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#2756 Summary

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Title and Abstract

Title Characteristics of phosphate phase (fluorapatite and monazite) in the South Nam Xe carbonatites, Northwest Vietnam

Abstract This paper presents characteristics of appearance and mineral chemistry of phosphate phase, including fluorapatite and monazite in the South Nam Xe carbonatite dykes in Northwest Vietnam. These minerals occur in both calcio- and ferrocarnatites in various modes. Most of the fluorapatites in the calciocarnatites are oblong to elongated, and have sharp contacts with calcite, aegirine and phlogopite suggesting their primary origin; whereas those in the ferrocarnatites are commonly present in forms of stubby to perfect hexagonal prismatic crystals, which partly replaced by the monazite. The monazites in the ferrocarnatites also occur as hundreds micro isolated crystals, which associated with ankerite, feldspar, magnetite and phlogopite.

Contents of fluor and rare earth elements (REE) are relatively high (F up to 4.26 wt.%; REE up to 5.19 wt.%) indicating a F- and REE-enriched precipitation for the carbonatites. The enrichment in light REEs in the fluorapatite is paired with an enrichment in Na, varying from 0.25 wt.% to 0.89 wt.%. The replacement of REE and Na for Ca in the fluorapatites, which leads to change in CaO/P₂O₅ ratios might show an open system where Ca and P are added to areas of the fluorapatite depleted in light REE (LREE). REE contents in the monazite show a very limited variation, and are mainly composed of La, Ce and Nd (La₂O₃ = 21.09-22.72 wt.%, Ce₂O₃ = 32.82-33.35 wt.%, Nd₂O₃ = 6.96-8.20 wt.% in calciocarnatite; La₂O₃ = 16.61-17.39 wt.%, Ce₂O₃ = 32.07-33.52 wt.%, Nd₂O₃ = 8.92-10.94 wt.% in ferrocarnatite).

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