

# Abstract

The effect of axial magnetic field of different intensities on pressure in silicon Czochralski crystal growth is investigated in cylindrical and hemispherical geometries with rotating crystal and crucible and thermocapillary convection. As one important thermodynamic variable, the pressure is found to be more sensitive than temperature to magnetic field with strong dependence upon the vorticity field. The pressure at the triple point is proposed as a convenient parameter to control the homogeneity of the grown crystal. With a gradual increase of the magnetic field intensity the convection effect can be reduced without thermal fluctuations in the silicon melt. An evaluation of the magnetic interaction parameter critical value corresponding to flow, pressure and temperature homogenization leads to the important result that a relatively low axial magnetic field is required for the spherical system comparatively to the cylindrical one.