

## ***Interactive comment on “Performance of a new co-axial ion-molecule reaction region for low-pressure chemical ionization mass spectrometry with reduced instrument wall interactions” by Brett B. Palm et al.***

### **Anonymous Referee #1**

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“Performance of a new co-axial ion-molecule reaction region for low-pressure chemical ionization mass spectrometry with reduced instrument wall interactions” by Palm et al. describes a new CIMS inlet and methods for determining sensitivities and wall losses that can be applied to other CIMS inlet designs. As the authors state, characterizing instrument performance to “sticky” compounds is very important as instruments become more and more capable of their measurement. The article is a pleasure to read, and I have only a few editorial suggestions. Otherwise I recommend publication in AMT.

Minor suggestions:

33: is “relatively” necessary in this sentence (if so, relative to what?)

181 and 224: I recommend “at the inlet to the IMR” rather than “at the start of the IMR” . . . in the latter the use of “start” seems not quite appropriate.

184: I recommend modifying this sentence to “The flow coming out of both the sample flow laminizer and ion flow laminizer exit in the same plane . . .” (that is, the flows are not co-planar).

244: I recommend “applies mainly to analyte . . .”

249: Is “theoretical” necessary in this sentence?

273: This sentence (to me) is awkward as it suggests surfaces compete for surfaces . . . Maybe change to: “Surfaces can also be modified by other analyte molecules, the latter essentially competing for surface sites.”

316: The reference to Fig. 3 is not correct, but I also think (since this is actually out of sequence) that the whole parenthetical comment can be eliminated (I don’t see how reference to the figure is helpful).

377: correct: “intercation”

441: It may be helpful to note here that there are many studies performed using laminar flow reactors (aka “flow tubes”) that, according to this analysis, could be operated in steady state.

478: Is this sentence necessary? I doubt the reader will forget that the inlet was just described.

494: Similarly, the sentence that starts “Further details of the experimental setup . . .” does not seem necessary.

501: In the sentence: “This way, the surface effects of water vapor on the IMR surfaces were probed.” Is the second “surface” needed?

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