Growth, crystal structure, and properties of Cu2Zn1-xCdxSnS4 solid solutions

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Abstract: The phase diagram of the Cu_2CdSnS_4–Cu_2ZnSnS_4 system was constructed using data on differential thermal, X-ray phase and microstructure analysis methods. The diagram can be attributed to the first type according to the Rosebohm classification. The Cu_2CdSnS_4–Cu_2ZnSnS_4 solid solution single crystals were grown by chemical vapor transport using iodine as a transport agent. Their structure and unit cell parameters as well as compositional dependences of lattice parameters, pycnometric, X-ray densities and microhardness were determined. It was found that the Vegard's law is fulfilled in solutions studied.

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