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Comment

## ***Interactive comment on “Sub-micron atmospheric aerosols in the surroundings of Marseille and Athens: physical characterization and new particle formation” by T. Petäjä et al.***

**Anonymous Referee #2**

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The paper is based on aerosol number distribution measurements at 2 European locations – Marseille, France (19 days in July 2002), Athens Greece (16 days in June 2003). Measurements included not only DMPS (SMPS) measurements, but high quality TDMA measurements at 20 and 50 nm at both locations (and 10 nm at Athens and 100 nm at Marseille). The paper includes not only a summary and discussion of the measurements, but extensive analysis of the results to figure out particle growth rates and to attempt to attribute growth to organic and inorganic condensable species.

My review of the paper comes to conclusion that the paper is very well written and complete, and benefits from the long history of research and publication by Kulmala and

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coworkers. Many challenging experimental and analysis techniques, such as TDMA and log normal mode fitting, are routinely done by some of the coauthors on this paper. It should be accepted with editorial revisions only.

My only criticism of the work is that it is very long and detailed, and the reader must work to separate the results that could be anticipated from other European measurements (e.g. noontime peaks in number concentration) versus the truly novel results (fractional contribution to growth from inorganic versus organic species). The work would be improved by shortening in length, highlighting the novel results, and condensing the other results into as compact a format as possible.

#### **Editorial comments:**

Page 8615, line 9 – spelling error

Page 8622, line 14 – “A Total of” no “Total of”

Figure 3 – it is not apparent from the caption what the 3 colors of lines refer to. This may be in the text, but it would not take much/any additional space to put it in a legend or in caption.

I printed the paper out in black and white, and all figures can be read, at least qualitatively, in grayscale, except for figure 9. This can easily be changed to show well in black and white.

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Interactive comment on Atmos. Chem. Phys. Discuss., 6, 8605, 2006.

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