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Peculiarities of x-ray fluorescent definition of ion-implanted Fe in Si single crystals

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Abstract

The technique of definition of iron concentration in a surface layer of Si(100) is developed by use of spectrometer Spectroscan-U. The measurements of intensity of X-ray fluorescent line FeKα as a function of turn of initial crystal Si(100) in an azimuthal plane are executed. The results of analysis of the diffraction maxima are used for numerical modelling of angular intensity dependencies obtained for Si implanted by Fe. The experimental calibration equations allowing to define Fe concentration on the parameters of azimuthal angular intensity dependence of the analytical line are obtained. The behaviour of X-ray energy spectrum of the initial Si in the range of wave lengths 0.19-0.20 nm depending on an azimuthal angle is considered.