
A method of growing crystals under conditions of controlled temperature gradient in the melt

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A method of crystal growth has been developed for a directed crystallization using axial temperature field shifting without sample or heater shifting. The control of axial thermal flux providing constant rate of crystal growth is implemented by using two heaters according to the data of thermocouples positioned along the axis above the crystal and below it. The real-time control of all parameters of crystal growth is performed by the developed universal computer interface. The interface displays the temperature on the heaters and the sample, its rate of change on all stages of growth process, controlling coefficients, amplitude, frequency and spectrum of digital Fourier transformation of applied mechanical vibrations (accelerations), and also the inclination angle of crystal growth axis from direction of gravity vector (g_0). The setup allows experiments on physical modeling of heat-and-mass transfer processes during semiconductor crystal growth. The setup allows conducting experiments on physical modeling of the processes of heat and mass transfer in growing semiconductor crystals.

Keywords: crystal, semiconductor, growth, thermocouple, control.

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