

Interactive comment on “Multifactor colorimetric analysis on pH-indicator papers: an optimized approach for direct determination of ambient aerosol pH” by Guo Li et al.

Anonymous Referee #1

Received and published: 11 November 2019

This work proposed a new model to establish the correlation between the color of samples on pH-indicator papers and their measured pH. This model was based on RGB analysis of the images of samples. Good agreement between the model-predicted pH and reference pH for pH paper color charts as well as standard buffers were observed for all the tested types of pH papers. The minimum liquid sample mass/volume needed for the type V pH paper is identified as $\sim 180 \mu\text{g}/0.1 \mu\text{L}$. Aerosol pH measurement is important for understanding the properties of aerosols. This work provided an improved model to do this. It is of scientific interest, and conclusions are supported by the data. However, two major concerns are: 1. The real application of this method is not performed. In real application, there will be many solid particles as well, which also

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have color (for example, black carbon) and may interfere with the measurement. This needs to be clarified. 2. In this work, a mobile phone camera is used to capture the color, which limits the the minimum liquid sample mass/volume needed for the type V pH paper. Even $0.1 \mu\text{L}$ is still too much. The measured pH value will be a collective result of many aerosols. To get pH information of one individual aerosol is more interesting. Using an optical microscope may be more accurate and can further reduce the limits.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2019-394, 2019.

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