

Special features of electron injection from an emitter discharge plasma into a planar magnetron sputtering system

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The special features of the central injection of electrons from the emitter discharge plasma into the discharge system of a planar magnetron are studied. A glow discharge with a hollow cathode and a vacuum arc were used as an emitter discharge. The injection of electrons was carried out through the central hole in the magnetron target. The pressure of the working gas (argon) in the vacuum chamber was 0.05–0.09 Pa in the case of glow discharge emitter. The emitter glow discharge in the hollow cathode functioned in both low-current continuous mode (10–100 mA) and high-current pulse mode (10–20 A, 25 microseconds, 1 Hz). The vacuum arc emitter operated in pulse mode (10–60 A, 200 microseconds, 1 Hz). Emission currents were measured for various configurations of the discharge system, including the conditions for the complete switching of the electronic component of the emitter current into the discharge system of the magnetron sputter.

Keywords: magnetron discharge, plasma, electron injection, collector.

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