

# Chemical inhomogeneity in zinc telluride thin films prepared by thermal evaporation

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## Abstract

An attempt was made to produce thin films of zinc telluride (ZnTe) by evaporating ZnTe in vacuum using effusion-type molybdenum boats. Following analysis of the films by optical spectroscopy and Rutherford backscattering spectrometry, it was found that the films were chemically inhomogeneous along the direction of growth. The value of the atomic ratio Zn/Te decreased from the substrate side of the film to its interface with air. An attempt is made to account for the observed variation of the atomic ratio along the direction of growth. It was found that the degree of this variation decreased as the rate of evaporation decreased from 1.0 nm/s to 0.1 nm/s. In fact, these variations were undetectable by the present methods for the films prepared at a rate of 0.1 nm/s. However, near stoichiometric films were obtained even for an evaporation rate of 0.7 nm/s when open boats (instead of effusion-type) were used.

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