Abstract title

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Abstract. Synroc B is a polyphasic ceramic dedicated to the confinement of many lanthanides and actinides. A Synroc B with 40 % pseudo-brookite, 36% zirconolite and 24% perovskite, was synthesized by sintering at 1200°C. Several standard leaching tests were conducted to assess the material chemical stability. The leachates were analyzed by X ray fluorescence spectrometry. The following matrix elements: Ca, Ce, Ti, Zr, Al, and Fe, are considered. For both MCC1 and MCC2 tests, the most dissolved element is Ca, with about 0.1 and 0.5% of the total Ca in the material, respectively. The other elements concentrations are below these values, especially those belonging to pseudo-brookite, such as Fe and Ti. Finally, a third test of microwave mineralization gave 26 % of the initial Ca content in the mineral. One can conclude that the addition of pseudo-brookite to Synroc B significantly increases its chemical stability.

Keywords: Synroc B, MCC1, MCC2, XRF, pseudo-brookite, chemical stability.

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