

# The problems of thick tin layer formation by ion sputtering in magnetron systems in target vapors

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*The article describes the process of thick-film tin coating deposition by the ion sputtering in magnetron systems in target vapors realized and studied for the first time. The physics of this deposition method for films of various materials is described and the stages and features of the technological process of deposition of tin coatings are analyzed. The analysis of the arising technological problems such as increased thermal effect on the substrate during the deposition process, unstable process transition into the self-sputtering regime after melting the target, and reduced deposition rate when working with molten tin, not having gone to the self-sputtering regime is performed. The ways of solving the listed problems are proposed, as a result of which the stable process of applying tin coatings with high deposition rates of about  $9 \mu\text{m} / \text{min}$  has been worked out. The quality of the samples of the tin coating deposited on ceramic substrates made of aluminum nitride obtained during variations of the deposition process is evaluated.*

**Keywords:** liquid-phase magnetron, tin, thick-film coating, vacuum deposition, ion sputtering, target vapors

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