

Determination of differential element mobility in a shear zone of Copacabana Range, NW of Argentina.

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Copacabana Range is compound mainly for a granitic basement, denominated Copacabana Granite, of upper ordovician-silurian age and cataclastic rocks developed from this, as consequence of the dynamic metamorphism that would have taken place in the region during the upper paleozoic. Field relations, petrographic studies and chemical analysis provide evidence that the cataclastic rocks derived from the enclosing granite. The mineralogy of Copacabana granite consists on quartz, K feldspar, plagioclase, muscovite, biotite and garnet, while the cataclasites present similar mineralogy, with epidote and richest in muscovite. The chemical analyses indicate that the compositions of both, granite and cataclasitas are homogeneous on a regional scale, with a range from 65 wt% and 75 wt% of SiO₂. The homogeneity of both rocks is also evident in a CIPW normative quartz-K feldspar-plagioclase ternary diagram. Both rocks range from monzogranite to granodiorite. These observations suggest that the rocks of the entire area would have behaved without gains and loss of chemical elements during the metamorphic process. However, mass balance calculations provides convincing evidence that, during the transformation process of granite to cataclasite, Fe, Mg, Ti y V appear to have been immobile, while Si, Al, Ca, Na and K have limited mobility during the metamorphic segregation. These components are gained by the cataclasites and are lost by Copacabana Granite, like is also reflected by the changes in the mineralogy of the considered rocks.