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Interactive comment on “Optical properties, morphology and elemental chemical composition of atmospheric particles at T1 supersite on MILAGRO campaign” by G. Carabali et al.

Anonymous Referee #2

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This paper reports on the results of the TEM analysis of individual particles collected at T1 site during MILAGRO 2006 field study. Different types of particle morphologies have been reported as characteristic for early morning and afternoon particles. The analysis reveals a number of fairly common particle characteristics. Authors present reasonable arguments on the apportionment of the indicated particle types. My major concern about this manuscript is that the presented work is too descriptive and does not seem to be driven by any scientific hypothesis. The work is not very original in terms of its novelty, conceptual advances or unique observations. A large volume of field data has been reported in the literature discussing the same or similar observations as those presented in this manuscript. By my opinion, a report of additional ob-

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servations of common types of carbonaceous particles at specific geographic location is arguable subject for publication. Therefore, I would like to leave for editor's discretion an issue whether such a paper can be considered that of substantial scientific significance and interest for the ACP research community. Additional comments: Figure 5 and 6 do not convince the reader that fractal dimensions of particles were remarkably different between March 15th and 19th samples. Presented data shows distribution of ~ 50 measurements into 15 bins of different fractal dimensions. That corresponds to 3 measurements per bin on the average, and highest relative frequency is shown as ~ 0.2 (~ 10 particles per bin). Assuming the population of the highest frequency bin, relative uncertainty of each bin frequency will be 50% or higher, which is not sufficient to draw any conclusions based on the presented data. It is not clear what TEM grids were used for sample collection. Based on the images I can guess that some kind of thin filmed grids were used. In that case carbon and oxygen cannot be really quantified, and therefore data of Table 4 is misleading. Conclusion section of the manuscript does not summarize any data reported in the manuscript, but rather lists a number of generic summaries from published literature that might be suitable for introduction section, but not the conclusions. Electron microscopy and micro spectroscopy analysis of particles collected during MILAGRO studies has been a subject of a number of previous publications (e.g. Adachi and Buseck, ACP, 8, 6469-6481, 2008; Moffet et al, ACP, 10, 961-976, 2010). Data of the submitted manuscript needs to be compared and discussed in the context of these earlier publications. The manuscript text requires extensive editing to improve the language. I strongly recommend to the authors to seek help of a professional editor.

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