

## ***Interactive comment on “Strong spectral dependence of light absorption by organic carbon particles formed by propane combustion” by M. Schnaiter et al.***

### **Anonymous Referee #2**

Received and published: 5 May 2006

This topic of this paper is the spectral absorption of soot. The paper does a nice job in demonstrating that the combustion conditions, in this case of a diffusion flame of propane, affect the OC/BC ratio, the mass absorption efficiency and the dependence of absorption on wavelength. The paper also contributes evidence that the strong spectral absorption dependence of OC is due to small, nucleation mode, particles, which the authors assert is related to the presence of PAH.

The paper is well organized and briefly stated and should be published for its new contributions. Please consider the following comments.

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## Specific comments:

1. I concur with reviewer #1 that the discussion of Fig 3 is unclear. I see long and short chains of primary particles of the same size. I do not see how this supports the notion that condensed PAH has collapsed the longer chains.
2. Since the manuscript reports mass absorption efficiencies, it would be appropriate to discuss how the EC/OC measurement was calibrated for total carbon.
3. In the present discussion of EC/OC measurement, it is stated that the high heating rate of 720 degrees per minute reduces the charring of OC. What is the evidence to support this claim? How does this EC/OC method correct estimates of EC for charring? These issues seem to be rather important in this study since the reported EC/OC ratios are central to the main discussion of the paper.
4. It is always easy for a reviewer to say what should have been included, and this is not always fair to the authors. Nonetheless, I will say that the assertion that PAH in the OC causes the strong spectral absorption dependence would be more convincing if PAH had been measured.

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Interactive comment on Atmos. Chem. Phys. Discuss., 6, 1841, 2006.

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