

## Growth and Thermodynamical Studies of $ZnS_xSe_{1-x}$ Single Crystals by Chemical Vapour Transport Technique

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**Abstract:** In this research, a thermodynamic model used to describe the growth of  $ZnS_xSe_{1-x}$  single crystals by chemical vapor transport technique with iodine as the transporting agent. The optimum growth condition in the  $ZnS_xSe_{1-x} - I_2$  system has been predicted theoretically based on partial of different components. Some experiments were carried out for growing  $ZnS_{0.5}Se_{0.5}$  crystals by the chemical vapor transport method using iodine as a transporting agent in the closed ampoule under various conditions. The experimental results showed that the  $ZnS_xSe_{1-x}$  single crystals, which have been grown with growth parameters close to the theoretically predicted optimum growth conditions, have better quality in comparison with crystals grown under other conditions.

**Keywords:** *chemical vapor transport,  $ZnS_xSe_{1-x}$ , optimum temperature, micromorphology, single crystal.*

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