

Interactive comment on “Predicting ambient aerosol Thermal Optical Reflectance (TOR) measurements from infrared spectra: elemental carbon” by A. M. Dillner and S. Takahama

Anonymous Referee #2

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General Comments:

This paper describes a new method to measure elemental carbon (EC) in aerosol samples using FTIR. Measurements of aerosol EC are important because of its potential effect on human health, visibility, and global warming. The paper determines the best method for calibrating the FTIR measurements by using ~800 filter samples that have been collected at a variety of ambient sites. The FTIR method is calibrated by using partial least squares regression to correlate FTIR absorbance at a few characteristic wavelengths with standard thermal optical reflectance (TOR) measurements of EC for a selection of the samples and then the calibration is evaluated using the remaining

C2137

samples. A very thorough evaluation is made of the potential chemical interferences to the FTIR method and effects of sample distribution and high and low EC loadings. The results indicate that FTIR can be used to make accurate measurements of EC, and it has the advantage of being inexpensive, rapid, and non-destructive. The measurements and data analysis are well done and the paper is clearly written. I have only one very minor comment, and otherwise think the paper should be published in AMT.

Specific Comments:

1. Although a very thorough discussion is given regarding the potential chemical interferences to the FTIR method and effects of sample distribution and high and low EC loadings, I am still a little confused about exactly how, in practice, one should calibrate. I think the information is there in the Conclusions, but it could help to describe the procedure in a prescriptive, step-by-step manner.

Technical Comments:

1. Page 6326, line 21: “produces” should be “produce”.
2. Page 6328, line 7: Delete “they are”
3. Page 6328, line 17: “filters” should be “filter”.

Interactive comment on Atmos. Meas. Tech. Discuss., 8, 6325, 2015.

C2138