

Invention relates to nanotechnology. Method for forming nanoclusters in gas flow during ion sputtering in local glow discharge within vacuum chamber connected to vacuum pumps, in which target-cathode and tubular anode are mounted, through which plasma-forming gas is supplied, wherein plasma-forming gas is supplied to the zone of cylindrical electrode mounted on the surface of target-cathode axially to tubular anode, and the size of nanoclusters and the density of their flow in quasi-closed high-pressure volume formed in cylindrical electrode are regulated by the flow rate of plasma-forming gas, the height of cylindrical electrode, and the magnitude of interelectrode voltage. An elevated pressure in the range of 1.33×10^2 - 1.33×10^3 Pa is created in quasi-closed volume. Technical result: directed flow of plasma-forming gas, an increase in its density within quasi-closed volume of the active sputtering zone, and thus deceleration of nanoparticles and reduction of their kinetic energy, intensification of their collisions and formation of large nanoclusters, reduction of plasma-forming gas consumption.