

Influence of annealing on the Cd(Te,Se) and (Cd,Mn)(Te,Se) crystals properties

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CdTe crystals with additive of selenium are recently studied to describe its usage for X and γ radiation detection material. For these applications crystals should meet specific requirements such as: good crystal quality, homogeneity of chemical composition in the entire volume of the material, low inclusions density and high resistivity. This work presents results of examinations of undoped CdTe-based crystals with an additional selenium, namely: Cd(Te,Se) and (Cd,Mn)(Te,Se). Bulk crystals were obtained by a low-pressure Bridgman method. As-grown as well as annealed materials have been characterized. In a first step the as-grown samples have been thoroughly investigated. Characterization of the samples included e. g.: resistivity (ρ) and photoluminescence (PL) measurements, microscopic observations of the inclusions and etch pits density measurements (EPD). Etch pits were created due to surface acting of specific etching solution (Inoue solution). Afterwards it has been studied the influence of the annealing of the material in different conditions – in cadmium or selenium atmosphere. Then there has been taken analogous measurements as for as-grown samples.