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## Composition and structure of Co films/Si substrate systems prepared by means of self-ion assisted deposition and accompanying silicon damage

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The effects of ion implantation of Xe ions as a marker, irradiation of Co assisting ions on the damage of silicon structure and on the efficiency of intermixing of components in an interface region in cobalt/silicon systems constructed by means of the self-ion assisted deposition (SIAD) method was investigated by utilizing the Rutherford backscattering spectrometry in conjunction with channeling (RBS/C) technique and RUMP simulation code. Whereas the thickness of Co coating/Si substrate intermixed layers does not increase with the preliminary Xe ion implantation, the diffusion processes of components of the construction and particularly cobalt atoms are activated. The layer damage concentration or the amount of displaced atoms in silicon decreases when the Co coatings are deposited on previously Xe implanted substrate. The cobalt-based films on silicon were found to have a high content of oxygen, carbon, hydrogen and substantial concentration of the substrate. All roughness parameters examined by atomic force microscopy (AFM) and relating to vertical features of virgin and modified by Co coating deposition Si surfaces testify high quality of Co coating/Si substrate structure.