V-Pb-Ce minerals in fluor Ca-carbonatites of Italy.

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Sr-calcite, fluorite and barite are the main constituent of fluor Ca-carbonatite [1] in the Bracciano volcanic complex. Other primary phases are gypsum, periclase, fluorapatite (cellophane), celestine, magnetite and rare wollastonite. A hydrothermal event following emplacement of fluorspar and fluor Ca-carbonatite, deposited halloysite, quartz, barren calcite, and Ca-Ce-Pb vanadates, Pb-Mn hydrated phases, scheelite, mimetite, anglesite and Ca-Ba zeolites. The empiric formula of the Ca-Ce vanadate would be expressed as $[(Ca, Sr)_{1.2}\ (Ce, La)_{0.8}\ (V, Si, P, As)_{1.1}O_4\ (O, F)]$ x $n(H_2O)$ (hypothetical) recalculated on 5 O assuming F and OH- enough to balance the charges. This phase may resemble hydrated wakefieldite as confirmed by Raman spectra and XRD. Vanadinite and coronadite/hollandite are intimately associated to the Ca-Ce vanadate. The system gained elevated amounts of Pb^{4+} and Ce^{4+} mobilised by hydrothermal solutions with associated loss of F and CO_2 reduction and precipitation as mineral phases whereas Y and HREE concentrate in euhedra of fluorite in magmatic carbonatite.

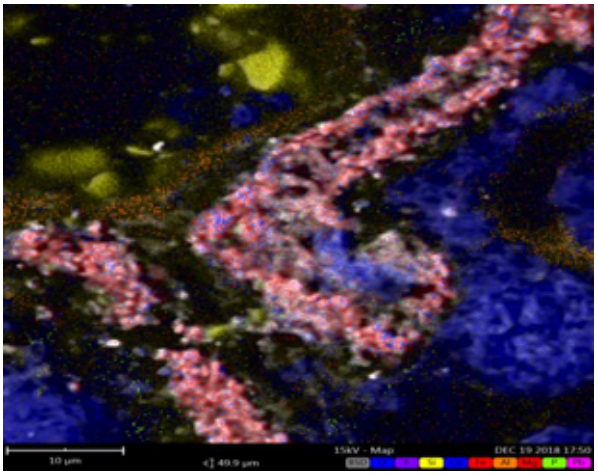

Figure 1: Coronadite-vanadinite aggregate

[1] Stoppa et al., (2016) Gondwana Research **37**, 152-171.