The Pyrochlores of the Catalão I Alkaline Massif (Brazil).

[1]PEREIRA, V. P. and [1]FORMOSO, M. L. L.
[1]Instituto de Geociências - UFRGS, Porto Alegre, Brazil

The Catalão I Alkaline-carbonatitic Massif is situated at 18°08'S, 47°48'W, in the Goiás State, and belongs to the Alto Paranaiba Alkaline Province.

The Catalão I pyrochlores were formed by one hydrothermal and metassomatic event over pyroxenites and phoscorites that transformed olivines and pyroxenes in ferriphlogopites.

Under optical microscope these pyrochlores are brown, yellow or white, and have size from few micrometers to four milimeters. Zonated grains are commonly observed.

The general formula of pyrochlores is $A_{16-m}\ B_{16}O_{48}\ (O, OH, F)_{8-n}\cdot pH_2O$, where A is composed principally by alkaline elements and B by Nb, Ta and Ti; m, n and p are irrational numbers.

The studied pyrochlores have Nb contents per unit formula between 12.04 and 16, Ta between zero and 2.05 and Ti between zero and 2.19.

The weathering promoted the hydration and leaching of the A site cations of these pyrochlores. The most alterated grains have 1.55 atoms per formula unit (apfu) in this site, and the least ones 14.51.The leaching, specially of Na and Ca, is the cause of the "high" Ba contents (3.86 apfu). Therefore, calcium pyrochlores and not pandaite (barium pyrochlore) are present in Catalão I.

In the weathered profile the Nb behaves as a "immobile" element and permited the pyrochlore pseudomorphosis by hematite, and in some cases by florencite. The weathering also produces pyrochlores with collomorph zones.