Microstructure of Ni@Ti Core-Shell Nanoparticles

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Abstract. Metallic nano components are a standard part of a variety of nano-electro-mechanical devices. For bonding of these components, sound quality thin joints are required. For nanoscale joining and bonding, advantageous properties could be found in core-shell NiTi nanoparticles. Characterization of morphology, size, shell thickness, and composition of core-shell NiTi nanoparticles prepared by DC magnetron sputtering using two planar magnetron sources was done by transmission electron microscopy and scanning transmission microscopy with energy dispersive X-ray spectroscopy. The observation of the nanoparticles at high temperatures was performed by in situ transmission electron microscopy in a heating holder, and the resulting products were characterized.