

Title: Cu₂ZnGeSe₄ single crystals: Growth, structure and temperature dependence of band gap

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Abstract: This work describes the production of [single crystals](#) of the semiconducting quaternary compound Cu₂ZnGeSe₄ using a gas chemical method in which iodine was used as a transporter. For all the synthesized samples, their phase state, crystal structure syngony and lattice constants were refined. The unit cell of the studied compound is characterized by tetragonal symmetry. The transmission spectrum was applied to calculate the band gap, which is depicted as temperature function in 20–300 K range. It was fixed that the band gap increases by 12% with decreasing temperature.

Keywords: Cu₂ZnGeSe₄, single crystals, gas chemical transport, band gap, tetragonal structure

<https://doi.org/10.1016/j.jcrysgro.2023.127481>

<https://www.sciencedirect.com/science/article/abs/pii/S0022024823004074>