The authors present an approach which utilizes this interference to determine the concentration of hematite via thermal-optical analysis using a Lab OC/EC Aerosol Analyzer (Sunset Laboratory Inc.) and the EUSAAR2 protocol. Generally, the manuscript is well written and easy to follow. The investigation fits the scope of this journal. However, I think the major defect of this study is that only illustrates the Fe effect on EC measurement, but without any discussion about the detection of OC concentration. Therefore, I suggested that the manuscript can be accepted only with major revisions as follows.

Major issues:

1. The calibration of Fe in snow samples by the TOA method is quite useful. However, I am a little puzzled that why the authors are only interested in the occurrence of mineral dust in snow samples. Does it mean that this investigation is only useful for snow samples? As the author illustrated that the PM_{10} samples can also obtain high amounts of Fe loadings, such as tunnel samples.
2. Reconstructed the abstract, as shown above, why only mineral dust and elemental carbon in snow samples are pained more attention? The mineral dust can also lead large bias of EC and OC concentrations for aerosol samples due to the temperature dependency of the transmittance signal determination.
3. I wonder to know what's the relationship between the attenuation and the hematite loading of less than 10 μgFe cm^{-2}. Because the bulk aerosols or snow samples can be loaded with lower Fe concentrations.
4. Although the major issue of this study focused on the bias of Fe on TOA techniques, However, there may be a large bias to account for insoluble OC concentration by using a microwave during the snow melt process.
5. In section 2.3, the author should provide more description of the relationship between the MD and Fe_2O_3, without only cited with previous studies.
6. Same as above section 3.1 is too general, the author should provide more details about the procedure of the treatment.
7. In section 3.2, as least, the detection limit of Fe_2O_3 should be given by ICP-MS or OES.

8. Actually, section 3.4 and Figure S2 are nothing useful and can be deleted directly.
9. The caption of Figure S2 is unclear. Does Figure S2 is standard samples or observed samples?
10. Finally, as Wang et al. (2012) indicated that the mineral dust mainly induces an extra decrease in optical reflectance during the 250 ^{O}C heating stage, thereafter, lead potential bias in the EC and OC split. But I didn't find any related illustration or explanation of such an issue in this study. I suggested the author should provide further details on this major issue of the split of EC and OC in snow samples to prove this useful approach.
11. Finally, the author should note that there is potential mass loss of BC or MD on 1.0 μm quartz fiber filters compared with 0.4 μm Nuclepore filters, as shown in Figure 5 by Wang et al. (2020).
12.

References:

Wang M, Xu B, Zhao H, Cao J, Joswiak D, Wu G, et al. The Influence of Dust on Quantitative Measurements of Black Carbon in Ice and Snow when Using a Thermal Optical Method. Aerosol Science and Technology 2012; 46: 60-69.

Wang X, Zhang XY, Di WJ. Development of an improved two-sphere integration technique for quantifying black carbon concentrations in the atmosphere and seasonal snow. Atmospheric Measurement Techniques 2020; 13: 39-52.