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Ion exchange synthesis at the interface "PbS thin film – aqueous solution of cadmium salt", composition and properties of a new phase

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Abstract

For the first time modified PbS layers with cadmium content up to 5.07 at. % were formed in the contacting process of lead sulfide thin films with an aqueous solution of cadmium salt at 368 K. The composition and morphology of the obtained layers were investigated by the methods of energy-dispersive analysis and scanning electron microscopy according to duration of ion-exchange process. Photosensitivity of modified PbS grows with the content of cadmium in these thin films. There is an assumption about the formation of substitution solid solutions $Cd_xPb_{1-x}S$ at the interface of "PbS thin film – an aqueous solution of cadmium salt".