Comments by referees are in blue.

Our replies are in black.

Changes to the manuscript are highlighted in red both here and in the revised manuscript.

Reply to referee #1

General comments:

The submitted MS egusphere-2026-3780 highlights new iron isotopes measurements in anthropogenic aerosol samples. This research work highlights "Isotopic composition of aerosol iron from anthropogenic source". This study has high scientific significance, improving our current understanding of iron isotopic source signatures. There are very few studies discussing Fe isotope signature in anthropogenic aerosol, which makes this MS special. This manuscript perfectly fits with journal criteria. The scientific quality and presentation quality of the paper are excellent and need minimal improvement. The new Fe isotope data on anthropogenic aerosol will improve source apportionment capability by enhancing end member criteria. Before the publication of this manuscript, the author should address few minor corrections, which will improve the manuscript quality. Those corrections are listed below

Reply: We thank ref #1 for the highly positive evaluation of our manuscript and for recommending its publication after minor revision. We have carefully addressed all the comments, as detailed below.

Specific comments:

Line 106-108: "In contrast to what is conventionally assumed, we found…." this is the result/ conclusion of the paper, it will be ideal if you include in the conclusion section not in the introduction section.

Reply: We agree with this comment. In response, we have deleted the two sentences in the original manuscript "In contrast to what is conventionally assumed.

Furthermore, in the revised manuscript (page 5) we have added the following sentence: "We further discuss the implications of our work for Fe isotope-based source apportionment."

Line-188-189: Author conducted sequential protocol at 120 oC, using 1) HNO3-HF, 2) H2O2-HNO3, 3) Aqua Regia, and 4) HCl, respectively. Is it necessary to conduct step-2, in general H2O2-HNO3 used for removing organic matter and volatiles as a predigestion step. Authors

were also followed the same for their fly ash samples (line-193-195). If they followed two different methods, it should be justified with proper descriptions as well as references.

Reply: We used two different methods to digest our samples, and H_2O_2/HNO_3 was used in both methods to remove organic materials. The major difference between the two methods was that microwave-assisted digestion was used in the second method for complete dissolution of carbonaceous and/or refractory materials.

For the sake of better clarity, in the revised manuscript (page 9) we have made the following change: "As detailed in the Supplement (Sect. S1.2), desert dust, power plant coal fly ash, municipal waste fly ash, oil bottom ash, and urban particulate matter samples were digested by a sequential protocol at 120 ^{o}C, using 1) HNO_3-HF, 2) H_2O_2-HNO_3, 3) Aqua Regia, and 4) HCl, respectively. Steelwork fly ash and biofuel burning aerosol samples contained substantial amounts of carbonaceous or refractory materials, and thus required microwave-assisted digestion to achieve complete dissolution. As a result, these samples were digested using the following sequential digestion protocol, namely 1) pre-digestion in HNO_3-H_2O_2 at room temperature, 2) microwave-assisted digestion in HNO_3-HF, 3) heated dissolution in Aqua Regia, and 4) heated dissolution in HCl."

Section-2.2.2 (line-199-209) references for the purification steps should be included.

Reply: As suggested, in the revised manuscript (page 9) we have included two references for chemical purification we used: "Chemical purification, which minimizes matrix effects and enhances the accuracy of Fe isotope analysis, is an essential step for high-precision Fe isotope analysis (Conway et al., 2013; Zhang et al., 2025)."

In addition, we have made the following change (page 9) to provide more information for the purification steps we used: "In this study, chemical purification of Fe was achieved using a single column filled with AGMP-50 cation exchange resin (Bio-Rad, USA), as described in the Supplement (Sect. S1.3), and further details could be found elsewhere (Zhu et al., 2020)."