

Development of XRD and TDS Methods to Study the Hydrogen Induced Near-Surface Effects

Content

Calibration of the TD GC setup performed. The linear response of chromatographic signal on introducing different amounts of hydrogen was shown, but the accuracy is still insufficient.

A study of the structural characteristics of metal coatings depending on the conditions of application and subsequent processing was carried out. In particular, the stress state of the surface of massive materials and magnetron coatings of the same metal on steel substrates was investigated using X-ray tensometry methods. A significant level of macrostresses in metal coatings of magnetron deposition was revealed, depending on their thickness. It was concluded that the permeability of hydrogen through protective tungsten coatings of relatively small thicknesses (500-250 nm) can be caused not only by their insufficient thickness, but also by a high level of macrostresses.

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