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Sb-enriched association of Ni arsenides and sulfarsenides from the Zemberg-Terézia vein system near Dobšiná (Western Carpathians, Slovak Republic)

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Abstract

An interesting association of Sb-enriched Ni arsenides and sulfarsenides was recently discovered in the carbonate-quartz (siderite type) hydrothermal vein in the Karol adit, at the Zemberg-Terézia vein system near Dobšiná, Slovak Republic. It is represented by nickeline and gersdorffite as main ore minerals accompanied by rammelsbergite, ullmannite, millerite, tetrahedrite-(Zn), chalcopyrite and bornite. The two distinct compositional types of nickeline are present, the Sb-poor (with up to 0.03 *apfu* of Sb) and Sb-rich variety (with up to 0.12 *apfu* of Sb). Gersdorffite is mostly replacing nickeline as rims or it forms aggregates, rims around or veinlets in tetrahedrite-(Zn). The three compositionally different types of gersdorffite are present: Sb-rich (with Sb reaching up to 0.31 *apfu*) and variable Ni/Co/Fe ratio, As-rich gersdorffite (with up to 1.32 *apfu* of As) also containing minor Co and Fe and the last one is Fe-rich gersdorffite (with up to 0.24 *apfu*) and nearly ideal As/S ratio. Rammelsbergite, ullmannite and millerite occur as abundant, microscopic inclusions in nickeline and gersdorffite. In tetrahedrite-(Zn), Zn (up to 1.52 *apfu*) is dominant over (Fe up to 0.82, Ni up to 0.12, Hg up to 0.04 and Pb up to 0.01 *apfu*) and Sb is considerably prevailing (2.96 - 4.01 *apfu*) over As (0.02 - 1.02 *apfu*). Both chalcopyrite and bornite were observed as inclusions in tetrahedrite-(Zn).

Key words: *nickeline, gersdorffite, rammelsbergite, ullmannite, arsenides, sulfarsenides, chemical composition, siderite veins, Dobšiná, Slovak Republic*

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