

Interactive comment on “A Vacuum Ultraviolet Ion Source (VUV-IS) for Iodide-Chemical Ionization Mass Spectrometry: A Substitute for Radioactive Ion Sources” by Yi Ji et al.

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In their manuscript ac-2019-02044c “A Vacuum Ultraviolet Ion Source (VUV-IS) for Iodide-Chemical Ionization Mass Spectrometry: A Substitute for Radioactive Ion Sources” the authors describe how to apply a commercially available krypton lamp that emits two Kr lines in the VUV at 123.582 nm (10.030 eV) and 116.486 nm (10.641 eV). The VUV light photo-ionizes either methyl iodide or benzene to form cations and photoelectrons. The authors used two configurations to investigate the different sensitivities and to compare this ionisation with that of a radioactive source.

Here are some items which should be improved:

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Line 17: the light, which is emitted are atomic lines as mentioned above and not wave-length bands as written by the authors. The right values for these lines are given above.

The description of figure 3 and figure 5 is sometimes a little confusing. This should be improved. Maybe the authors could indicate figure 3 a,b,c,d and 5 a,b,c,d instead of saying “upper left” and “lower left”. At line 176 the authors write: “ At 40 Torr, up to 58.9 ppmv C₆H₆ was added to 1.8 ppmv of CH₃I to reach the maximum level of sensitivities (157, 166, and 138 Hz pptv⁻¹ for formic acid, Cl₂ and ClNO₂, respectively) when using 19.0 ppmv of CH₃I.” I suspect the 58.9 ppmv should be exchanged by 19 ppmv as shown in the lower left part of figure 5. Also in Table 1 this should be corrected: Instead of 0-58.9 it should be written 0-19, I guess. It would also be easier for the reader to follow, when in figure 3 upper left would be written in the graph: 9.6 ppmv CH₃I, in the lower left 1.6 ppmv CH₃I, in figure 5 upper left: 8.8 ppmv CH₃I and lower left : 1.8 ppmv CH₃I.

In the figure caption the same values like in the text should be used: 110 ppmv and 8.8 ppmv. It would also be good for the reader to indicate some masses of the spectra like it is explained in the text.

The authors used two configurations to show that configuration a generates many additional ions compared to a radioactive source. The explanation is that these ions might be created by the VUV radiation. Do the authors see all these additional ions also when they do not use any methyl iodine or benzene?

When the above mentioned items are corrected or improved the manuscript should be published.

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