

Planar magnetron sputtering system with electron injection and reflecting electrode

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The features of the operation of a discharge system based on a planar magnetron with additional electron injection and a conical reflecting electrode are investigated. The injection of electrons was carried out from a glow discharge with a hollow cathode placed on the back side of the target. The magnetron discharge target with a diameter of 125 mm was made of copper. The pressure of the working gas (argon) varied in the range from 3 to 0.5 mTorr. The discharges functioned in a continuous mode. The results of the influence of the reflecting electrode on the radial uniformity of the generated plasma, as well as the degree of its sputtering, are presented. The radial uniformity and the surface and phase structure of copper films formed when the operating pressure decreases down to the lowest possible (0.5 mTorr) are investigated.

Keywords: magnetron discharge, plasma, electron injection, reflecting electrode, films.

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