and a beam cross section of 0.5 x 0.5 mm² were used. The sample-to-detector distance and diffraction center were calibrated at RT using a LaB6 powder. Azimuthal integration was carried out over the entire 360° to minimize potential effects of texture and grainsizes. The peaks in the diffraction patterns were fitted using Pearson-VII function and the peak parameters were calculated using least square method.

The weight loss of the samples was found to be between 0.01 and 0.56 % which indicates that the composition of the suction casted alloys was close to the nominal composition. The optical and scanning electron micrographs of rapidly solidified alloys exhibited a dual phase morphology. The maximal microhardness of 340 $HV_{0.05}$ was achieved in the sample with a diameter of 3mm. It is assumed that the high cooling rate during suction casting led to the formation of metastable β phases.

1. M. Niinomi, Recent metallic materials for biomedical applications, Metall and Mat Trans A 33, 486 (2002)

STRUCTURE AND PROPERTIES OF Ti-Nb ALLOYS FABRICATED BY SUCTION CASTING

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Ti-Nb alloys were fabricated by suction casting. The microstructure of alloys was characterized by optical microscopy and scanning electron microscopy. The content of Nb varied in the range 25-35 mass % leading to significant changes in microhardness.

Ti-based alloys, and especially Ti-6Al-4V, are widely used in aerospace, automotive or sporting goods. Up to now Ti-6Al-4V alloy is widely used in biomedicine. However, due to potential toxicity of Al and V a new generation of Ti alloys with Nb or Ta is under particular review [1]. β-Ti alloys have attracted attention in medicine due to their perfect corrosion resistance, high strength to weight ratio and high biocompatibility.

In this study, the binary Ti-Nb alloys with Nb content from 25 to 35 mass % (hereafter "mass %" will be referred to as %) were prepared from commercially pure (c.p.) Ti and Nb. The materials were weighted according to the nominal composition. The materials were synthesized in a BUEHLER arc furnace in an argon atmosphere. A titanium ingot was used as an oxygen getter and was melted prior to each melting procedure. Considering the big difference in density (Ti:4.5 g/cm³; Nb: 8.57 g/cm³) and melting point (Ti: 1941 K; Nb: 2750 K) of the initial elements the alloys were remelted 16 times and flipped 7 times (after each second remelting). The weight loss of the samples during melting was evaluated by weighing the initial materials and the samples after melting. The microstructures were examined using an optical microscope (Carl Zeiss

Axio Observer Z1m). Scanning electron microscopy (SEM) was conducted using a Carl Zeiss EVO 50 in back scattered electron (BSE) mode. The elemental composition was checked by Oxford Instruments X-Act energy dispersive X-ray spectrometer (EDX) coupled with SEM. The hardness measurements, an average of 30 readings, were carried out using a WOLPERT Group 402 MVD Vickers hardness tester under a load of 50 g and a dwell time of 10 s.

The weight loss of the samples was found to be between 0.01 and 0.56 % which indicates that the composition of the suction casted alloys was close to the nominal composition. The optical and scanning electron micrographs of rapidly solidified alloys exhibited a dendritic morphology. The maximal microhardness of 340 $HV_{0.05}$ was achieved in the sample with a nominal composition of 27.5 % Nb. It is assumed that the high cooling rate during suction casting led to the formation of metastable β phases.

1. M. Niinomi, Recent metallic materials for biomedical applications, Metall and Mat Trans A 33, 486 (2002)

КИСЛОРОД-ИОННЫЙ ПРОВОДНИК СО СТРУКТУРОЙ РАДДЛЕСДЕНА-ПОППЕРА $Nd_{0.8}Li_{0.2}BaInO_{3.8}$

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THE OXIDE-ION CONDUCTOR WITH THE STRUCTURE OF RADDLESDEN-POPPER $Nd_{0.8}Li_{0.2}BaInO_{3.8}$

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In the present work, the $NdBaInO_4$ was acceptor-doped by the Li^+ position of the Nd^{3+}. The polycrystalline sample $Nd_{0.8}Li_{0.2}BaInO_{3.8}$ was synthesized by solid-state reactions. The composition $Nd_{0.8}Li_{0.2}BaInO_{3.8}$ is isostructural to the $NdBaInO_4$ (space group P 21/c). A study of the dependence of the electrical conductivity of temperature. The conductivity of $Nd_{0.8}Li_{0.2}BaInO_{3.8}$ is higher than the conductivity of $NdBaInO_4$ in the entire temperature range and has a value of the order of 10^{-4} S/cm at a temperature of 600 °C and 10^{-2} S/cm at a temperature of 900 °C.

Новый класс твердых электролитов с кислород-ионной проводимостью с блочной структурой Раддлесдена-Поппера представляет интерес в качестве кислородных датчиков и мембран, а также твердых электролитов в твердооксидных топливных элементах. Среди них фаза $NdBaInO_4$ при акцепторном допировании ионами Ca^{2+}, Sr^{2+} и Ba^{2+} проявляет значимое увеличение общей