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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Morphology, Chemical Composition and Mixing State of Atmospheric Aerosols from Two Contrasting Environments in Southern India" *by* C. R. Hariram et al.

Anonymous Referee #1

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Morphology, Chemical Composition and Mixing State of Atmospheric Aerosols from Two Contrasting Environments in Southern India

Hariram

The authors used SEM/EDX to study aerosol particles in urban and rural sites in southern India. Basically, the aerosol information is limited from India atmosphere. I really expect that I could get some useful information from this study. However, I am disappointed about the study. The study didn't select right sample collection to do right analysis.

Firstly, the authors used quartz filters to collect aerosol particles and study individual

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Discussion paper

particles. The information could not descript the right single particles in the air. The quartz filter looks like fibrous. Many fine particles are hiding in the filter and hence the SEM could not see all the particles in the filter. I would like to say that you need to use the flat substrate such as TEM grids, silicon substrate, and polycarbonate filter. I think that the authors should look at these references cited in the paper.

Secondly, the author totally made a mistake about the core-shell structure shown in Figure 2. Core should be in center of particles and shell look like coating on the shell. In the Figure 2, the red part only overlapped on other part. I am pretty sure that the particle is not core-shell structure. Based on these two points, the rest figures could not be right data analysis. Even in Figure 4, I could not find any core-shell structure.

Thirdly, because the authors selected one wrong sample filter, they could not get any good images to secondary particles, soot (BC), metal, and other particles. EDX did show quit high Si from quartz filter. The EDS data could not be quantitatively analyzed to show C, O, and Si.

Based on these points, the paper doesn't supply any useful information about aerosol information at two contrast sites.

Other comments:

1) P5Line 4-5 how do you know the BC?

2) P5Line 33 why are Si and O dominant in the particles? You might analyze coarse particles because the fine particles penetrate in the filter. Or the quartz filter influence the EDS.

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