THE FORMATION THIN FILMS OF TRANSITION METAL SILICIDES BY PULSED PHOTON ANNEALING

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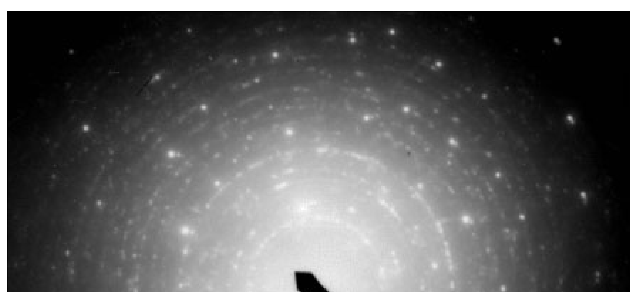
In laboratory of thin films physics of inorganic materials by metods of transmission-electron microscopy (EM-125), electron diffractometry (EMR-102 electron diffractometer), energy dispersive X-Ray spectroscopy (SEM-515, Genesis SEM Quant ZAF software) element composition, regularity of structural and phase transformations in Si-Fe-Si and TiN-Ti-Si thin film systems by pulsed photon annealing were investigated.

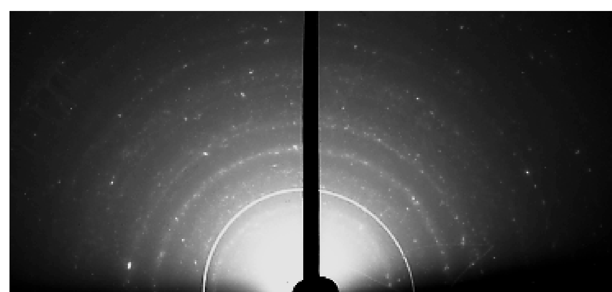
Thin films of transition metal and metal - semiconductor systems were deposited on a silicon substrate by a method of electron-beam deposition.

Pulsed annealing by the incoherent light of xenon lamps used UOL.P-1 beam-processing setup. The emitting elements of the setup are three xenon gas-discharge lamps opening in the pulsed mode.

A pulse duration was 0,7; 1,1; 1,4; 1,6; 1,8 and 2,1 second that corresponds to energy density 100, 150, 200, 230, 250 and 300 J/cm^2.



Electron diffraction pattern from TiN-Ti-Si after pulse annealing under energy density 230 J/cm^2



Electron diffraction pattern from Si-Fe-Si after impulse annealing under energy density 250 J/cm^2

Optimum conditions of impulse annealing for formation on silicon thin films of FeSi, β-$FeSi_2$ and $TiSi_2$ in modification C49 were determined.