Crystal structure of silver sodium hexagallium decatelluride, NaAgGa₆Te₁₀

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AgGa₆NaTe₁₀ trigonal, R32 (No. 155), a = 14.488 (2) Å, c = 17.722 (4) Å, V = 3221.6 Å³, Z = 6, R(F) = 0.025, wR(F²) = 0.063.

Table 1. Parameters used for the X-ray data collection

| Source of material: Single crystals of NaAgGa₆Te₁₀ could be prepared from stoichiometric mixtures of the elements at 980 K. NaAgGa₆Te₁₀ is an intermediate between NaGasTes (see ref. 1) and the high pressure ionic conductor AgGasTes (see ref. 2). The arrangement of Te is closely related to that of the Mn atoms in β-Mn, which is characterized by a complex framework of face sharing tetrahedra and metaprisms (distorted octahedra). Like in AgGa₆Te₅, the Ag⁺ in NaAgGa₆Te₁₀ show a positional disorder in the regions of the metaprisms (see fig. pos. 1). In contrast to AgOasTes, the Ag⁺ in NaAgGa₆Te₁₀ are also distributed over those tetrahedra, which share common faces with the metaprisms (see fig. pos. 2, 3). These tetrahedra and metaprisms define a diffusion path, which makes the ionic conductivity of the silver containing β-Mn phases reasonable. |