
Nitrogen plasma immersion ion implantation in round wire NiTi SMA

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Abstract

There are several papers describing the processing effects of nitrogen plasma based ion implantation (NPBII) in flat surface of NiTi SMA. The purpose of this work is to analyze the possibility of NPBII processing in round wire. The starting material is an 50mm in diameter ingot produced by vacuum induction melting, hot rolled down to 15mm, and then hot forged to around 4mm in diameter and finally cold drawn down to 2 mm. After cold drawing two sets of samples will be prepared: one set in as drawn condition and one set as solution treated, then the samples will be processed in NPBII in the range of temperature of 400 °C to 700 °C during 120 minutes. The nitrogen implanted thickness will be analyzed by GDOES technique and the martensitic transformation temperatures by DSC and the mechanical properties by DMA. Complementary analyzes will be done by SEM and optical microscopy.

Keywords: PBII, NiTi alloy

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