

General: Extensive study of the variability in state of mixing of urban BC particles and other material with new results.

Language: The English formulations need substantial improvements. Several examples are pointed out in the list of detailed comments.

Citations: The cited literature is mostly rather recent, predominantly Chinese, and more than necessary from the own authorship, disregarding original findings and reports.

Examples are given in the list of detailed comments.

Recommendation: Accept after addressing the list of detailed comments, thorough language editing and literature review.

Line	Comment
63	Chemical composition and „mixing state“ are not the same, c.f. (Heintzenberg and Covert, 1990)
66	is determined
66	composition
67	Heintzenberg & Covert 1990 precedes the cited literature by more than 20 years
74	Who is “it”? Obscure sentence
82	“ambient BC particles externally and internally mixed BC particles”: Obscure formulation
99	pollutant
127	Sentence beginning here is missing a verb
140	What is the collection efficiency of the SPAMS, e.g., at its lower size limit of 200 nm?
173	“primary aerosol emission”: obscure formulation
198	Fig. 2 starts at 2017-07-01 instead of 2017-07-04 as in the text and as more suitable for illustrating the TDMA-SP2” sampling intervals, which should be marked in the figure
245	How do you define “total”? Total samples or truly total ambient? If the latter where does your ambient reference come from?
275	The hydrolysis of N ₂ O ₅ has been described decades before, e.g., Mozurkewich, M., and J. G. Calvert, Reaction probabilities of N ₂ O ₅ on aqueous aerosols, J. Geophys. Res., 93, 15,889–15,896, 1988
284	“It is known that BC particles originated from traffic emissions are small”. Yes but known before the cited Chinese reference
291	Proportions
305	If you compare the volume of the coating instead of the coating thickness with varying core diameter you might come to a different conclusion
315	How low is the “low efficiency”?

Literature

Heintzenberg, J., Covert, D.S., 1990. On the distribution of physical and chemical particle properties in the atmospheric aerosol. J. Atmos. Chem. 10, 383-397.