



Continuous slip-system transition in naturally deformed plagioclases from the Southern Iberian shear zone (SW Spain)

M. Díaz-Azpiroz (1), G.E. Lloyd (2)

(1) Dpt. Sist. Fis. Quim. Natur. Univ. Pablo de Olavide, 41013 Seville, Spain. (2) School of Earth & Environment, The University, Leeds LS2 9JT (UK). (mdiaazp@upo.es)

Seven samples from three cross-sections through the Southern Iberian Shear Zone (SISZ), which deforms the Acebuches metabasites (SW Spain), have been analysed via SEM/EBSD to obtain their plagioclase crystal lattice preferred orientations (LPO). Within the SISZ, the temperature decreases towards the structural bottom and the strain increases in the same sense (Díaz Azpiroz and Fernández, 2005). The metabasites affected by the SISZ under amphibolites facies metamorphism (samples V1, V3, A3, A4 and PV3) exhibit well-developed LPO characterised by alignment of [100] parallel to the tectonic X-direction (the stretching lineation related to the SISZ). In contrast, the orientation of [010] and [001] are somewhat different. In samples V1 and A3, [010] is subparallel to the Y-direction, whereas [001] shows different maxima on both sides of the Z-direction (poles to the mylonitic foliation of the SISZ) joined by a girdle. In samples V3 and PV3, [010] lies parallel to the Z-direction whereas [001] approximates the Y-direction. Sample A4 seems to represent an intermediate case between the other two, with [010] parallel to the YZ-plane but with a maximum in an intermediate position between both axes. Samples V4 and PV7, which deformed under upper-greenschists facies conditions, exhibit a weak LPO, although that from sample V4 is similar to that observed in sample V3. The [100] direction can be interpreted as the slip-direction of the slip-system. However, in the SISZ, there seems to be a continuous transition in the plagioclase slip-plane from (010) in the lower-temperature samples (V4, V3 and PV3) to (001) in the higher-temperature samples (V1 and A3). Sample A4 perhaps represents a transition stage in which both slip-systems would be active. Also, the weak LPO shown by the mafic schists (samples V4 and PV7), which are the most deformed ones, suggests the influence of LPO-destroying mechanisms

such as brittle deformation, which is further evidenced by the intense fracturing observed in both samples. On the other hand, most plagioclase grains from sample PV7 appear surrounded by amphibole. In such conditions, it is likely that plagioclase did not have space to deform plastically and to develop a strong LPO.

Díaz Azpiroz, M., Fernández, C. (2005) *Tectonics*, 24, TC3010, doi:10.1029/2004TC001682.