



FEDERAL SERVICE
FOR INTELLECTUAL PROPERTY

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(12) **ABSTRACT OF INVENTION**

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(54) **DEVICE AND METHOD TO PRODUCE NANOPARTICLES**

(57) Abstract:

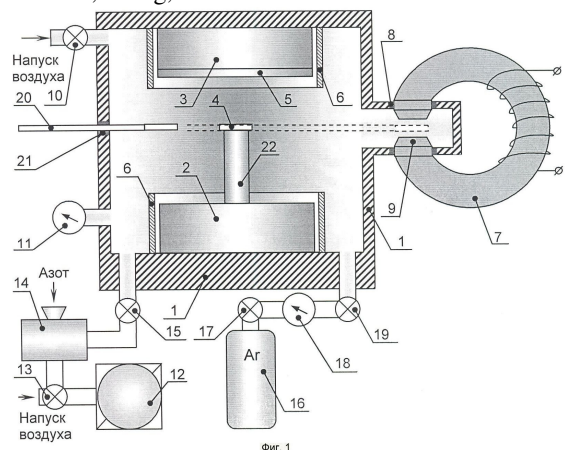
FIELD: nanotechnologies.

SUBSTANCE: device for production of magnetic nanoparticles on a substrate comprises a vacuum chamber with a cathode arranged on it with a target and an anode, where the substrate is placed, a pumping system, a vacuum metre and a system of plasma-forming gas supply. The device also comprises a manipulator for movement of the substrate with deposited nanoparticles into a gap of a magnetic conductor of a permanent magnet or an electromagnet used to magnetise nanoparticles in the specified direction after their deposition or after etching of the substrate surface with deposited nanoparticles. The method to produce magnetic nanoparticles on the substrate includes placement of the initial substrate inside the vacuum chamber, pumping of the vacuum chamber, supply of the plasma-forming inert gas, plasma ignition, target bombardment and performance of a cycle including deposition of nanoparticles onto the substrate surface, movement of the substrate by means of the manipulator in the gap of the magnetic conductor, where the magnetic field is created with

the help of the permanent magnet or the electromagnet and magnetisation of deposited nanoparticles in the specified direction. The specified cycle is repeated to produce the required average size of nanoparticles.

EFFECT: magnetic nanoparticles of specified size are produced with specified density of scattering on substrate surface and with specified shape, and also amorphous nanoparticles are produced.

11 cl, 8 dwg, 1 ex



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