treatments and then joined by epoxy resin. The joints were tested for shear strength after various storage periods. Following 24 months of storage most of the tested joints failed by a mixed type of failure with a trend to adhesive failure, while the rest were completely adhesive failures. The surface of the adhesion area is characterized by three types of regions: "islands", "intermediate" and "saw teeth", which characterize the type of the failure. Various parameters were tested for their effect on the joints. It was found that the amount of the resin and the thickness of the joint affect the shear strength to a large extent, up to 30%. A procedure is suggested for the minimization of the negative effect of superfluous epoxy resin.

REFERENCE:

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## RADIATION EFFECTS IN COMMERCIAL A-5 ALUMINUM

A. Munitz, Z. Livne, C. Cotler and U. Admon

The effects of radiation on A-5 type aluminum, one of the common construction materials in nuclear reactors, was studied. Samples of A-5 aluminum were exposed to a thermal neutron ($E<0.625$ eV) fluence of $1.0\times10^{22}$ n/cm$^2$, and a fast neutron ($E>0.625$ eV) fluence of $0.7\times10^{22}$ n/cm$^2$. The maximum irradiation temperature was about 80°C. The samples underwent tensile and bending tests, as well as electron microscope CTEM, STEM and SEM analysis.

The major effect observed is the formation of Si-rich precipitates in the aluminum matrix. Silicon is a transmutation product of aluminum, and is produced in the reaction

$$_{13}Al^{27}(n,\gamma)_{13}Al^{28*}\xrightarrow{\beta^-}{}_{14}Si^{28}$$

The precipitates were evenly dispersed in the matrix. Their exact nature has not yet been unequivocally determined. No voids or other defects could be observed.

The tensile and bending tests did not show a significant change in properties after irradiation. This indicates a possible recovery of defects during irradiation, in accordance with the findings of Yoshida et al. [1]. The irradiated as well as unirradiated fracture surfaces showed transgranular tearing and dimples, typical of ductile fracture. It was concluded that for the irradiation doses used commercial A-5

type aluminum undergoes no apparent deterioration in properties.

REFERENCE:

[1] Yoshida, H., Kozuka, T. and Sagane, T., Proc. Jpn. Congr. Mater. Res. 24, 1 (1981).

## MECHANISM OF He RELEASE FROM He IMPLANTED SAMPLES DEDUCED FROM POST-IMPLANTATION He RELEASE MEASUREMENTS

Y. Lifshitz, E. Cheifetz* and S. Shamash

A combination of post-implantation, room temperature, He release measurements and surface erosion investigation by scanning electron

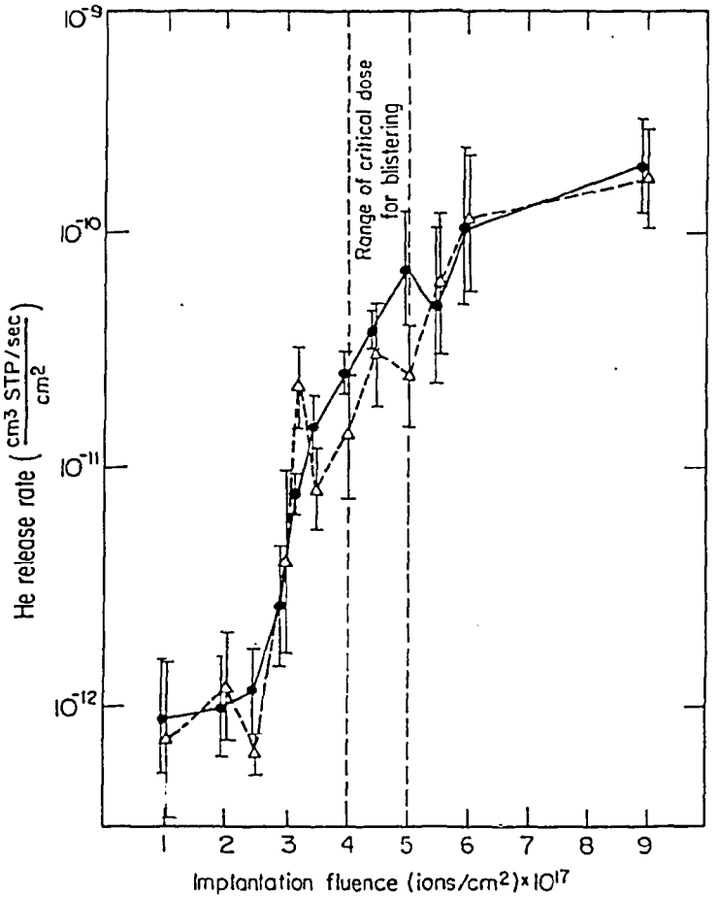


Fig. 4
Average He release rate from implanted samples (10 days after implantation) vs. implantation dose. (Δ) even surface erosion; (●) non-uniform surface erosion

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