Alloying by Magnesium: A Route How to Eliminate the Amount of Ti_2Ni Phase in Ni-Ti Alloy

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This article offers completely new results in the research of NiTi alloys produced by Self-propagating High-temperature Synthesis (SHS). There is investigated the effect of addition of magnesium on the microstructure, phase composition and especially, the amount of undesirable Ti_2Ni phase. This phase is unwanted in NiTi alloy because of its brittleness. Moreover, this one is stabilized by oxygen and forms during SHS process. Selected preparation method is considered as an alternative to the melting metallurgy, which produced products with poor homogeneity and purity. For this reason, SHS process has been studied intensely and many researchers have tried to eliminate secondary phases unsuccessfully. Our research showed that alloying by element with high affinity to oxygen causes disappearance of Ti_2Ni phase.

Keywords: Ti_2Ni phase, Self-propagating High-temperature Synthesis, Ni-Ti-Mg alloy

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