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Experimental investigation of physical processes in the high power pulsed magnetron dischargeIvan Shchelkanov¹, Georgiy Khodachenko², Galina Krashevskaya², Artyom Sokolov²¹NRNU, Moscow, Russian Federation ²NRNU MEPhI, Moscow, Russian Federation

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Discharge parameters of the high power pulsed magnetron were investigated for various anode configurations. The size and position of the anode were varied to study the discharge stability. The experimental scheme was optimized to measure the total discharge current and plasma fluxes towards grounded parts of the vacuum chamber. Stability of discharge regimes with currents higher than 60A and pulses longer than 10ms are discussed.

For pulses longer than 10ms and different anode configurations we discuss the ion energy distributions measured in various directions. These measurements were made with the classical retarding field analyzer.

Presented measurements shed light onto the physical processes, which take place in the high power pulsed magnetron discharges. The results are compared with known literature data.

Keywords

Magnetron Discharge

Gas Discharge

Impulse

Coating

Plasma