Nanostructured surfaces

Deuterium desorption temperature from Ni and Ni-B composites

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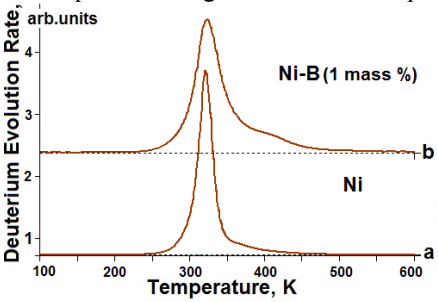
The TDS technique has been used to investigate the kinetics of spectrum development for deuterium desorption from Ni and Ni-B composites versus the implanted deuterium dose. In our experiments, to reduce the impact of background hydrogen being present in the samples and in the target chamber, we have used the hydrogen isotope deuterium. The samples were pre-implanted with 12 keV deuterium ions at the sample temperature Tirr. ~ 100 K. The low temperature was chosen to restrict the diffusion mobility of deuterium in the samples and to investigate its behavior in a wide range of concentrations produced in the implantation layer.

It can be seen that at low implantation doses (see Figure), the thermodesorption spectrum of ion implanted deuterium represents a single peak with the maximum at T_m ~ 325 K. Qualitatively kinetic spectrum developments deuterium desorption (TD) accurately expressed peak is formed of samples of Ni and a composite Ni-B forest is close on structure. However there is an essential difference which is shown that in spectrum TD from a composite Ni-B formed strongly blurred peak on a temperature range deuterium desorption 250-500 K.



Presence of extended area on a temperature scale desorption deuterium and peak degradation desorption with temperature of a maximum 325 K testifies to presence of an amorphous phase in composites nickel-pine forest.