Solid Earth

Discussions

Open Access

EGU

Interactive comment on "High stresses stored in fault zones: example of the Nojima fault (Japan)" *by* Anne-Marie Boullier et al.

B. Anne-Marie

anne-marie.boullier@univ-grenoble-alpes.fr

Received and published: 19 January 2018

This answer to referee 2 has been written by O. Robach.

1. "Residual stresses are calculated from elastic strain measured by X-ray Laue microdiffraction and stress peaks at 100 MPa (mean 141 MPa)."ÂÌ In fact the "residual stress" should be explained and discussed in several aspects. It should be emphasized that the measured strain was actually deviatoric strain tensor, but the full strain tensor. Therefore, the stress tensor calculated was neither full stress tensor nor deviatoric stress tensor, and thus the so-called von Mises stress is not the real von Mises stress. How different could it be? A discussion would be appreciated. We agree with that and will provide an estimate of the error committed on the von Mises using this

approximation.

2. "Quartz has trigonal symmetry, which leads to some possible ambiguity for the Laue pattern indexing, as shown in some reference papers, for example Journal of Applied Crystallography, 45, 982-989, DOI: 10.1107/S0021889812031287, 2012. Thus more details about how LaueTools handle such problem are welcome. We will add a comment about this issue in the paper together with the JAC reference. The ambiguity between the two variants of the Dauphiné twins [ref JAC] was not lifted in the present 2-spots analysis, the map being located mostly in a single variant. The small domain of Dauphiné twin detected by EBSD in the region of the micro-Laue map is clearly visible in the micro-Laue map when mapping the maximum intensity of the second spot, as shown in the new figure that will be added to the supplementary material. We still need to figure out if our indexing of the spots is correct, based on the relative intensities of the various HKL spots. Thanks to the referee for pointing this.

3. Page 16. "Indeed, although in theory a multi-grain indexation procedure could be applied to the multi-spot Laue pattern, in order to individually index each sub-spot present on the beam path, in practice the corresponding code for closely-spaced sub- spots is still unavailable."ÂÌ This is not real. The code is available and practical in many Laue data analysis software packages. Thanks for pointing this. Could you please provide a reference and the name of a package that would be able to automatically sort the sub-grains in a pattern such as the one shown in [Figure 2c - zoomed region number 2] ? Our impression was that when the distance between sub-spots is comparable to the tolerance used to decide if two distant spots are in the same sub-grain the automated indexation fails.