**Atmospheric
Chemistry
and Physics
Discussions**

Interactive comment on "Atmospheric new particle formation: real and apparent growth of neutral and charged particles" *by* J. Leppä et al.

Anonymous Referee #1

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General Comments: The paper is generally well-written and solid. It is a useful contribution to the literature and should be published with only minor revisions.

Specific Comments: The major problem I have is with the generalization of Section 2.1.3 on self-coagulation. The authors derive results for a monodisperse distribution, which to me means essentially a single size bin. For these conditions the derivations follow to obtain equations (6), (8), and (9). That is, N is the total number concentration and V(tot) is the total volume concentration. However, when the distribution is generalized to spread over multiple size bins, N consists of particles from all these bins. They state in Section 3.3.3 that "the particle concentration in the mode decreases". It seems the authors are trying to have it both ways. Does Equation (9) generalize to a mode that consists of many bins? How does that follow from the assumptions necessary for

Equations (5) and (6)?

Technical Corrections: p. 2079, line 17: "improper understanding on the vapors participating into these processes" is awkward. I suggest something like "incomplete knowledge of the vapors that participate in these processes". p. 2080, lines 15-16: Reword to read "and how can these problems be dealt with? p. 2080, line 17: Add a "?" after "sizes". p. 2083, line 24: What value is used for "r", and why?

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 2077, 2011.