Interactive comment on "The closure temperature(s) of zircon Raman dating" *by* Birk Härtel et al.

Airton Dias (Referee)

diasanc@ufscar.br

Received and published: 15 March 2021

Authors: Birk Hartel, Raymond Jonckheere, Bastian Wauschkuhn, and Lothar Ratschbacher Ms. Title: THE CLOSURE TEMPERATURE(S) OF ZIRCON RAMAN DATING

GENERAL COMMENTS:

I suggest that the article be ACCEPTED.

I have no serious corrections to the manuscript. It is very well written and the description of the results (content and figures) is excellent.

I make a single suggestion in order to increase the reference base of the manuscript

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and a single question on a methodological level. In addition, I make some technical suggestions for improving the text.

SPECIFIC COMMENTS:

There are some points that should be addressed by the authors to improve the quality of the paper.

1) I suggest reading the article by Dias et al., 2020 (doi:10.1166/jnn.2020.17172). It is related to the content of this article. It may be an updated reference.

2) In the METHODS AND MATERIALS (2.2 RAMAN SPECTROMETRY), the laser used in the experiments is presented: 488 nm - line 64. I would like to know why this laser was used instead of laser regularly applied (514 and 633 nm)? What are the advantages of using laser 488 nm? Finally, I would like to receive more information to justify this choice. I even think that such information should be included in the text (even succinctly).

TECHNICAL CORRECTIONS:

âĂć All manuscript: change "fission track" by "fission-track"

âĂć Introduction, line 21: remove the word "of". It is unnecessary.

âĂć Introduction, line 47: change "Our aim is" by "We aim".

âĂć Annealing experiments, line 78: change "one hour" by "one-hour".

âĂć Changes in band position and width, line 84: change "is" by "are".

âĂć Changes in band position and width, line 89: insert "a" before "slope".

âĂć Changes in band position and width, line 91: remove the word "the" before "stage". It is unnecessary.

âĂć Changes in band position and width, line 97: remove the word "the" before "stage". It is unnecessary.

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âĂć Changes in band position and width, line 104: insert "s" after "stage".

âĂć Changes in band position and width, line 123: remove the word "of" before "the decrease". It is unnecessary.

âĂć Kinetic modeling and closure temperature, line 154: change "age" by "ages".

âĂć Kinetic modeling and closure temperature, line 161: remove the word "an" before "activation". It is unnecessary.

âĂć Kinetic modeling and closure temperature, line 173: change "are" by "is".

âĂć Kinetic modeling and closure temperature, line 191: remove the word "the" before "faster". It is unnecessary.

âĂć Kinetic modeling and closure temperature, line 196: remove "," after "timescales".

âĂć Kinetic modeling and closure temperature, line 206: remove "a" before "lower". It is unnecessary.

âĂć Conclusions, line 249: change "for" by "of".

âĂć Conclusions, line 252: change "for" by "in".

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