Reviewer A:

REPORT:
        This manuscript sound interesting and describes an interesting application of dispersive SPME using ionic liquid IL) with magnetic graphene oxide (MGO) particles for Hg (II) determination in water and vegetables. The work seems to be carried out with care but in my opinion text should be reorganized showing exactly which is the main focus, if the synthesis of IL preparation and preparation and characterization of MGO or the determination of Hg(II) in water and vegetables. The way as the manuscript is organized is some confusing. I do suggest to propose the development of a method for IL loaded with MGO e propose Hg(II) determination just as an example of application. English is acceptable but revision is required. Therefore, I could recommend this manuscript with Minor Correction and as a Short Communication. Other
comments are below:
Author’s response

In respond to your comment the expanded uncertainty has been calculated by eq 2-4 and presented in table 2.

1. It is very strange to find "clear transparent digests were obtained..." just using a mixture of HNO3 and H2O2 at 80oC. In my research group we have worked by more than 20 years with these matrices and HNO3 digestion and with just 80oC is practically impossible to achieve "transparent" digests (at least if one day by heating is used...). Please, check this statement.
Author’s response

Thank you for your attentions, It has been corrected in the manuscript.

2. Too many figures. I do suggest reducing the number of figures keeping just the essential ones (other figures could be moved to a Supplementary Information Section).
Author’s response

4 figures related to the characterization of the sorbents has been sent to Supplementary Information Section as Fig S1 to S4.

3. A problem is that Hg(II) was not detected in anyone real sample. Is the proposed method really suitable for Hg(II) determination in this kind of matrices, even considering a 200 fold-times enrichment? (please, notice that in Line 90-91 authors wrote "...samples with satisfactory results.".
Author’s response

You are right. So in response to your comment expression of “with satisfactory results.” has been removed.

4. Introduction, 1st paragraph 9lines 27-36): all these sentences could be deleted. it is too basic and well-known information and it does not bring any benefit to remaining text.
Author’s response

Thank you for your considerations, I agree with you about line 27-31 but the sentences after that, which are related to the next paragraph, I think it is better to merge them in the nest paragraph.

5. Line 38: Is really X-ray fluorescence used for Hg determination in water? Please, check it. Moreover, why ICP-MS was not cited together other techniques?

Author’s response

The reference was about the usage XRF on Hg determination in tooth, not in water. So, in respond to your comment the reference 4 has been removed and a new reference has been added as ref 4.

6. Line 61: "have been" instead of "were" (in line "...and graphene oxide were used...). Line 120: please revise the meaning of this sentence "To synthesis the ionic liquid..." (synthesize?)
Author’s response

The mentioned sentences has been modified.

7. Line 128: Reference 33 is from 1958. Is there any other more recent to cite here?

Author’s response

It has been replaced by one of our recent papers.

8. Line 132: please use "mol L-1" instead of "M".

Author’s response

It has been replaced.

9. Line 136: "coworkers" instead of "coworker".
Author’s response

It has been replaced.

10. Line 147: "...of IL-MGO were.." instead of "was".

Author’s response

It has been done.

11. Table 4: please define what it means "PF".

Author’s response

Is means preconcentration factor. It is described at page 20 line 335

12. Line 367: what does it mean "anti-interference".

Author’s response

The word is replaced by “selectivity”

Reviewer B:

        This paper could be accepted for publication however some important information are missing, some sentences are not completely clear.  It would be important to emphasize why ionic liquid was used in this work and to point out influence of each component of IL-MGO on Hg(II) absorption. Also, more detail analysis of GO is needed.

Author’s response

The influence of each component of IL-MrGO has been discussed in page 9-10 effect of pH. Two major part of IL-MrGO influence in the sorption of Hg(II) first oxygen containing groups and the second part which the most important one is the sulfur of L-cysteine. The oxygen containing groups interact to Hg(II) by electrostatic interaction and sulfur make a complex with Hg(II). The new experiment (XPS and TGA) for characterization of IL-MrGO has been done wich added to Fig S3 and S4

Detailed comments:

1. At Page 3...line 64.
˝GO  posses  large delocalized π-electrons and in the case of GO delocalisation area is decreased significantly,˝ This sentence should be corrected because graphene posses large delocalized π-electrons area and GO has significantly decreased area with delocalized π-electrons.
Author’s response

It has been corrected, accordingly.

2. Page 3...line 68,
˝However, according to our literature survey, the used GO have had the limitation of water instability and toxicity in application to real samples.˝
This sentence is not completely clear!?
Author’s response

It has been corrected.

3. Page 4:
It was concluded that ˝...no centrifugation is required for phase separation.....˝ However at page 7 in experimental part it is evident that solution was centrifuged:
˝Subsequently, the IL–MGO was isolated from the solution by
centrifugation at 5000 rpm for 4 min and the upper phase was discarded ˝(Page 7, line 152).  This contradiction should be corrected.
Author’s response

It has been corrected.

4. Page 5 line 104˝...... was out.....˝.............correct to was-carried out
Page 5 line 120 .... ˝To synthesis the ionic liquid˝......correct to ˝....to synthesise.....˝
Author’s response

The corrections have been applied, accordingly

5. Page 8. The authors have mentioned Fe2O3 NP, but abbreviation NP was not described in experimental part neither Fe2O3 NP preparation was described. Please correct this.
Author’s response

The description of Fe3O4 NPs has been added to experimental section line

6. From the experimental part and results it is not clear if GO is reduced in contact with IL or not. It was reported in ref. [34] that GO is reduced by using IL, however in this paper it was concluded that final obtained product is IL-MGO which means that graphene structure exists in GO form.

Usual abbreviation for reduced form of GO is rGO.  Moreover at page 12 authors claim that used sample is reach in oxygene functionalities that is characteristic of GO. Therefore more detail analysis of graphene structure should be given. As well, the reason to modify MGO with IL should be described. In this paper there is high number of informations but detail characterisation of IL-MGO is missing. Fe2O3 is characterized by XPS and XRD, however, GO structure that is
important  for adsorption process is not characterized.  XPS and TGA methods were used in this paper and these methods are suitable for graphene structure analysis.
Author’s response

The correct abbreviation (IL-MrGO) has been replaced. Moreover new TGA and XPS experiments have been done to know more about the structure of GO and IL-MrGO. The XPS analysis showed that the IL-MrGO still has some oxygen containing groups.

7. Page 9, line 189-192. Please use the abbreviations throughout the text. For example at page 7 from line 189-192 authors use first full name (ionic liquid modified magnetic graphene oxide ) and in the next sentence abrevation IL-MGO. It is more easy to read a text if abbreviations are used and also this will shorten the text.
Author’s response

The abbreviations has been introduced in abstract and used in the next sentences.

8. This information is not important for this paper (page 9):
˝The nitrogen adsorption-desorption isotherms of graphene oxide and ionic liquid modified magnetic graphene oxide show a type IV  isotherm according to IUPAC classification corresponding to mesoporous solids.˝

Author’s response

In respond to your comment, the mentioned text has been omitted.

9. The speciific surface area for GO is obtained to be 2400 m2 g-1, it is very close to theoretical value for graphene (2650 m2 g-1). However, the authors have prepare dry samples by drying under vacuum at room temperature or at elevated temperature and in these conditions it is not possible to achieve  such high area since graphene oxide and graphene are prone to agglomeration. Only by freeze drying or critical CO2 drying it is possible to obtain high surface area. Please explain this.
Author’s response

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10. Page 10. The authors have concluded that lower mass change in the case of IL-MGO compared to GO is obtained due to the presence of Fe2O3.  To be able to carry out any conclusion from TGA results it is important to compare TGA of GO, MGO and IL-MGO as well as IL, otherwise presented result is useless.
Author’s response

Thanks for your nice point of view. The TGA of MGO has been added and compared with others.

11. Page 25...ref. 37...the volume should be bolded
Author’s response

It has been done