



Contribution ID: 241

Type: Poster

ZrCo bed as Protium and Deuterium storage material

Wednesday 7 June 2017 13:40 (2 hours)

It is a constant research interest in finding reliable solutions for the long term storage of hydrogen isotopes that integrates both the safety matters and its easy recovery. Thus, various methods have been investigated so far, namely gaseous storage in high pressure gas cylinders, liquid storage in cryogenic tanks or under solid state form. Considering as option the storage on solid substrate, for which a myriad of materials were investigated over time, this work focuses on the storage bed activation and absorption/desorption characteristics of a ZrCo bed alloy. Hydrogen isotopes (Protium and Deuterium) were selected as the working gases. The activation was performed at 500 °C under vacuum conditions, hydrogenation at maximum 100 °C under a pressure of 1bar, and the dehydrogenation at temperatures up to 300 °C. Defined by qualities like easy activation, low equilibrium working pressure, high adsorption rate at low temperature and use of moderate temperature for hydrogen gas recovery, ZrCo represent one of the strongest candidate materials, beside uranium and titanium, for the design and construction of dedicated getter beds necessary to capture and transfer hydrogen isotopes

Eligible for student paper award?

No

Authors: Mr HAN, Xingbo (Shanghai Institute of Applied Physics, Chinese Academy of Sciences, Shanghai); Mr IONETE, Eusebiu Ilarian (INC-DTCI ICSI Rm. Valcea); Mr SPIRIDON, Stefan Ionut (INC-DTCI ICSI Rm.Valcea); Mr ZHANG, Dongxun (Shanghai Institute of Applied Physics, Chinese Academy of Sciences); Mr MONEA, Bogdan Florian (INC-DTCI ICSI Rm.Valcea); Mr COSTEANU, Claudiu Gheorghe (INC-DTCI ICSI Rm.Valcea); Mr LIU, Wei (Shanghai Institute of Applied Physics, Chinese Academy of Sciences)

Presenter: Mr HAN, Xingbo (Shanghai Institute of Applied Physics, Chinese Academy of Sciences, Shanghai)

Session Classification: W.POS: Poster Session W

Track Classification: Fueling, exhaust, and vacuum systems