

Geochronology Discuss., referee comment RC2
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Comment on gchron-2021-28

Hideki Iwano (Referee)

Referee comment on "Short communication: Experimental factors affecting fission-track counts in apatite" by Carolin Aslanian et al., Geochronology Discuss., <https://doi.org/10.5194/gchron-2021-28-RC2>, 2021

Comments to the Authors

This paper reported experiments concerning the effects of grain orientation, polishing, etching and observation on fission-track counts in apatite. The paper also showed results were systematically obtained and theoretically explained in the framework of a recent etch model. I think this is an article worth reading for FT researchers, therefore my recommendation would be publish this paper as a short communication. The following comments should be further developed for publication.

Fig.1

- Explanation for regression line is needed in the caption.

Table 1

- The track densities of B00 and B60 are clearly smaller than those of P00. Is this a difference due to U concentration? If not, which one is closer to the true track density?

Fig.5

- I am amazed at the number of track-shaped pits in the reflected image. Of course the authors counted them as a fission track. What are the criteria for track identification? Please describe them for each (TL and RL). If there are several etch pits detected by apatite that is totally annealed at 450 ° C, I think it can be set as the minimum noise to identify (count) fission tracks. Additional images of totally annealed samples are needed and helpful.

Fig.6

- Between 0.7 and 1.0, track density for RL is higher than TL. This means that the track identification criteria are different. Please describe the identification criteria for minimum track, at least.

Table 3 and Figure 6

- Are there data at 450 ° C for total annealing? I am very concerned about the density of track-like defects.