

LOW ENERGY IMPLANTATION OF NITROGEN IONS BY EXTENDED BEAM WITH A BALLISTIC FOCUSING IN A STAINLESS STEEL*

A.I. RYABCHIKOV¹, YU.H. AKHMADEEV², I.V. LOPATIN², O.V. KRYSINA², D.O. SIVIN¹, O.S. KORNEVA¹, P.S. ANANIN¹, S.V. DEKTYAREV¹

¹National Research Tomsk Polytechnic University, Lenin Avenue 30, Tomsk, 634050, Russia

²Institute of High Current Electronics SB RAS, Akademicheskoy Avenue 2/3, Tomsk, 634055, Russia, lopatin@opee.hcei.tsc.ru

The results of experiments on the low-energy implantation of nitrogen ions in stainless steel 12X18H10T (analogue of AISI 321) are presented. The processing with a pulsed extended beam of nitrogen ions, obtained using a ballistic focusing system was carried out. The source of ions was the nitrogen plasma of a non-self-sustained gas arc discharge with a thermionic cathode [1]. The formation of a pickling hole on the sample surface as a result of ion etching is shown. The profile of this hole is depends on the parameters of ion beam action. An increasing of surface hardness up to 4 times when processing stainless steel in such system is shown. The hardness increasing is due to the formation of a modified layer in the surface occurs. The layer contains nitrides of iron and alloying elements and its thickness reaches 50 microns. The formation of a modified layer across the processed samples surface, including outside the ion beam focusing region, is shown.

REFERENCES

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