TRIPLE-CRYSTAL X-RAY DIFFRACTOMETRY STUDY OF THE DECOMPOSITION KINETICS IN A SOLID SOLUTION OF OXYGEN IN Cz-SILICON

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S u m m a r y

The method of triple-crystal X-ray diffractometry is used to study the process of formation and growth of defects (precipitates and dislocation loops) at the isothermal decomposition of a supersaturated solid solution of oxygen in Cz-grown silicon. A technique for the experimental determination of defect distributions by size and concentration is proposed and tested. The sections of distribution curves are obtained, which correspond to the capabilities of X-ray detection of local defects. The growth of oxygen-containing precipitates is found to take place due to the diffusion processes, whereas the formation of dislocation loops is due to the processes of coagulation of silicon interstitial atoms and the extrusion of loops by stresses around the precipitates.