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NANOPOROUS MATERIALS APPLICATION OF COMPUTATIONAL MODELS *)

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Computational physics of nonequilibrium collision and fluctuation-induced plasma chemistry processes, weak plasma collisions and phase transitions [1] was developed as part of multidimensional codes for the study of collisionless strongly nonequilibrium plasma and plasma-like media [2]. Stable numerical methods for solving the Fokker-Planck-Kolmogorov equations with functional coefficients based on the mathematical apparatus and properties of stochastic Ito equations in the sense of Stratonovich made it possible to consider models of nonequilibrium kinetics of metal vapor condensation [3] as the initial stage of a phase transition - processes consistent on spatio-temporal scales with the parameters of the Tokamak divertor plasma, and a kinetic model thermal emissions from the dust surface[4]. Models of nanoporosity [5-6] are associated with damage to surfaces by pulsed ion fluxes.

Fundamental mechanisms of the kinetic stage of Langmuir turbulence, and correlation phenomena of beam-plasma interaction in open Vlasov systems [2], and (see <<Our Laureates>> // Plasma Physics, 1998) are obtained numerically, are associated with the correlation instability and self-organization of plasma in the phase space of coordinates and velocities of plasma particles, as well as with criticism of the quasi-linear theory). The methodology of analyzing the results of solving equations of kinetic theory is relevant when creating nanopore models for the numerical solution of the Einstein-Smolukhovsky equations using algorithms for the deposition of porosity structures resulting from indirect elastic interaction of pores under the action of a total potential acting on vacancy-gas pores from other pores and from irradiated and non-irradiated surfaces of the sample. This interaction is carried out through acoustic phonons of the lattice and Friedel oscillations of the electron density. Nanoporosity [7], which arose in materials under the action of an Xe++ pulse with an energy of 5-10 keV, [6,8], changes the dispersity and optical properties.

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