

Synthesis and Structure of Li_4GeS_4 ^a

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The compound Li_4GeS_4 has been prepared as transparent, light yellow moisture-sensitive crystals. Li_4GeS_4 belongs to the space group Pnma with $a = 14.107(6)$ Å, $b = 7.770(3)$ Å and $c = 6.162(2)$ Å. The crystal structure was solved by direct-methods. The final R and R_w -values are 1.85 and 1.65% for 866 observed reflections. The Li_4GeS_4 structure has three crystallographically independent lithium sites and one germanium site. The lithium atoms adopt two different coordination types. The Li1 atom is coordinated to five sulfur atoms in a square pyramidal geometry, while the Li2 and Li3 atoms have distorted tetrahedral coordination. The Ge atom is tetrahedrally coordinated by four sulfur atoms and is found as $[\text{GeS}_4]^{4-}$ units. The anisotropic three-dimensional crystal structure of Li_4GeS_4 is described.

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