found to exhibit photoluminescence at wavelengths ranging from blue to the near infrared. Note, main data on detailed structure of isolated nanostructures, unlike nanoscale structures in bulk materials, has been determined by theoretical calculations using ab initio and tight-binding methods. Though a large number of theoretical studies have been performed on the luminescent properties and stability of silicon nanoparticles, defective clusters, particularly those with irregular shapes have received very limited attention; in fact, there is only one such comprehensive simulation for 1 nm diameter H-terminated particle involving 29 Si atoms. Almost all other simulations were performed on idealized, quasi-spherical (though including very large) structures with a diamond-like core, or on slight modifications of such structures. In this review we also consider recent results on computer simulations of realistic silicon clusters, performed by nonconventional tight-binding method (Z.M. Khakimov et. al. Phys. Rev. B **72**, 115335 (2005)).

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RADIATION STERILIZATION OF SOME PHARMACEUTICAL PREPARATIONS AND MEDICAL PRODUCTS

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In connection with intensive development of pharmacology and medical techniques, use of the products contacting to blood, with the internal environment of an organism, with wound surface, with mucous membranes and skin there were high requirements to sterility of pharmaceutical preparations and medical products.

Traditional methods of sterilization (heat treatment, gas processing and processing the ferry) have some restrictions in application, and not insufficient degree of sterilization required for pharmaceutical preparations and medical products. Thermal processing can lead to degradation of structure (medicine), mechanical changes and loss of medical properties. Besides, it is impossible to carry out sterilization of many pharmaceutical preparations by a method of heat treatment. Sterilization of products in packing is very complicated, because sterilization temperature of packing and a product is different.

Gas processing is basically applied to sterilization of medical products (syringes, bandage, cotton wools, etc.). However, the degree of sterility is low, because of rather low ability and heterogeneity of sterilizing substance. Sterilization in packing represents special difficulty and demands additional charges related with delivery of the purified gas from abroad.

Last years alongside with known technological methods of sterilization of medical products and pharmaceutical preparations radiating methods of processing have found wide application.

Use of electronic bunches with the moderate energy and various isotopes became a basis for formation and development of a new direction in the medicine, called by "radiation sterilization". The radiation technology is highly harmless and economic, not polluting substance and surrounding space.

Unlike the specified traditional methods, radiating processing of products by the isotope ^{60}Co, radiating the gamma quantum, has unique opportunities - high penetrability in substance, providing uniformity of sterilization; a low power spectrum of radiation (1.25 MeV); radiating activity is completely excluded; low temperature at radiating processing; medical properties, quality and functional purpose of a preparation and a product are kept. Mechanical and structural infringements of processed production are excluded, high accuracy of the control of a phase of irradiation, adaptability to manufacture and profitability of the method of processing are provided.

By present time the technology of radiation sterilization of many kinds of pharmaceutical preparations and medical products is developed, however the sterilizing doze for each material - product in various different countries. It is connected with quality of materials and components from which pharmaceutical preparations and medical products are prepared, technologies of their manufacture, packing materials, and climatic conditions in each country.

Experimental works on development of technology of sterilization of pharmaceutical preparations and medical products is carried out in the two research channels gamma facility of the INP AS RU, designed for radiating processing of various products, substances and production.

As experimental objects for radiation sterilization: injection syringes for unitary application; surgical threads (catgut); hygienic packages, tampons, surgical cotton wool; the medical product "Glipil" are chosen.

Various dose and temperature regimes for sterilization of single use syringes, made in Uzbekistan are studied, and certain optimal doze of sterilization is reached providing the highest degree of sterility, as well as functionalities and initial optical parameters.

By the radiating of surgical threads (catgut, silk) in two gamma channels with various capacities at temperatures up to 25 ^0C a certain optimal doze of sterilization with preservation of their initial durability qualities was determined.

Medical product "Glipil" which demanding the special conditions of sterilization, connected not only with sterilization, but also with preservation of medical properties and not destruction of communication between radicals have been processed in six dose modes from $D=10^5$ Rad up to D= 4 MRad. The optimum doze of sterilization is determined.