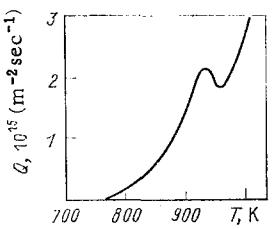

Fig. 1

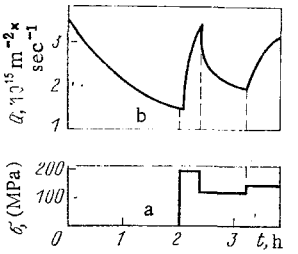

Fig. 2

Fig. 1. Helium liberation Q from the Kh20N45 alloy in the case of 1000°K heating at a rate of 0.5 K/sec.

Fig. 2. Dependence of the rate of helium liberation upon the mechanical stress σ.

$$H = kT \frac{T}{\Delta T} \ln \frac{q(T+\Delta T)}{q(T)},$$

where k denotes the Boltzmann constant; T, absolute temperature; and q, rate of creep or desorption.

The calculated activation energies coincided within the error limits and amounted to 3 eV. This means that there exists a vacancy mechanism of helium migration in the particular alloy at 1000°K.

The dependence which we obtained for the rate of helium liberation upon the mechanical stress seems to be associated with an increase in the mobility of the helium atoms by diffusion because the vacancy concentration rises in deformations. Besides that, structure studies of the alloy, which were made with an electron microscope, have shown that slip along boundaries and sliding inside grains occur after a deformation. This leads to the development of 10-100-nm-high steps on the sample surface and implies the breakup of the implanted layer (the assumed range of the 40-keV helium ions in the alloy is 200 nm). Accordingly, the desorption rate must depend upon the deformation rate, and the incubation period must obviously be associated with a delayed deformation of the surface layer of the sample.

Thus, our results indicated that deformations substantially affect the liberation of helium. This must be taken into account in the energy balance of the plasma.

LITERATURE CITED

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2. F. Garofalo, The Laws of Creep and of Long-Term Strength of Metals [in Russian], Metallurgiya, Moscow (1978).

ERRATUM

The article by E. P. Veretenkin et al. "Use of metallic lithium for detecting solar neutrinos" (Vol. 58, No. 1, pp. 82-83 (1985)) contains a misprint. Line 13 of the first paragraph should read: "and this is 1000 times lower than the usual contamination of the surrounding materials."