



New structural data on Belgian ardennites



Martin DEPRET¹, Frédéric HATERT¹, Michel BLONDIEAU², Stéphane PUCCIO³

Ardennite

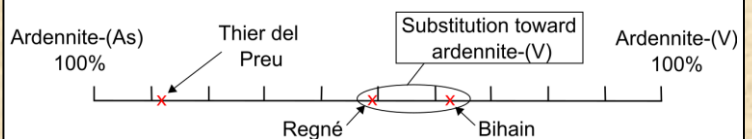
- **First described** by von Lasaulx and Pisani in 1872.
- **General formula:** $A_4M_6T_6O_{22}(OH)_6$
 $Mn^{2+}_4(Al,Mg)_6(Si_3O_{10})(SiO_4)_2[(As, V)O_4](OH)_6$
- **Crystallography:** orthorhombic, space group $Pnmm$, $a \approx 8.8 \text{ \AA}$, $b \approx 5.8 \text{ \AA}$, $c \approx 18.6 \text{ \AA}$, $Z = 2$
- **Geological setting:** Manganiferous sediments affected by low- to high-grade metamorphism
- **Type localities:** Salmchâteau (Belgium) Piedmont (Italy)



New Belgian occurrences

Samples	Thier del preu	Regné	Bihain
a (Å)	5.7981	5.7995	5.8035
b (Å)	18.4765	18.467	18.4792
c (Å)	8.6953	8.6888	8.6959
As SOF on T_4	0.96	0.85	0.81

Proportions of As and V calculated from de refined occupancies on the T_4 site

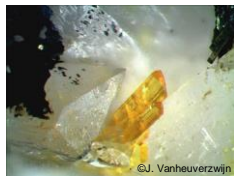


Ardennite samples



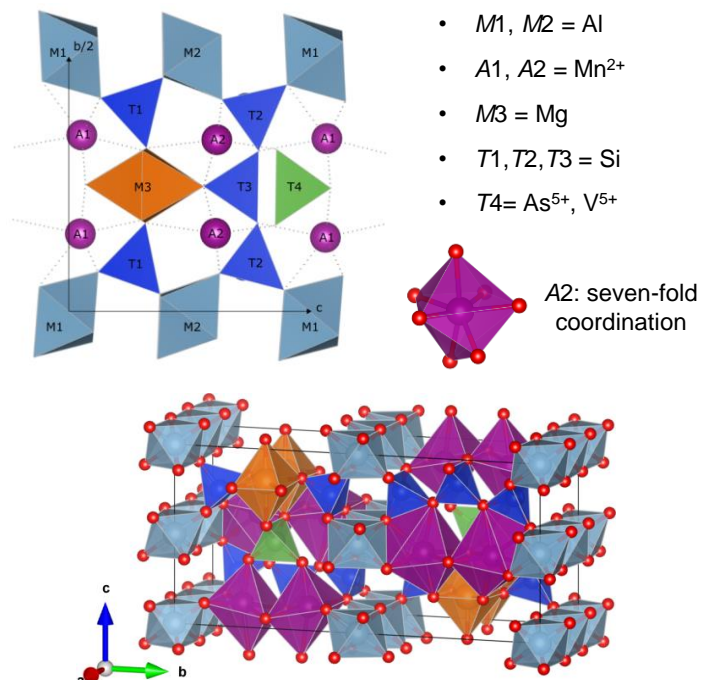
Ardennite-(As)
(Salmchâteau)

Ardennite-(As) crystal
(Salmchâteau)

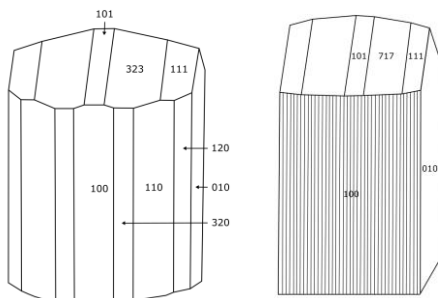


Ardennite-(V)
(Piedmont)

Crystal structure



Crystallographic forms



Conclusions

- Single-crystal X-ray diffraction measurements and structure refinements were performed on three new occurrences of Belgian ardennites
- The knowledge of the cation distributions in these three new occurrences, combined with chemical data, will help us to better understand the crystal chemistry of the complex ardennite group.

Addresses:

1. Laboratoire de Minéralogie, Université de Liège, B-4000 Liège, Belgium.
2. Val des Cloches 131, B-6927 Tellin, Belgium.
3. Rue des Fontaines 156, B-4041 Vottem, Belgium.