Chakrabarty *et al.* Reply: In the preceding Comment, Sander *et al.* [1] claim that the very low fractal dimensions (D_f) we observed is caused by sampling and process effects. To substantiate their claim, they used a detailed stochastic particle model to simulate soot particle formation in a premixed flame—similar to the one used for our experimental work—and to study the soot agglomerate properties. The authors also claim to have previously validated their model over a number of different flame conditions without providing any information on what model predictions were validated or referencing any publication on their model validation.

We are of the opinion that the study conducted by Sander *et al.* is fraught with fundamental errors, thereby making their claims unacceptable with respect to our findings.

(i) In the publication describing Celnik *et al.*'s soot formation model [2], the effects of fuel-to-air equivalence ratio (φ) on soot formation inside of a premixed flame are not accounted for. Our observations of low D_f agglomerates were limited to φ ranging between 2.0 and 3.5 in a premixed flame, with D_f decreasing from 1.51 to 1.2 with increasing φ. The comments by Sander *et al.* do not include any information about the φ used in their premixed flame model.

(ii) Second, we observe $D_f \approx 1.2$ agglomerates only around $\varphi \approx 3.5$, which corresponds to decreased Brownian motion of monomers in the premixed flame due to a decrease in flame temperature. One also finds significant amount of organic carbon coating on the agglomerates at high φ (i.e., ≥ 3) [3]. These two phenomena affect the agglomerate morphology, but are not accounted for in the Celnik *et al.* model.

Just because Sander *et al.* observe low D_f for a subset population of agglomerates generated under unspecified conditions, does not invalidate our experimental observation and hypothesis. In other words, while Sander *et al.*'s modeling results and our experimental findings have both resulted in observation of low D_f soot agglomerates, this does not mean that the causes of low D_f for our experimental study are necessarily the same as for their modeling study.

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