

P31-04

Two new minerals from Italy: ardennite-(V) and allanite-(La)

M. Pasero and P. Orlandi

Department of Earth Sciences, University Of Pisa, Via S. Maria 53, 56126 Pisa, Italy

pasero@dst.unipi.it

We describe herewith two new Italian minerals, both belonging to the family of sorosilicates. The new minerals and their names were approved by the IMA CNMMN [ardennite(V): proposal # 2005-037; allanite-(La): proposal # 2003-065].

Ardennite-(V) is the V-dominant analogue of ardennite, a sorosilicate with $[\text{Si}_3\text{O}_{10}]$, $[\text{SiO}_4]$, and $[\text{M}^{5+}\text{O}_4]$ groups ($\text{M} = \text{As}^{5+}, \text{V}^{5+}$). Ardennite-(V) was sampled in Sparone (TO), Val di Locana, Piedmont, Italy, where it occurs as yellow very thin elongated-tabular crystals up to 1 mm in length and a few μm in diameter and is associated with quartz, muscovite and piemontite. Electron microprobe analyses pointed to the following simplified chemical formula: $\text{Mn}^{2+}_4[\text{Al}_4(\text{Mg}, \text{Al}, \text{Fe}^{3+}, \text{Mn}^{3+})_2][\text{Si}_5(\text{V}, \text{Si})\text{O}_{22}(\text{OH})_6$. Ardennite-(V) is orthorhombic, *Pnmm*, *a* 8.760(3), *b* 5.838(2), *c* 18.56(2) Å. These parameters were refined from the X-ray powder diffraction pattern. A complete single-crystal X-ray diffraction study has been made difficult by the typical occurrence of ardennite-(V) as very thin fibers, often intergrown in parallel aggregates. However, the chemical composition, Weissenberg [010] rotation photographs, and the identity of the XRPD pattern with that of ardennite allowed us to unambiguously recognize the nature of the new mineral. Ardennite (without any suffix) has to be considered now the As- dominant member. In the past, the name ardennite was used to refer to mineral phases irrespective of the dominant M cation (either As^{5+} , or V^{5+} , or even Si^{4+} and P^{5+}).

Allanite-(La) is a member of the epidote group. It was sampled in the Buca della Vena mine, near Stazzema (LU), Apuan Alps, Tuscany, Italy, where it occurs as black prismatic elongated (up to 2-3 mm) crystals and is associated with barite and pyrite. Electron microprobe analyses pointed to the following simplified chemical formula: $\text{Ca}(\text{La}, \text{Ce}, \text{Ca})\text{Al}_2(\text{Fe}^{2+}, \text{Fe}^{3+})(\text{SiO}_4)(\text{Si}_2\text{O}_7)\text{O}(\text{OH})$. Allanite-(La) is monoclinic, *P2₁/m*, with *a* 8.914(4), *b* 5.726(1), *c* 10.132(6) Å, β 114.87(4)°. Its crystal structure has been refined by single-crystal X-ray diffraction data up to *R* = 0.033. The role of allanite-(La) within the epidote group is briefly outlined. In literature, analyses of REE-bearing epidote-group mineral having La as the dominating REE are reported from a few localities (e.g., Waterford, CT, USA; Mitchell Twp., Québec, Canada; Serifos Islands, Cyclades, Greece). However the mineral allanite-(La) was never formally approved by the IMA CNMMN.