

Interactive comment on “Coagulation of combustion generated nanoparticles and their measurement behind vehicle engines: can they play a role as atmospheric pollutants?” by H.-H. Grotheer et al.

Anonymous Referee #1

Received and published: 16 June 2005

There are a few points which make this manuscript appear borderline to me. Therefore I will publish these points so that others (including the authors) may correct me: 1. The title question is not answered. The relation to atmospheric chemistry, even if it appears natural to the authors, is only discussed in the introduction! 2. What is the scope of this paper? Four independent measurements are summarized, which all have something to do with soot or nanoparticles, but I could not find clear interconnections. 3. A distinction between soot and nanoparticles is made, without defining the difference.

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4. Several times it is stated, that the beam is supersonic. The groups of McIlroy and Kamphus et al. showed a while ago (Comb. Symposium 2002) that this is not true for pressures of 50 mbar, a pressure similar to the 100 mbar used here. Therefore the question is: is it important that the beam is supersonic? If yes: discuss this point; if no: omit it. 5. The hard facts within this paper are measurements of rate coefficients for coagulation. The experiment and the data evaluation, however, are not reported; only the final numbers. So the reader has to believe that they did a good job, for example: how about wall reactions? This is not the way science should work. A companion paper in preparation is cited, which is not helpful at all. To my opinion, the details should be given here, or the paper should be rejected. 6. In the 'Results' section it is said, that most experiments were performed under conditions of fragmentation. Why were those measurements not repeated under mild ionization condition? 7. In the three exhaust gas measurements, it is shown, that, in part, similar species leave the combustion processes, but aging and therefore some kind of wall reactions play a role. What do we learn from this? 8. In the discussion, further experimental results are presented (concerning filter measurements); why not in the 'Results' section?

To end with a more positive statement: I agree that the formation of soot is a really difficult topic of importance, and generations of scientists work on this problem. Therefore, a pure presentation of new results might be inspiring, if such new methods are used, as presented here. But for this, the presentation and discussion of the work must be much more focussed.

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 3847, 2005.

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