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Atmospheric Chemistry and Physics Discussions

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

H.-H. Grotheer et al.

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The present statement of Anonymous referee #4 appears to me as conveying some degree of convergence. This is certainly a benefit of this discussion forum.

Concerning some issues that remain in disagreement the interested reader is asked to form his own opinion. Did I (example 2) repeat a figure without appropriate citation? Did I (example 3) omit several important issues of criticism? This can all be found in the text.

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With regard to the "speculations" of Sgro et al. (example 1) one should remember that with the exception of the alveoli, our breathing system is completely covered by a mucous membrane which acts as a very efficient barrier against particles that are insoluble in water. In view of this it is very startling that Sgro et al. discovered a partial water solubility of combustion generated nanoparticles. This is even more so as they and other research groups from Naples found significant concentrations of these particles behind engines using optical methods (see reference list in our manuscript).

Consequently, it is the key question of this paper whether we "see" these particles behind engines using mass spectrometry. The answer is: yes. Unfortunately, for concentration reasons we see them as fragments rather than intact. Even if these data are regarded as "bad", they are the best ones currently available to us. We could, however, strengthen this issue by adding a further figure to the Results section. This figure shows how particle spectra behind rich flames (such as those in Fig. 4) change upon irradiation with an intense laser beam until they eventually show the fullerene-like pattern that we found behind engines. This is no proof, yet it makes more obvious why we associate our fullerene-like spectra with nanoparticles. The editor is asked to decide whether such a figure plus a little extra text should be included in the final version.

I cannot belief that all this should not be "of any interest to the scientific community" as presumed by Anonymous referee #4. Particles from engines that others found to be water-soluble, that our DLR colleagues found to be toxic (forth-coming papers) should by contrast be of very high interest. Perhaps other groups can do a better job concerning measurement. This would be supported by a rapid publication of the present results.

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

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Interactive Comment