

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

B. dibaie asl^{1*}, M. J. Tafreshi¹, M. Fazli²

1- Physics Department, Faculty of Science, Semnan University

2- Chemistry Department, Faculty of Science, Semnan University

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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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*Corresponding author, Tel-fax: +98 (0231) 3338847, E-mail: behnamdibaie@yahoo.com