Interactive comment on “Are black carbon and soot the same?” by P. R. Buseck et al.

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I have a comment about the following statement in the paper:

Elemental carbon (EC) is another term used in the aerosol community. It is essentially a high-T residue of thermal-optical measurements. EC is commonly measured together with organic carbon (OC), with the latter being the low-T fraction (Table 1).

This statement is only true for those that use EC measured with thermal-optical techniques. There are others that use single particle mass spectrometers that describe particles as EC which produce a characteristic mass spectrum with mainly C cluster ion peaks. This forms a true chemical structure which goes well beyond an instrumental definition. EC is another form of carbon with mostly sp2 hybridized bonds in sheets (like graphite but more disrupted with sp3 bonds as well). The EC particles qualify as soot also but we use the term EC as it has an actual link to a real chemical structure.
We have written many papers with EC described as such (~50) but none of these are even mentioned or cited. The point of this paper is to add another label – yet I do not say any reason EC or soot cannot still apply. It is true, as the authors point out, that EC is being applied rather loosely by the folks that use thermal optical techniques. But it is also a real structure of mostly carbon.

Several relevant papers which describe the mass spectra of soot or EC particles are listed below. There are many other groups using single particle mass spectrometers that also label mass spectra with carbon clusters as soot. This entire body of literature has been missed in the discussion in the paper.


