

## ***Interactive comment on “Accounting for the effects of non-ideal minor structures on the optical properties of black carbon aerosols” by Shiwen Teng et al.***

### **Anonymous Referee #1**

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This paper studies the optical properties of black carbon particles and introduces a new parameter, the “volume variation” to quantify several minor structural differences relative idealized structures such as fractal aggregates of same sized, spherical primary particles, etc.

This paper has some admirable properties. It provides a thorough review of the light scattering literature of aggregates such as soot and emphasizes the non-ideality of their real world structures. It also classifies the several ways structures can deviate from the ideal form. The results demonstrate that all these non-idealities can be represented by a volume variation that can be used to unify their effects. Then a simple empirical

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relationship quantifies their effects on the optical properties. Overall the effects are not large, a few to several percent. The authors make arguments that such effects can be important. Important or not, it is worthwhile to know the extent of the effects and compare them as this paper does.

The paper is well written and the results are of value. I recommend publication.

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