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## ***Interactive comment on* “Characterization of organic aerosol produced during pulverized coal combustion in a drop tube furnace” by X. Wang et al.**

### **Anonymous Referee #1**

Received and published: 4 April 2013

The paper of Wang et al. (2013) is very timely - it attempts to characterise the organic aerosols produced during coal combustion. The abstract is also very interesting, reporting coal combustion is a main source of aerosols, which can be wrongly assigned to biomass burning.

However, the mass spectrometry analysis of this study is very poor. High resolution mass spectra of AMS are not presented, and the presentation of the ATOFMS data is also not good enough for ACP standard.

I suggest to deeply revise the current manuscript - which is not suitable for ACP at this stage.

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I shall suggest the following:

-Introduction: The introduction is very short, and need to be expanded. There are dozens papers on biomass-coal-combustion AMS-ATOFMS datasets, which are not even mentioned in the current manuscript. Pg. 3347 line 4-5 is a repetition of previous page. The objective of the study is not clearly stated.

- methodology. Running ART2a with a vigilant factor of 0.7 leads to very broad particle types, which I am not sure can be correctly classified. To my knowledge, most of ATOFMS studies in the literature are carried out with at least 0.85.

- results:

- pg 3352 Figure S2 is by far not uni modal as stated, and actually several differences (see the fine and coarse modes) can be seen when the mentioned ratio is changed. - pg 3354 Figure 3c. I am not sure this is valid, as it does not represents real ambient particles. This particle is simply a dust particle, with potassium, calcium and phosphate. - pg 3354 Fig S3 shows very large error bars. If t-test is applied, I feel the three bars are the same -pg 3368. what is the point of using HR-AMS if not presenting HR data? At this stage only a short weak description of m/z 60 and 73 is carried out. -pg 3374. As pointed out by Dr. Healy (see short comment) - a more detailed description of the ATOFMS results should be attempted.

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