

Photodesorption of Glid-Cop by High Energy Photon

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In the design and manufacture of the vacuum system for the SPring-8 storage ring, interaction of synchrotron radiation (SR) with absorbers is one of main problems to be considered. To investigate the influence of the interactions we measured the photodesorption yield of Glid-Cop (Al₂O₃-0.15% dispersion strengthened copper), the material of the irradiated section on the absorber, using the high energy photon beam (the critical energy 26 keV) from the Accumulation Ring (AR) of TRISTAN at KEK. This experimental result is compared with that of the

half a day at 150 °C before the SR irradiation, and thereby the background pressure for experiments was 5.5×10^{-7} Pa. The chamber was cooled with water to reduce thermal desorption during experiments. The outgassing rate due to photodesorption was obtained by through-put method.

Figure 2 shows the relation between the photodesorption yields (η) and the photon dose (Dp). The η are nearly constant below the Dp of 10^{20} photons/slit and decrease with an increase in the Dp. above that. The η of OEHC and Glid-Cop at Dp of

of OFHC [2]. These suggest that the influence on vacuum by the secondary photodesorption of the aluminum alloy is larger than that for Glid-Cop. We consider that most of the SR-induced gases are mainly desorbed from the aluminum alloy in the absorber chamber and that the use of Glid-Cop as the absorber has little influence on vacuum.*

References

- [1] K.Watanabe et al. : RIKEN Accel. Prog. Rep. 26, 163 (1992).
- [2] S.Ueda et al. : Vacuum, 41, No.7-9, 1928 (1990).