

# Interactive comment on “The impact of traffic on air quality in Ireland: insights from simultaneous kerbside and sub-urban monitoring of submicron aerosols” by Chunshui Lin et al.

Specific comments:

Line 15: Space after (OA)

Line 24: Which is the corresponding ratio fpr the whole period?

Lines 25-27: Clarify the periods, heating – no heating.

Line 70: “Residential heating is the major source of HOA”

Line 84: 3 “km”?

Line 129: How far is the airport? Can we trust the meteorological data from that far away? How different is going to be the wind speed/ direction inside the city? Street effect doesn't affect these?

Lines 152-160: Use dots, instead of comas.

Line 153:  $R^2$  for  $NO_x$  and BC?

Line 185: Is there a wind dependency? When N/Ne winds BC was almost hlf, does wind affect the kerbside measurements?

Line 216: Mentioning the diurnal profile at this point can strengthen your point better that the 7-days diagram.

Line 234: I found it confusing, the discussion is about the kerbside measurements and the authors refer to Figure 2b which is about residential. Is this a typo?

Line 259: What about the boundary layer effect?

Line 271: Discuss a bit about the Chloride peaks on 31/10 to 1/11.

Comments about fig. 3c?

Line 282: Discuss a bit about the Chloride peaks on 31/10 to 1/11. Suggestions of origin?

Comments about Fig. 3d?

Line 290: Figure S7 and every OOA spectrum, the high m/z at the beginning in OOA is that of m/z 18? Why do you have such a big signal of water since a Nafion dryer was used?

Line 314: What LV-OOA, what is the source of that factor? Clarify better? Any other correlations to the rest of bibliography?

Line 321: How they get the 38% contribution? Was it compared to other pollutants? Please clarify.

Line 324: Why is there an evening peak?

Line 330: Maybe then this period was not appropriate to call it no heating?

Line 333: The authors state that they chose the peat factor because it had a better correlation than BBOA reported by Ng et al. (2011a). But there is no other comparison to the rest of BBOA factors in the rest of literature. Recent studies has shown that the spectra of BBOA factors can vary a lot, so taking into account only one publication may lead to incorrect results and conclusions.

Line 351:  $f_{44}$  is present and common to every OOA factor. What similarity want the authors to show?

Line 352: It has a pattern. It peaks at night. Suggestions?

Line 397: What is the  $R^2$  between the time series of the factors? Does the correlation indicate common source of the factors? (more factors than should be used etc?)

Line 412: This refer to Kerbside site?

Section 3.5. Discuss more. This is the main conclusion of this work and should include more information.

References: Should all have the same format.

Figure 1: Please redo it. Rathimnes is not very visible with this grey colour. Also, stucking components is creating problems like during the period of 4/10 to 23/10 at Kerbside site where it seems like there is no other component but BC.

Figure S3. Move it to main manuscript.

Figure 2a. During Sunday seems like there is only BC. Fix it.

Figure 2b. BC seems like contributing nothing. Fix it.

Figures 4, 5, 6, 7 (a). Fraction of what?

In overall the manuscript has been improved but still lacks in the section of scientific results.

In introduction the authors state that: “In particular, the diurnal pattern of HOA shows largely enhanced concentration in the evening when compared to that during the morning rush hours, suggesting residential heating is the major source of HOA in suburban Dublin. However, the relative importance of traffic and heating to HOA in different urban settings (e.g., kerbside and residential) and different seasons (e.g., heating and non-heating) remain poorly understood.”

There is an effort in linking these statements to the current work but the authors should clarify better the relation between HOA and residential heating, something that is not very clear in the current version. The importance of HOA is not that high during the heating periods and maybe title should be reconsidered.