Atmos. Chem. Phys. Discuss., 15, C8332–C8333, 2015
www.atmos-chem-phys-discuss.net/15/C8332/2015/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Light absorption properties of laboratory generated tar ball particles" *by* A. Hoffer et al.

C.E. Chung

eddy.chung@dri.edu

Received and published: 21 October 2015

The authors generated tar balls in a laboratory experiment that resemble ambient tar balls. Then, they revealed the optical properties of the generated tar balls. The findings from examining the optical properties are extremely interesting and valuable. Thus, the paper should be published in ACP. I would however think that the paper would be more valuable if the presentation improves.

1. The description of tar ball generation, though it meets minimum criteria for a science paper, is very difficult to understand. A better explanation is needed, particularly because the employed methodology is quite new. A schematic diagram is desired. I see Tóth et al. (2014) included a figure for the instrumentation in their Fig. 1. A different

and complementary figure will be very useful for this paper. In particular, various texts and Fig. 3 refer to “oily phase” and “aqueous phase”. It is difficult to understand how liquid tar (product of dry distillation) can be in aqueous phase since liquid tar is some sort of oil. Also I recommend that the authors discuss the scientific meaning of separating the oily phase from the aqueous phase and dealing with the optical properties of each phase. Did the authors do this to address the variation of ambient tar balls (since some of the ambient tar balls might be formed from the oily phase while others from the water phase)?

2. Table 1 and Fig. 3 talk about oven temperature. Since I could not understand the tar ball generation very well from section 2 (and section 2 mentions heating in multiple stages), I couldn’t see the significance of discussing the effect of oven temperature. Improving the clarity and better discussing the significance of oven temperature will help the paper.

3. The AAE in Alexander et al. (2008) concerns a single particle while the authors deal with an AAE of multiple particles with a size distribution. A more careful comparison is needed.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 16215, 2015.