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**IT-4-P-3145 Application of EBSD technique to analyze the microstructure and texture in Peridotites from Archipelago of São Pedro and São Paulo**

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The Archipelago of São Pedro and São Paulo consists in a set of island where rocks from the Upper Mantle outcrops above the sea level [1]. They are a rare example in the world with such this feature. Samples from their rocks were collected for microstructural and crystallographic texture analysis with the aim to get insight into the mechanisms involved in the formation of these rocks, as well as, to infer the deformation mechanisms that developed the observed structures. To achieve that, we use a combination of optical microscopy, to see the whole picture of the microstructure alongside with the powerful of the EBSD analysis. The rocks are Ultramylonite of Peridotite composition. Porphyroclasts of Olivine are deformed by dislocation creep and show subgrains, sweeping undolose extinction, and tails of recrystallized grains of delta type indicate a sinistral sense of shear [2]. The new recrystallized grains adjacent to the clast show crystallographic preferred orientation (CPO) compatible with recrystallization mechanisms of subgrain rotation with some grain boundary migration. In contrast, moving towards the matrix the Olivine grains are much smaller than those close to the clast and there is a weak to random crystallographic texture. A mechanism involving grain boundary sliding assisted by diffusional creep is proposed for the accommodation of the deformation in the matrix. The main challenge is that, it is also not completely ruled out some reaction between minerals in the matrix. Since some grains do not match any minerals loaded in the EBSD acquisition software (CHANNEL 5, in Flamenco mode), and if the nonindexing problem is a matter of phase reaction or the resolution SEM used in the analysis.

References:

[1] [www.mar.mil.br/secirm/publicacao/arquipe.pdf](http://www.mar.mil.br/secirm/publicacao/arquipe.pdf)

[2] Ron H. Vernon, A Practical Guide to Rock Microstructure, Cambridge University Press, Oct 7, 2004

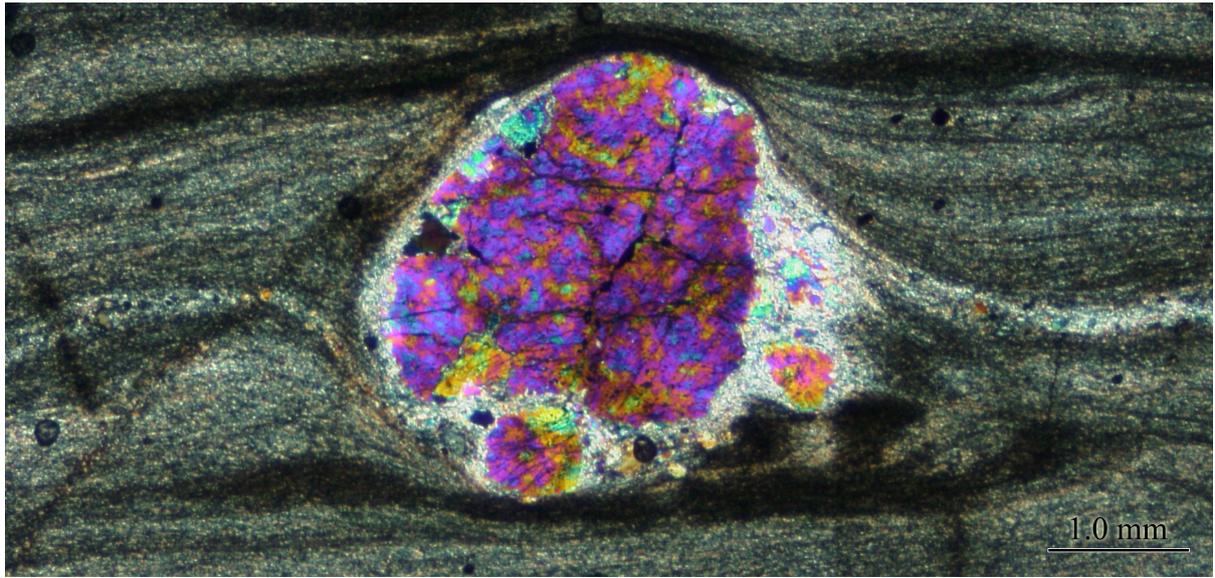


Fig. 1: Optical image from a characteristic clast from the ASPSP.