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Determination of pumping and dynami vacuum properties of conductive quaternary alloy of TiZrVAg non-evaporable getter

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Abstract

Non-Evaporable Getter (NEG) coating has been employed extensively in the particle accelerator especially where the vacuum conductance of the vessel is severely restricted and ultra-high vacuum condition is required. NEG coating will significantly reduce the outgassing rate and provides active pumping surface for H2, CO and CO2.

In addition, it has been proven that NEG coated surfaces have a very low secondary electron yield, as well as low photon and electron stimulated desorption yields. However, the existing NEG film increases the RF surface resistance of the beam pipe. In order to increase NEG coating conductivity, at ASTeC, in the past several years, the alternative NEG composition have been studied by adding more conductive element such as Cu, Au, Al and Ag. In this study, we report on the photon stimulated desorption, activation temperature and surface resistance from room temperature to cryogenic temperature for a new NEG quaternary alloy of TiVZrAg as function of the film composition.

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