

## Microstructure and Mechanical Properties of Ni-Ti-X Alloys Sintered by Spark Plasma Sintering

Pavel Salvetr, Andrea Školáková, Filip Průša, Pavel Novák

University of Chemistry and Technology, Department of Metals and Corrosion Engineering, Technická 5, 166 28 Prague 6, Czech Republic, Email: salvetp@vscht.cz, skolakoa@vscht.cz, prusaf@vscht.cz, panovak@vscht.cz

**In this work, the mechanical alloying with following spark plasma sintering consolidation is presented as a possible way for preparation of Ni-Ti and Ni-Ti-X alloys. The microstructures and mechanical properties of these samples were compared with the samples prepared by reactive sintering, milling and spark plasma sintering. The aluminium, niobium and magnesium were chosen as alloying elements. The microstructures of spark plasma sintered products and their hardness depend on preparation's way of Ni-Ti-X prealloyed powders. The combination of mechanical alloying and spark plasma sintering did not form large areas of the Ti<sub>2</sub>Ni phase like spark plasma sintering of milled product from self-propagating high-temperature synthesis. The addition of aluminium caused an increase of hardness, but the mechanical properties in compression are lower in comparison with the other prepared Ni-Ti and Ni-Ti-X alloys.**

**Keywords:** Ni-Ti alloy, intermetallics, powder metallurgy, mechanical alloying, spark plasma sintering

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