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PŮVODNÍ PRÁCE/ORIGINAL PAPER

## Příspěvek k chemickému složení minerálů skupiny tetraedritu z Val d'Anniviers (Švýcarsko)

Contribution to chemical composition of minerals of tetrahedrite group from Val d'Anniviers (Switzerland)

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### Abstract

Historical samples of tetrahedrite from Val d'Anniviers in Switzerland traditionally have been considered as bismuth-rich. New quantitative chemical analyses (EPMA-WDS) of three samples (collections of National Museum, Prague) of the tetrahedrite group minerals from this area show the presence of tetrahedrite-(Fe) with various Bi contents. Significant Bi contents were verified only in one of sample (P1N9933), where tetrahedrite is associated with aikinite, in the range of 0.32 - 0.39 *apfu* (4.20 - 5.08 wt.% Bi). These contents are comparable to the historical analysis of Fellenberg (1854), who reported 0.42 *apfu* Bi (5.59 wt.%) in tennantite-(Fe) from this area. In the other two samples, the Bi contents are only minor and range from 0.04 to 0.07 *apfu*. The empirical formulae calculated on the base of 16 cations *apfu* are:  $(\text{Cu}_{5.91}\text{Ag}_{0.07})_{\Sigma 5.98}[\text{Cu}_{4.00}(\text{Fe}_{0.98}\text{Zn}_{0.58}\text{Cu}_{0.44})_{\Sigma 2.00}\text{I}_{\Sigma 6.00}(\text{Sb}_{1.89}\text{As}_{1.76}\text{Bi}_{0.36})_{\Sigma 4.01}\text{S}_{13.22}$  (sample P1N9933);  $(\text{Cu}_{5.64}\text{Ag}_{0.31})_{\Sigma 5.95}[\text{Cu}_{4.00}(\text{Fe}_{0.95}\text{Zn}_{0.84}\text{Cu}_{0.21})_{\Sigma 2.00}\text{I}_{\Sigma 6.00}(\text{Sb}_{2.68}\text{As}_{1.31}\text{Bi}_{0.06})_{\Sigma 4.05}\text{S}_{12.83}$  (sample P1N9934 large grains),  $(\text{Cu}_{5.77}\text{Ag}_{0.09})_{\Sigma 5.86}[\text{Cu}_{4.00}(\text{Fe}_{0.92}\text{Zn}_{0.89}\text{Cu}_{0.19})_{\Sigma 2.00}\text{I}_{\Sigma 6.00}(\text{Sb}_{3.07}\text{As}_{1.06}\text{Bi}_{0.05})_{\Sigma 4.13}\text{S}_{12.89}$  (sample P1N9934 rare tiny grains) and  $(\text{Cu}_{5.66}\text{Ag}_{0.29})_{\Sigma 5.95}[\text{Cu}_{4.00}(\text{Fe}_{0.96}\text{Zn}_{0.84}\text{Cu}_{0.20})_{\Sigma 2.00}\text{I}_{\Sigma 6.00}(\text{Sb}_{2.71}\text{As}_{1.29}\text{Bi}_{0.05})_{\Sigma 4.05}\text{S}_{12.70}$  (sample P1N69320).

**Key words:** tetrahedrite-group minerals, chemical composition, electron probe microanalyses, tetrahedrite-(Fe), bismuth, Val d'Anniviers, Switzerland

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