

Magnetic properties of hydrogenated Mg/Ni multilayers

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Magnesium hydride is both relatively cheap and abundant and together with its high gravimetric and volumetric hydrogen storage capacity that makes it a favoured material for practical applications. In this contribution we have studied magnetic properties of Mg/Ni multilayers (MLs) before and after hydrogen absorption using VSM. The structure was characterised by standard X-ray diffraction. The MLs were deposited by UHV magnetron sputtering onto naturally oxidised Si(100) substrates. Results showed, that due to MgNi alloy formation near interfaces the magnetisation of MLs was strongly reduced. Effective MgNi alloy thickness strongly depends on Mg sublayer thickness. Furthermore, hydrogen absorption and desorption kinetics up to 1000 mbar was studied at RT in Pd covered Mg/Ni MLs using four-point resistivity measurements. The kinetics also strongly depends on both magnesium and nickel sublayer thicknesses.

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