

## ***Interactive comment on “CCN activity and droplet growth kinetics of fresh and aged monoterpene secondary organic aerosol” by G. J. Engelhart et al.***

### **Anonymous Referee #3**

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Referee report on:

CCN activity and droplet growth kinetics of fresh and aged monoterpene secondary organic aerosol

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gineering, University of Patras, Patra, Greece

General comment on the scientific value of the paper:

Overall, I would place the manuscript worth for publication in ACP with minor revisions.

General comment on the manuscript style/language:

The manuscript is written in good English style.

Detailed scientific comments on the manuscript:

Abstract

Last sentence: Do you mean SOA has only a surface tension of 10 to 15% of water. I guess it has one that is 10 to 15% reduced in comparison to water.

The abstract is appropriate.

1 Introduction

First paragraph: I would say "...many questions still remain about the influence of organic particle material on..."

Fourth paragraph: I would say "...the alpha-pinene SOA was, or SOA particles were..."

Fifth paragraph: I would say "...the alpha-pinene SOA was, or SOA particles were..."

Please shorten the introduction (especially paragraph four and five!) and focus on the main points.

- a. Role of monoterpene SOA.
- b. What has been done before (literature)?
- c. What is new?

You should not state measurement results from other studies in detail. You can compare your results with these findings later in the manuscript.

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## 2 Experimental Methods

First paragraph: What were the temperature and RH values in the chamber? Please provide information here.

Second paragraph: "...particle number size distribution..."

## 3 Results

### 3.1. Comparison of CCN instrumentation

First paragraph: What about doubly charged particles leaving the DMA. Do you consider them and how do you treat them as they should appear in the CCN counter as "early activated guys"?

Second paragraph: How long does one chamber experiment take?

Third paragraph: This belongs into the section of experimental methods and partly was already stated there.

Fourth paragraph: Please give possible reasons for your finding of deviations between the two CCN counters. Is it because they are based on different principles?

I would put this section "Comparison of CCN instrumentation" as a subsection in Experimental Methods. Please see it as a proposal.

### 3.2. Aging of SOA Particles

First / Second paragraph: I would put in here a theoretical curve with a surface tension smaller than that of water because I expect a reduction of surface tension compared to water when investigating SOA particles.

### 3.3. Potential of SOA as CCN

This section is fine.

### 3.4. Koehler theory analysis of SOA

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This section is fine.

### 3.5 Droplet growth kinetics

This section is fine.

### 4. Parameterization using classical Koehler theory

Second paragraph: "...at different combinations..." Could you earlier in the manuscript state the uncertainty of your CCN measurements!

### 5 Conclusions

First paragraph: "...alpha-pinene..."

### Figures

Figure 2: Please put the description of symbols into a legend on the plot.

Figure 5: Please list the participating chemical components in the figure caption.

Figure 7: Again, please put in additional lines for lower surface tension and try to use a better scaling with larger symbols.

Figure 9: Again, please put the description of symbols into a legend on the plot.

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Interactive comment on Atmos. Chem. Phys. Discuss., 8, 95, 2008.

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