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Interactive comment on "The morphology and surface features of olivine in kimberlite lava: implications for ascent and emplacement mechanisms" *by* T. J. Jones et al.

M. J. Heap (Editor)

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Dear Mr. Jones,

Thank you for submitting "The Morphology and Surface Features of Olivine in Kimberlite Lava: Implications for Ascent and Emplacement Mechanisms" to Solid Earth. As you can see, we have now received two reviews of your manuscript. Based on these reviews I find that your manuscript is suitable for publication in Solid Earth, pending minor/moderate revisions. Overall the reviews are very positive and encouraging. Please now prepare your rebuttal letter (giving detailed responses to the comments of both reviewers, and my minor comments below) and revised manuscript, paying particular

attention to: (1) the volume proportions of the mantle material and the olivine content of the kimberlite lava, as requested by reviewer #1 and, (2) the composition of the olivines (using a microprobe or SEM) and mineral removal during kimberlite ascent, as requested by reviewer #2.

We hope you consider Solid Earth for your future publications.

Mike Heap (Topical Editor)

Minor comments:

Page 2284 Line 8: "Scanning electron microscopy"

Page 2285 Line 15: You should add "(SEM)"

Page 2285 Line 19: Why these lavas exactly? Are they fresh? Are they representative of kimberlite lavas worldwide? I would add a short sentence here explaining your choice.

Page 2286 Line 18: "rimmed"

Page 2288 Line 10: EDS?

Page 2290 Line 6: I would state upfront that these analyses are 2D.

Page 2291 Section 5.2: How many olivine crystals did you inspect?

Page 2292 Line 25: I would change "having" to "with".

Page 2293 Line 3: What do you refer to by "x-axis"?

Page 2293 Line 11: Did you not just say they were 50 microns?

Page 2293 Line 23: How do you know they have identical chemistry?

Page 2293 Line 26: I would remove "themselves"

Page 2294 Line 23: Did you consider thermal cooling cracks?

Page 2296 Line 15 (also Page 2297 Line 11): There is an important distinction here. Are these features unique to the IHV lavas? Or is their observation in kimberlite lavas unique?

Page 2296 Line 26: Was there any evidence for collision-induced fracturing?

Interactive comment on Solid Earth Discuss., 5, 2283, 2013.