Accepted Manuscript

Intracrystalline deformation of garnet, wollastonite and pectolite grains during development of a crenulation cleavage in the sheared skarn

Ramin Elyaszadeh, Khalil Sarkarinejad, David J. Prior

PII: S0191-8141(17)30131-1

DOI: 10.1016/j.jsg.2017.06.010

Reference: SG 3493

To appear in: *Journal of Structural Geology*

Received Date: 14 February 2017

Revised Date: 8 June 2017

Accepted Date: 13 June 2017

Please cite this article as: Elyaszadeh, R., Sarkarinejad, K., Prior, D.J., Intracrystalline deformation of garnet, wollastonite and pectolite grains during development of a crenulation cleavage in the sheared skarn, *Journal of Structural Geology* (2017), doi: 10.1016/j.jsg.2017.06.010.

Intracrystalline deformation of garnet, wollastonite and pectolite grains during development of a crenulation cleavage in the sheared skarn.

Ramin Elyaszadeh[a], Khalil Sarkarinejad[a*], David J. Prior[b]

[a]Department of Earth Sciences, School of Sciences, Shiraz University, Shiraz, Iran.

[b]Department of Geology, University of Otago, 360 Leith Walk, Dunedin 9056, New Zealand

[*]Corresponding author: Sarkarinejad@susc.ac.ir (K. Sarkarinejad)

Ramin403@gmail.com (R. Elyaszadeh)
Sarkarinejad@susc.ac.ir (K. Sarkarinejad)
david.prior@otago.ac.nz (D. J. Prior)

Abstract

This study focuses on a mylonitic skarn at the margins of a harzburgite of the Neyriz mantle diapir, Iran. The studied sample contained garnet porphyroclasts in a wollastonite and pectolite matrix. The microstructures of porphyroclasts and matrix are analyzed using electron backscatter diffraction (EBSD). Detailed analysis of garnet porphyroclast distortions and subgrain boundary trace analysis suggests that (110) <110> dislocation control intracrystalline deformation of garnet grains. Wollastonite and pectolite crystallographic preferred orientations (CPOs) are dominated by (100) parallel to foliation plane and <010> parallel to lineation. However, a dominance of low angle misorientation axes parallel to <010> precludes <010> dislocations from significant involvement in intracrystalline deformation. Schmid factor analysis also shows this slip system does not have high integrated Schmid factor. These observations suggest that