Atmospheric
Measurement
Techniques

Discussions

Interactive comment on "Analysis of functional groups in atmospheric aerosols by infrared spectroscopy: sparse methods for statistical selection of relevant absorption bands" *by* S. Takahama et al.

Anonymous Referee #2

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In this well-structured and very detailed paper, four sparse algorithms (SPLSa, SPLSb, EN and EN-PLS) were considered and evaluated for selecting relevant mid-infrared absorption bands in the calibration model building process. Using FTIR spectra obtained in transmission mode, two types of sparse calibration models were constructed for predicting/interpreting: (1) abundances of four organic functional groups (alcohol COH, carboxylic COH, alkane CH and carbonyl CO) and (2) TOR OC and EC concentrations in ambient aerosol samples. The paper has also presented a thorough analysis of the constructed models. I find the paper suitable for publication in AMT and only have very few minor comments:

Page 3, line 75 onwards: Samples were taken from seven sites in the IMPROVE network. Did the investigators set out any criteria for selecting these sites for the study? It might be a good idea to provide a brief description of the sites to gauge their representativeness of the network. Throughout the paper, nothing was mentioned about these sites except that they were comprised of rural and urban sites (from Figures 3 and 4).

Page 4, line 100: The 250 laboratory standards used were mixtures of seven compound types. What are these compounds? If this has been described elsewhere, citing the relevant literature would suffice.

Page 40, Figure 3 legend: What do the investigators mean by anomalous clusters?

PM: PM10 or PM2.5?

Grammatical/typographical corrections:

Page 38, Figure 1 caption: Should this be Appendix C instead of Section C?

Please go over the manuscript again and proofread it.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2016-2, 2016.