Interactive comment on “Dynamic shape factor and mixing state of refractory black carbon particles in winter in Beijing using an AAC-DMA-SP2 tandem system” by Xiaole Pan et al.

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It is an interesting paper. The dynamic shape factor and the mixing state of rBC-containing particle in atmosphere indeed need to be studied.

However, I do not quite understand the calculation of dynamic shape factor (Line206), the author pointed out that \( \chi \) and Dve can be calculated out by combining equations (4) and (6), here you have 2 equations but have 3 unknown variables: \( \chi \), Dve, and the density of particle. It is mathematically impossible to solve this equation set.
Or did the authors assume a value for the density of particle? There is no mention in the paper. If that is the case, I am also wondering how they chose a value for the density of particle, as atmospheric aerosols are so complicated that it is unlikely their density was a constant.

Please also note the supplement to this comment:
https://www.atmos-chem-phys-discuss.net/acp-2019-433/acp-2019-433-SC1-supplement.pdf