

of used EM on base of BNC. The problem of returning to balance expensive and deficit materials has a high economical, technological and ecological significance.

At the Institute of radiation Problems of NAS of Azerbaijan is developed thermoradiation method of vulcanization of EM on base of BNC using γ -irradiation of Co^{60} . This method has a significance advantage on comparison thermochemical method and allows to get the product of high quality. EM can be obtained with predicted properties by changing of absorbed dose of radiation, at this is ensured obtaining of C-C connection without application of sulfur and sulfurcontening accelerators. Instead is recommended polychalogenmethylcontening (PCM) and epoxy compounds (EC) with oxides of metals.

A wide laboratory testing of PCM and EC showed, that entering these structuring systems to gasket and gland mixtures is purposeful.

On technological and exploitation properties the model are comparable with factory made products. It is suggested to use thermoradiation EM in engineering industry.

The developed method allows to exclude environment pollution.

Properties of thermoradiated vulcanizate depend on vulcanization structure and absorbed dose. The technological scheme of obtaining of use thermoradiation EM includes mixing heating in electropress during 2-4 min, radiation and other operations.



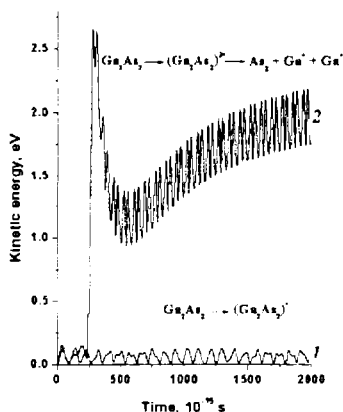
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COMPUTER SIMULATION OF RADIATION-INDUCED FRAGMENTATION OF SEMICONDUCTOR CLUSTERS

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It is well known that photon and electron irradiation of semiconductors can induce electron transitions to repulsive states and following conversion of atom potential energy into kinetic energy can lead to displacement of atoms. Such a process, induced by electron



excitation or ionization, can lead to more substantial effects in nanometer scale clusters, in particular to their fragmentation.

Fragmentation process stimulated by Auger ionization was investigated by computer simulation method for series of Ga-As clusters. On example of neutral Ga_2As_2 cluster we consider possible channels of cluster decay under its ionization.

We consider two-multiple ionization of cluster under influence of Auger effect. We are interested in the case, when holes originally created on atom by Auger ionisation, arise on the most external energy levels of cluster, in this case a positive charge belongs to whole cluster.

On figure dependence of kinetic energy of Ga_2As_2 cluster excited states on time after ionization are represent. The results show that one-multiple ionization of cluster leads to small

changes of kinetic energy of system (curve 1). On the case of two-multiple ionization of cluster the kinetic energy of system after series of vibration increases. As a result weakening of bond energy of cluster and mutual repulsion of positive-charged Ga atoms lead to decay of cluster on three parts: two positive Ga^+ ions and two As_2 molecule. Thus, the multiple ionization of cluster really has more substantial effect on clusters destruction than separate ion with the same charge.

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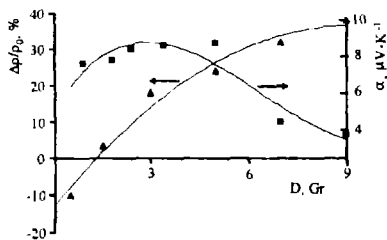
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THE INFLUENCE OF GAMMA-QUANTA IN ELECTROPHYSICAL PROPERTIES OF ZIRCONIUM METAL

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The dependence of physical properties (specific resistance - ρ , thermo e.m.f.- α and v.c.c.) of the thin plates zirconium by thickness $80 \div 200$ microns, on absorption doze stream of γ -radiation in contact with H_2O_2 is investigated. It is revealed that at small primary meanings of the absorbed doze ($D \leq 0,9 \cdot 10^3$ Gy) the resistance ρ in compare with meaning ρ_0 up to a radiation decreases for 47 %. The further increase of a stream of the absorbed quanta results to the fast increase of meaning ρ , and in the field of radiation doze $D \geq 3,5 \cdot 10^3$ Gy the speed of increase of meaning ρ begins to weaken. For revealing the reasons of such change ρ the dependence of relative change of resistance on the absorbed doze D was investigated.



In fig. 1 the dependence $\frac{\Delta\rho}{\rho_0} = f(D)$ and $\alpha = f(D)$ for metal

zirconium was given. As it is shown, at the initial stage of dependence $\rho = f(D)$ ρ strongly decreases and the relation $\frac{\Delta\rho}{\rho_0}$ becomes negative. At the further increase D in

the interval $D = (0,9 \div 2,5) \cdot 10^3$ Gy the change $\frac{\Delta\rho}{\rho_0}$ from D

linearly grows up to $D = 2,5 \cdot 10^3$ Gy and passes through a point of inversion at $D = 1,2 \cdot 10^3$ Gy. The meanings of α on the contrary while passing through extreme $D = (3,0 \div 5,0) \cdot 10^3$ Gy monotonously decreases.

As a result of experiments the followings are revealed: