HEAT AND MASS TRANSFER OF CHEMICAL DEPOSITION OF ZINC-SELENIDE LAYERS

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ABSTRACT

The heat and mass transfer in a reactor designed for depositing large area layers of ZnSe is discussed. The gas-phase deposition of ZnSe from the mixture Zn-H_2Se-H_2-Ar in a flat channel with separate feeding of the reagents is studied numerically. It is shown that the use of argon/hydrogen mixture for the carrier gas improves the uniformity of ZnSe layers and increases the rate of deposition of the initial reagents. The influence of technological parameters (such as the flow-rate and chemical composition of the gas mixture) on the deposition of ZnSe layers is discussed.

CONCLUSION

The use of argon-hydrogen mixtures for the carrier gas improves the uniformity of zinc-selenide layers and increases the rate of deposition of the initial reagents. The distribution of the deposition rate along the reactor has a maximum, whose location is determined by technological parameters. By varying the feeding rate of the gas mixture and the temperature in the deposition zone, we can ensure a fair uniformity of the deposited layer of zinc selenide.