

Reviewer comment on

Importance of size representation and morphology in modelling optical properties of black carbon: comparison between laboratory measurements and model simulations

General comments:

The manuscript compares the optical properties of laboratory generated soot particles with those obtained from model calculations. The paper is generally well written and worth to be published after minor modifications.

The authors run model calculations and perform laboratory measurements for bare (or half-bare) soot particles and for soot particles with organics. These two types of particles were generated in two separate experiments E1 and E2.

In the results section, several optical parameters obtained from the model runs are discussed and compared with the measured values. It would be useful for the readers, if the same optical parameters (including the concentration dependent parameters :absorption and scattering coefficient) would have been discussed for bare and undenuded soot particles. For example AAE from the 2nd experiment is not mentioned and MAC is discussed only for the E2 experiment.

Although the authors mention in the paper that the resmaller should keep in mind that for smaller particles the Catalytic Stripper was less effective, thus the particles can not be considered bare soot particles this introduces some uncertainty in the comparison of model and measured data. Unfortunately there is no EC/TC measurements for denuded particles, but the authors should give an estimation for the uncertainty of the measured data caused by the residue of the organic material. Fig. S2 indicates that the modeled absorption coefficient of the fractal bare BC using polydisperse method is smaller for larger particles (160 nm) than the experimentally determined value. Might this indicate the presence of organic residue for larger particles?

Specific comments:

Line 311: the word modeled should be modelled

Line 356: the density is not mentioned in the equation

The yellow band of the measured data in figure 7, 8 and 9 is hardly visible.

Figure S1: the "blue stars" appear green because of the green edge of the symbol.

For which wavelength was the MAC calculated?

