

Obtaining of diamondlike coats using laser processing and the ion-beam technology

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In the study the method of combined film coating which comprises laser processing and the ion - beam technology is offered. The essence of this method is that the graphite target is situated in the core of a low-energy ion source, made according to the plan of the face Hall accelerator with an open anode layer. The source allows to form an ion beam which has the energy (40 - 200) eV and the angle of the recession of ions $(140-160)^\circ$. The laser erosion torch begins to form in the ion source. In such combination the energy of the high-energy part of the laser erosion torch remains practically invariable, as it exceeds greatly the energy of particles formed in the ion source.

The use of a combined method has allowed to increase the energy of the low-energy part of the laser erosion torch, to ionize the neutral component of the particles of the laser erosion torch.

The use of a combined method of diamondlike coating has allowed to obtain films which contain fewer allotropic modifications of carbon and which have sp and sp^2 connections, to increase considerably the square of the evaporated surface in comparison with the evaporation using a pure laser erosion torch.

Diamondlike properties of the obtained films are confirmed by the infra-red methods, methods of visual and ultraviolet spectroscopies, of the spectroscopy of combinational scattering, by the methods of electronic paramagnetic resonance and of the atomic-power microscopy.