

**Crystal habit (tracht) of groundmass pyroxene crystals recorded magma ascent paths
during the 2011 Shinmoedake eruption**

Shota H. Okumura^{1*}, Mayumi Mujin², Akira Tsuchiyama^{3,4,5}, and Akira Miyake¹

¹Department of Geology and Mineralogy, Graduate School of Science, Kyoto University, Kitashirakawaoiwake-cho, Sakyo-ku, Kyoto 606-8502, Japan

²Department of Earth Science, Graduate School of Science, Tohoku University, 6-3, Aramaki-Aza-Aoba, Aobaku, Sendai 980-8578, Japan

³Research Organization of Science and Technology, Ritsumeikan University, 1-1-1 Nojihigashi, Kusatsu, Shiga 525-8577, Japan

⁴CAS Key Laboratory of Mineralogy and Metallogeny/Guangdong Provincial Key Laboratory of Mineral Physics and Materials, Guangzhou Institute of Geochemistry, Chinese Academy of Sciences, 511 Kehua Street, Wushan, Tianhe District, Guangzhou 510640, China

⁵CAS Center for Excellence in Deep Earth Science, Guangzhou 510640, China

*Corresponding author: okumura@kueps.kyoto-u.ac.jp

Online Resource 3: Determination of the 3D shapes of groundmass pyroxenes by SR-XnCT

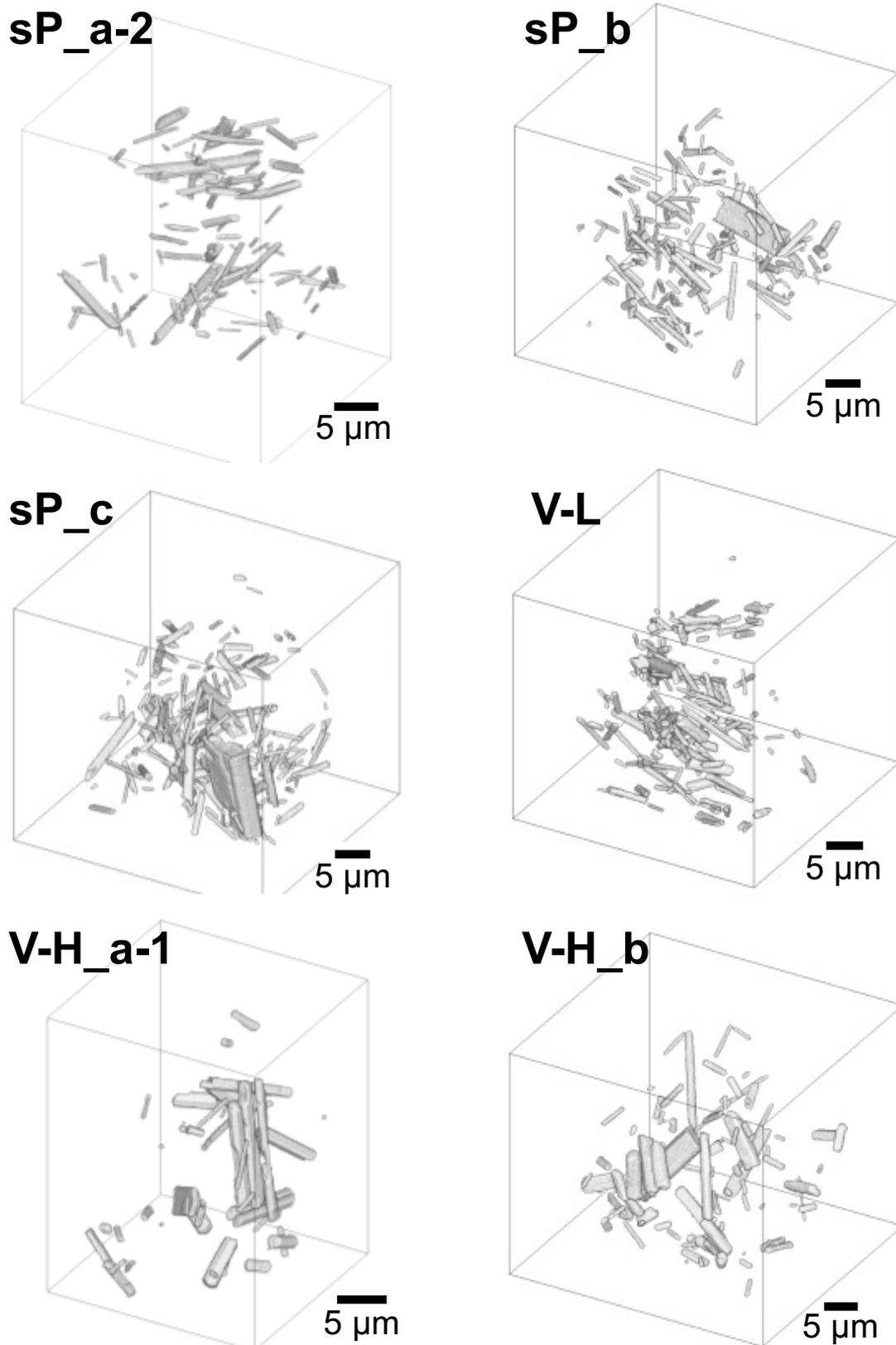


Figure S2. 3D shapes of groundmass pyroxene crystals in pumice. These 3D images were acquired by SR-XnCT analyses. The 3D images for the two remaining CT specimens (i.e., sP_a-1 and V-H_a-2) are presented as Figure 5 in Okumura et al. (2022a).

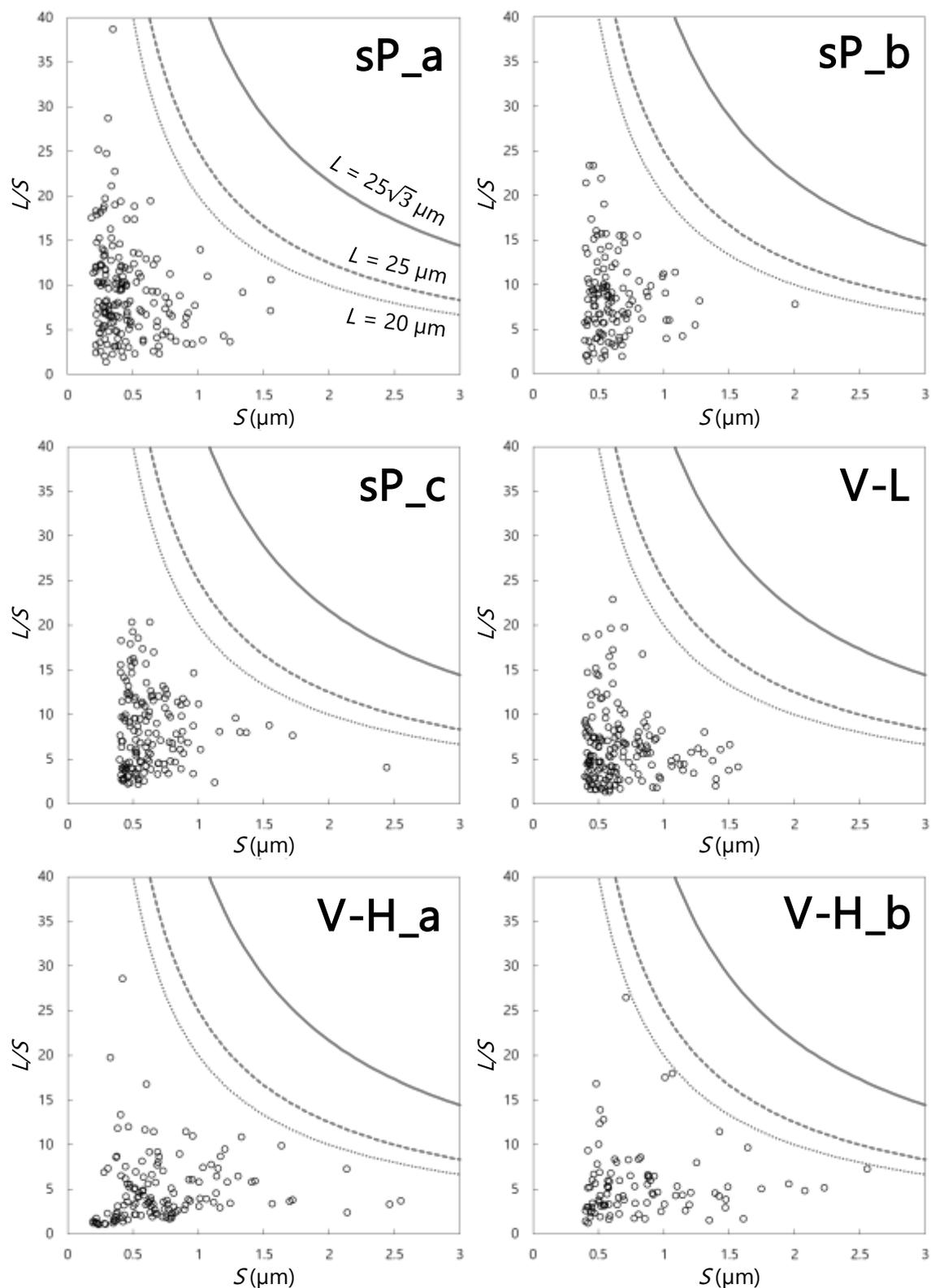


Figure S3. The degree of elongation (L/S) vs. short-axis length (S) of groundmass pyroxenes. Data points are SR-XnCT data for each pyroxene crystal. The solid, dashed, and dotted lines indicate contours for $L = 25\sqrt{3}$, 25, and 20 μm , respectively. We were unable to measure crystals longer than $25\sqrt{3} \mu\text{m}$ due to the limited size of the CT specimens (about 20–25 μm on a side).

Reference cited

Okumura, S.H., Mujin, M., Tsuchiyama, A., and Miyake, A. (2022a) 3D crystal size distributions of pyroxene nanolites from nano X-ray computed tomography: Improved correction of crystal size distributions from CSD Corrections for magma ascent dynamics in conduits. *American Mineralogist*, 107. <https://doi.org/10.2138/am-2022-8039>