Optical Characterization of End-Member Mixtures Found in Urban Indoor Air

Sebastian Vivancos[1], Beizhan Yan[2], James Ross[2], Steve Chillrud[2]

[1]Columbia University, Columbia College, New York, NY 10027, USA

[2]Department of Geochemistry, Lamont-Doherty Earth Observatory of Columbia University, 61 Route 9W, Palisades, NY 10964, USA

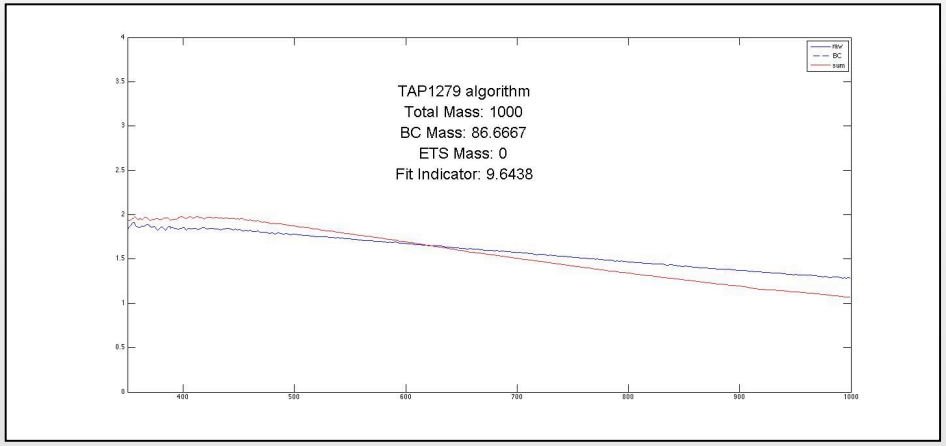

Figure 1. Fitting curve of NYC indoor air filter sample. Plot of optical density vs. wavelength (nm).

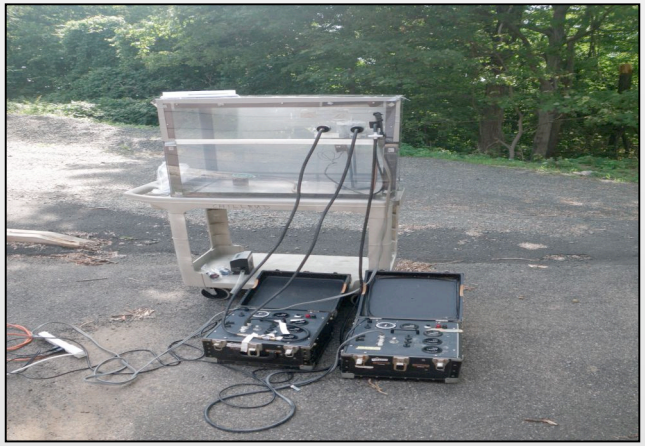

Figure 2. Combustion chamber where kerosene soot and sidestream tobacco smoke were collected.

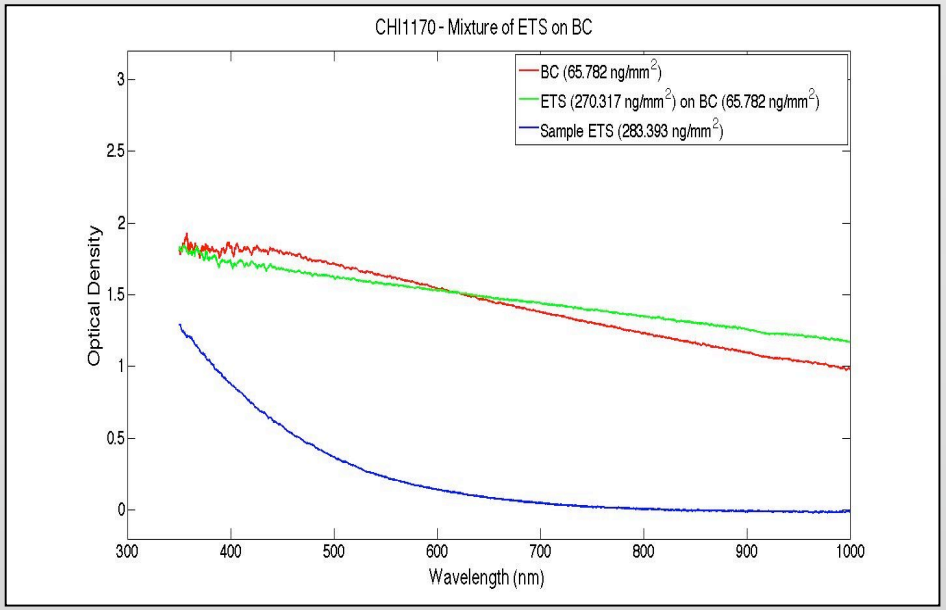

Figure 3. Comparison of the optical absorption by a mixture of ETS on BC vs. pure BC and ETS.

- Ammonium sulfate can change the absorption pattern of BC substantially when the mass loading of ammonium sulfate is high.
- Mixtures of BC and ETS show a flattening of the absorption curve.
- This suggests that optical density (OD) of mixtures is not a straightforward addition of the OD of its various components, and that further investigation is needed for better understanding the dependence of a mixture's optical density on the wavelength of light emitted.