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Thermal Transport Properties of $Cd_{1-x}Mg_xSe$ Mixed Crystals Measured by Means of the Photopyroelectric Method

Abstract

The concentration dependence of the thermal conductivity and thermal diffusivity were determined for $Cd_{1-x}Mg_xSe$ mixed crystals in the temperature range between 20 °C and 40 °C. To determine the thermal transport properties, the photopyroelectric setup in the back detection configuration was constructed. In the concentration range $0< x <0.36$, both thermal conductivity and thermal diffusivity were found to decrease with increasing magnesium concentration as well as with increasing temperature. The observed concentration dependence is discussed in the framework of the Adachi model.

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