

Microstructure evolution of heat treated NiTi alloy

Michal Štencek, Monika Losertová, Ondřej Štefek, and Jaromír Drápala

VŠB-Technical University Ostrava, Faculty of Metallurgy and Materials Engineering,
17.listopadu 15, CZ-70833 Ostrava-Poruba, Czech Republic

Superelastic behavior of off-stoichiometric NiTi alloys is significantly affected by microstructure changes that are provided by means of thermal treatment [1-3]. The temperatures of austenite-martensite transformation changed through appropriate thermal regime correspond to precipitation of Ti_3Ni_4 , Ti_2Ni_3 or $TiNi_3$ [4-5]. The experimental samples of NiTi alloy with 55.85 wt.

This article has been elaborated in the framework of the project No. LO1203 Regional Materials Science and Technology Centre - Feasibility Program funded by Ministry of Education, Youth and Sports of the Czech Republic and co-financed by the European Social Fund, of the project No. TH01020487 "Development of endodontic tools" financed by Technology Agency of the Czech Republic and of the projects SGS SP2017/77 supported by Ministry of Education, Youth and Sports of the Czech Republic.

- [1] SRIVASTAVA, A. K., YANG, Z., SCHRYVERS, D., VAN HUMBEECK, J. Effect of annealing on cold-rolled Ni–Ti alloys. *Materials Science and Engineering: A*, 2008, 481-482, 594-597.
- [2] ZHENG, Y., JIANG, F., LI, L., YANG, H., LIU, Y. Effect of ageing treatment on the transformation behaviour of Ti–50.9 at.
- [3] BHAGYARAJ, J., RAMAIAH, K. V., SAIKRISHNA, C. N., BHAUMIK, S. K., GOUTHAMA. Behavior and effect of Ti_2Ni phase during processing of NiTi shape memory alloy wire from cast ingot. *Journal of Alloys and*
- [4] ADHARAPURAPU, R. R., VECCHIO, K. S. Superelasticity in a new bioimplant material: Ni-rich 55NiTi Alloy. *Experimental Mechanics*, 2007, vol. 47, no. 3, pp. 365-371.
- [5] JIANG, S., ZHANG, Y., ZHAO, Y., LIU, S., HU, L. ZHAO, Ch. Influence of Ni_4Ti_3 precipitates on phase transformation of NiTi shape memory alloy. *Transactions of Non-ferrous Metals Society of China*, 2015,