

Interactive comment on “Dust sputtering within the inner heliosphere” by Carsten Baumann et al.

Anonymous Referee #2

Received and published: 30 May 2020

Dust sputtering within the inner heliosphere

Carsten Baumann, Margaretha Myrvang, and Ingrid Mann

General Comments ————— The paper is nicely written and addresses important aspects of small dust entering the inner solar system. The paper is recommended for publication, only minor details shall be addressed.

Detailed Comments: ————— Abstract: Instead of "particles" use "ions" since you known what your particles are.

Line 21: Spell out "WISPR", or is it "WISPER"

Line 42: Write "... as solar wind ions hit dust particles."

Line 47: Typo "examplless"

C1

Line 63: Write "... bombardment by energetic ions ..."

Line 65: "... and form high quality surfaces." Perhaps you want to add the ref. J. E. Greene, *Jou. Vac. Sc. Techn. A* 35, 2017 , 05C204

Line 80: "... used for the solar wind / CME conditions .." spell out "/"

Table 1: Perhaps you want to add two columns to give the (fractional) abundance of He and heavies.

Line 91 ff: use italics for the formula symbols, same as in the formula.

Line 95: Write "... correspond to the atomic abundance ratios of the dust composition and the ion abundance ratios"

Figure 2: The absolute sputter yield is somewhat misleading, since only the sputter yield prorated to the solar wind ion abundance applies. Perhaps you plot the prorated sputter yield for all the solar wind ions, and sum curve that adds the yield contributions from H to Fe stepwise, thus showing their contributions. If you do that also for fast SW and CME you will get a very strong plot.

Line 100: I guess you mean "(H - Iron, Fe),"

Line 151: Write "... have sputtering lifetimes that can reach ..."

Line 179: Typo: "... assuming the dust is in at a distance ..."

Line 194 ff: use italics for the formula symbols, same as in the formula.

Line 202ff: "re-emitted" wouldn't "emitted" just do it? It is a photon of different energy anyway.

Line 209: Typo: "... material(not shown)."

Line 230: use italics for the formula symbols, same as in the formula.

Line 237: Write "... are larger than 10^5 d." Remember the difference of drinking a

C2

great cup of tea, and drinking a large cup of tea.

Line 243: Write "(see Fig. 2)." I guess.

Line 248: "prove" → "evidence", I guess.

Line 261: Write "... at much larger distances ..."

Line 288ff: These arguments imply that the average composition of small grains changes when getting closer to the Sun. Maybe you want to elaborate on this argument.

Line 311: "the fragile nanodust" this is the first time this classification is presented. Does that imply that the nano-dust is not a solid, but small, grain, but more a composition of many grains loosely attached to each other?

Line 324ff: Sublimation seems to be important around 0.1 AU. Shouldn't there be an optical signal if you would look at optical lines of sublimated material located at about 0.1 AU. Can you address this with Solar Orbiter or PSP?

Line 341: Write "... distances from the Sun, i.e. 1 AU and further out."

Interactive comment on Ann. Geophys. Discuss., <https://doi.org/10.5194/angeo-2020-30>, 2020.