Effects of Ion Irradiations and KOH Pretreatment on Hydrogen Absorption Rate of the MmNi$_{5-x}$(Al, Mn, Co)$_x$ Alloy

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The effects of ion irradiation and a KOH pretreatment on the rate of electrochemical hydrogen absorption by the MmNi$_{5-x}$(Al, Mn, Co)$_x$ alloy were investigated. The ion irradiation method is known to produce a high density of vacancy type defects in metals [1, 2]. In previous studies, we reported the remarkable enhancement of the initial rate of hydrogen absorption by the LaNi$_5$ with pretreatments of alkaline hydroxide solutions such as KOH [3, 4]. In addition, we revealed that the hydriding properties of the alloy and Pd can be improved by ion irradiations at TIARA (Takasaki Ion Accelerators for Advanced Radiation Application), JAEA[5,6]. In this study, we examined the effects of surface modifications by the alkaline treatment and ion irradiations. The both pretreatments are found effective to improve kinetics of hydrogen absorption by the alloy.

References