

Interactive comment on “Portable Calibrator for NO Based on Photolysis of N₂O and a Combined NO₂/NO/O₃ Source for Field Calibrations of Air Pollution Monitors” by John W. Birks et al.

Anonymous Referee #1

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The manuscript describes a portable calibration system/transfer standard for NO_x monitors based upon photolysis of N₂O from a small compressed gas source. A GPT system allows for calibration of NO₂ conversion efficiency as well as NO sensitivity as is often required in the most common NO_x air monitors employing NO chemiluminescence. Ozone monitors may also be calibrated with the same unit. The calibration system appears very well characterized and robust also the manuscript is clearly written, well presented, detailed, referenced etc. I recommend publication in AMT once a few relatively minor issues have been addressed.

General Comments

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Stylistically there are lots of references to ‘our’ or ‘we’ in the manuscript which I would rather be depersonalized throughout.

In a similar vein, the manuscript strays into becoming an advertisement of seemingly the entire 2B Technologies range of products. This is to be expected and is possibly unavoidable though it seems unnecessary to describe both the Model 408 and also the Model 306 (already described in Birks et al., 2018b) separately. The obvious competing interest of the authors is rightfully declared however.

Specific comments

P2 L60 – “...a strong tendency for the concentration of NO in the cylinder to decline with time...” – please provide a reference e.g. Robertson et al 1977 (<https://doi.org/10.1080/00022470.1977.10470491>) or similar of the authors choosing. This is oft-claimed without reference.

P25 L571 “Complete conversion of ozone to NO₂ is not critical if NO is measured as well...” True, except if calibrating a photolytic NO₂ converter whose conversion is a function of J and concentration of oxidants of NO. However, below it is shown that O₃ is negligible.

Technical Corrections

P8 L226 “photolytic NO converters” should be “photolytic NO₂ converters” I think

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