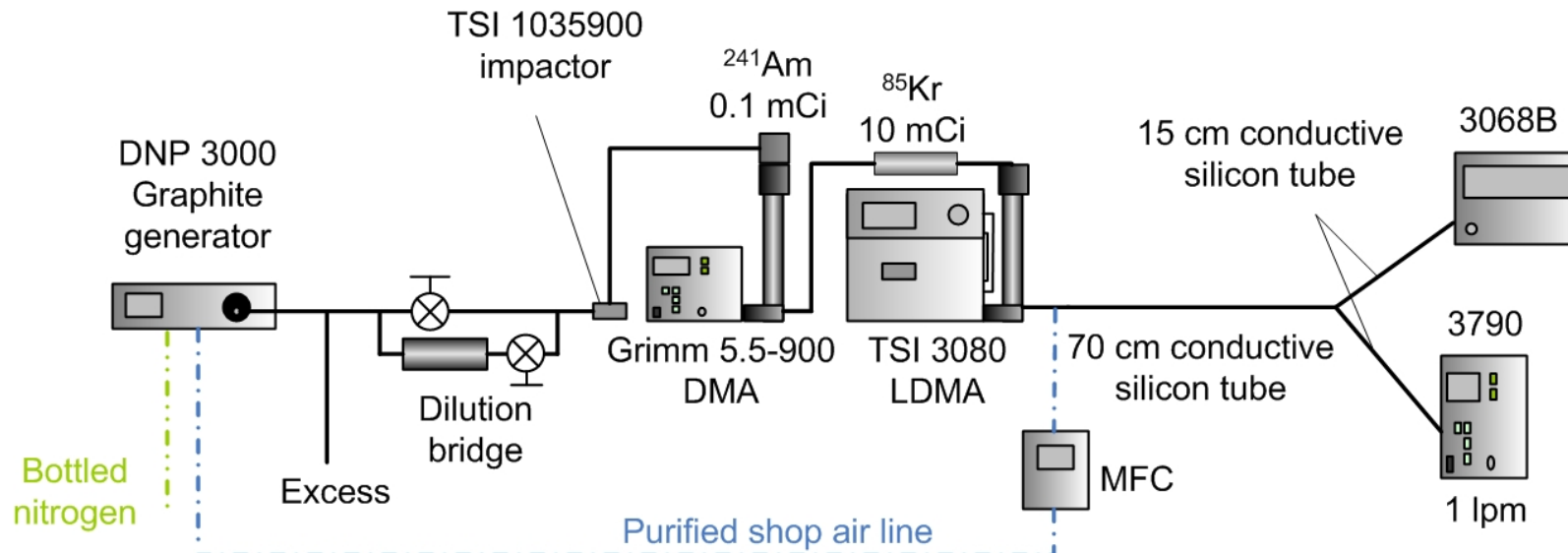


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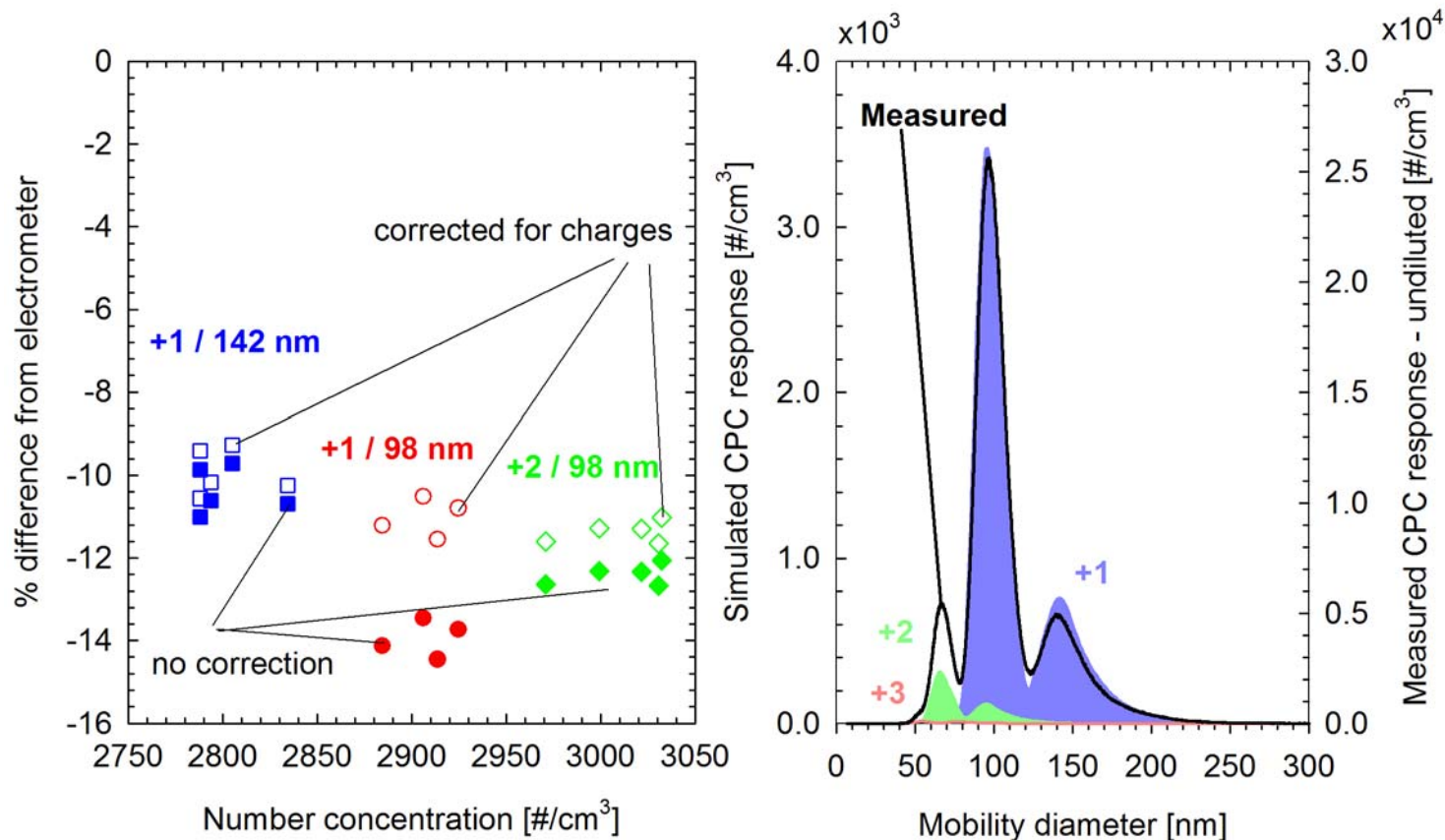
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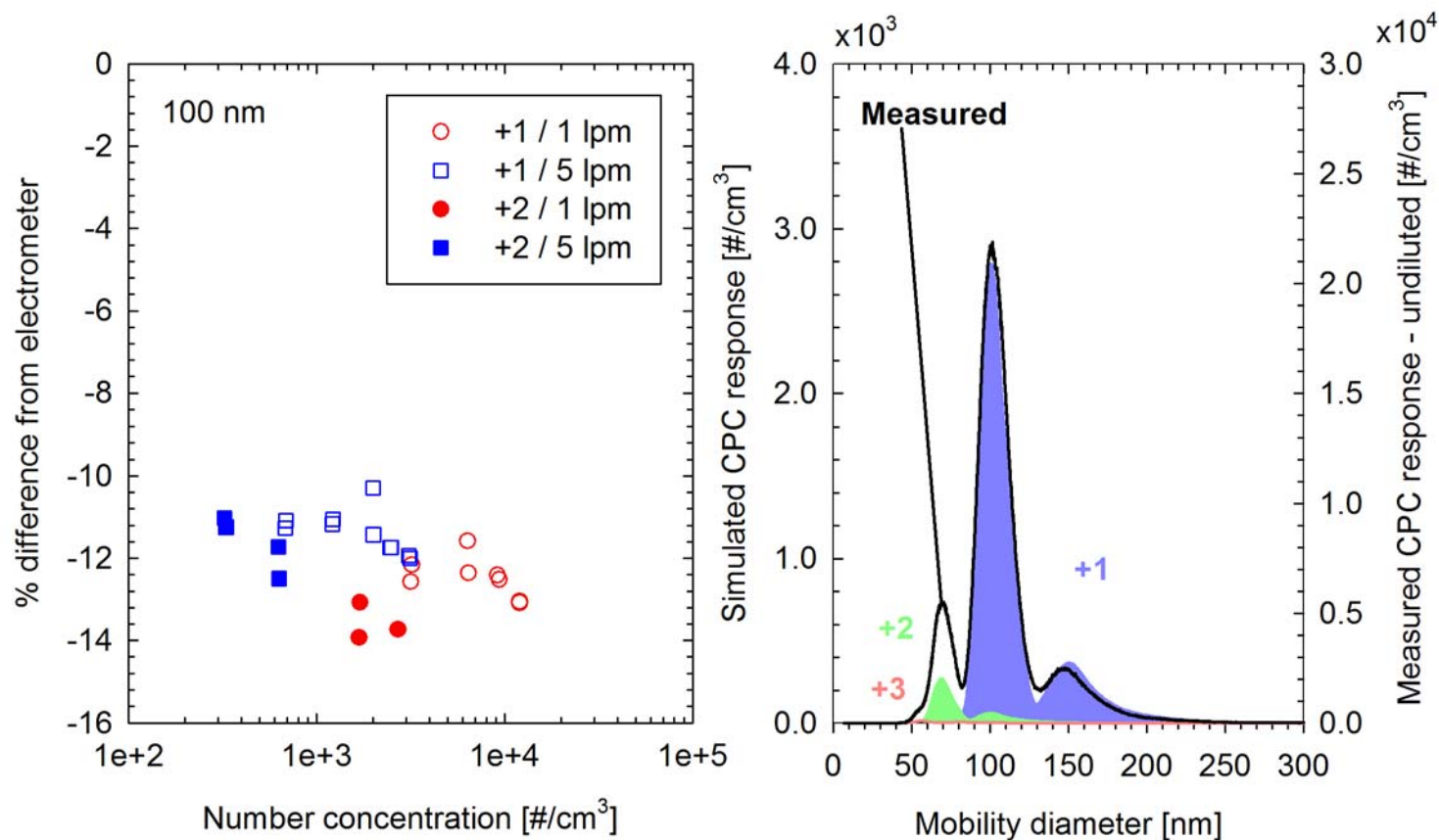
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- **Calibration against an electrometer**
- **“Monodisperse” graphite particles in a Tandem DMA**

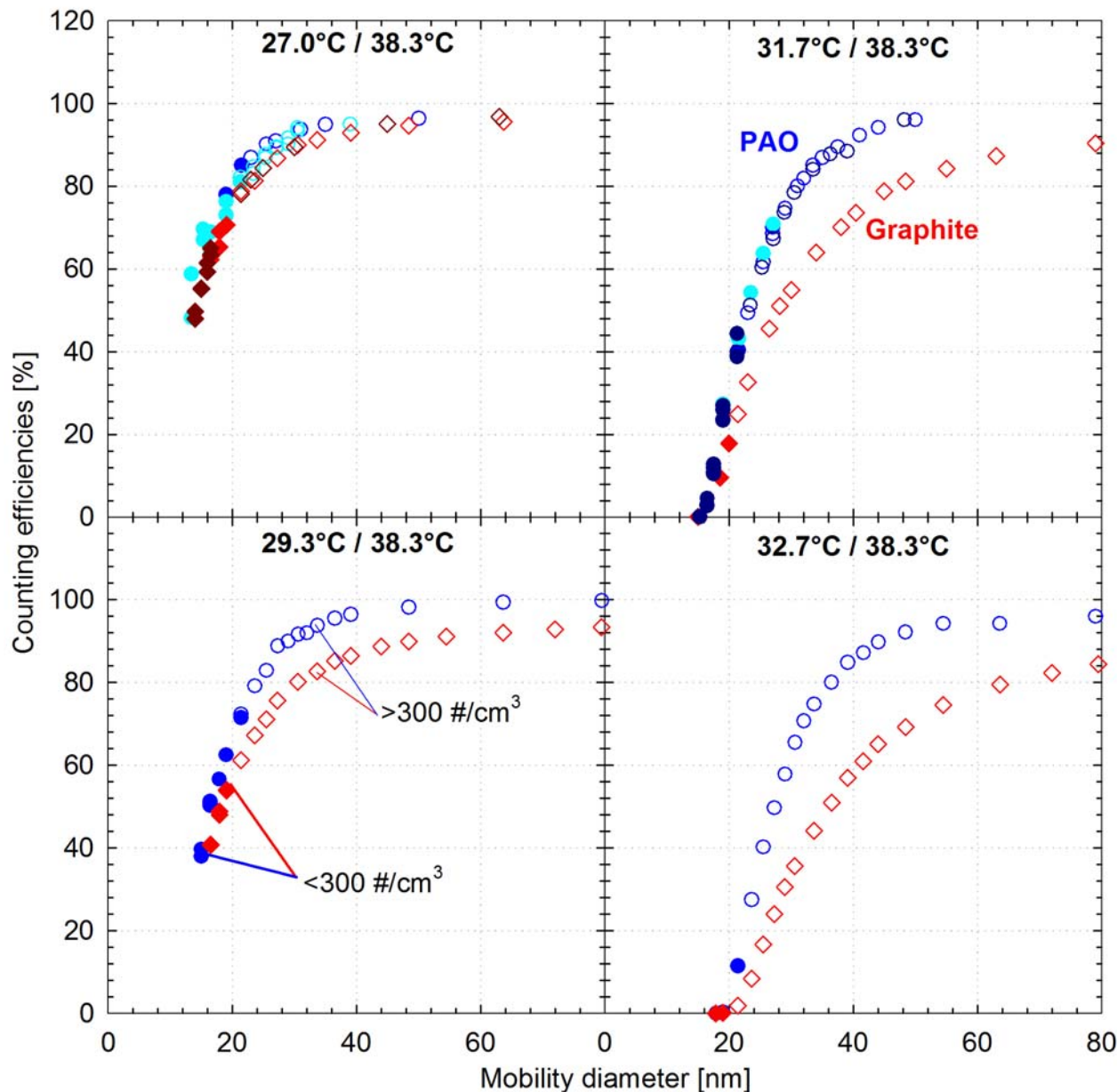


- Use of doubly charged peak from a TDMA signal can effectively double the electrometer sensitivity
- Discrepancies between measured and simulated TDMA responses \rightarrow uncertainties in the charging probabilities

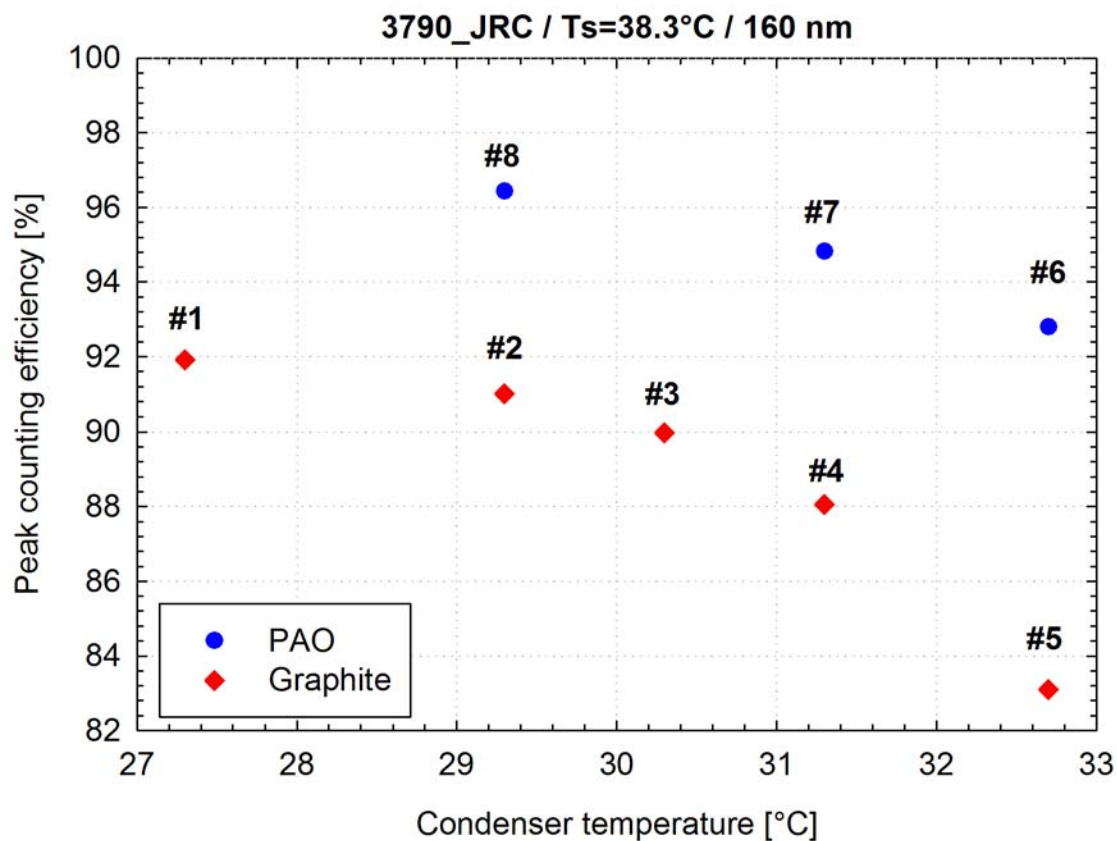


- **Fivefold increase of the electrometer sample flowrate and use of doubly charged particles could allow for a linearity check down to 300 #/cm^3 .**
- **Small but systematic differences were observed between different setups (probably due to uncertainties in flows & particle charges).**

- **Calibration of the Golden CPC against a calibrated TSI 3025A CPC.**
- **PALAS DNP3000 for graphite particles.**
- **Homemade evaporation-condensation generator for emery oil particles.**



- The CPC is less efficient in counting graphite particles.
- Material dependence becomes more evident at lower temperature difference.



- The peak concentration appeared to depend on the material and the operating temperature difference.

- **The golden CPC was found to be less efficient in detecting graphite particles (golden aerosol generator)**
- **The peak counting efficiencies were found to depend on the material employed and the operating temperatures of the CPC**
- **The possibility to check the linearity of the CPC at concentrations below 2000 #/cm³ was investigated, through the use of well controlled doubly charged particles and elevated electrometer flowrates**

Thank you for your attention!



Calibration and Modeling of PMP compliant Condensation Particle Counters

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