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Development of new acoustophysical methods for deposition of thin films

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This article presents the results of a study on the development of a thin film deposition technology using different acoustophysical methods. The experimental work examined the following: cathode sputtering in an acoustoplasma discharge; magnetron sputtering; thin films obtained by galvanic method and deposition in solutions and suspensions. To compare the main physical and structural parameters, of thin multilayer film samples which were synthesized using the following methods: 1. using a conventional magnetron and the developed acoustoplasma magnetron. 2. galvanic method with direct current supply, in the presence of an alternating component, as well as in the presence of acoustic field of different frequencies. 3. sedimentation by centrifugation and sedimentation from suspension with absence and presence of acoustic field with different frequencies. The research has shown that it is possible to obtain layers with a denser packing, comparison to existing methods. It is possible to obtain films with less defects due to their partial etching at the same time with the application process.

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