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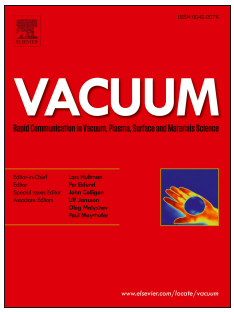

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A.J. Cavaleiro, A.S. Ramos, R.M.S. Martins, F.M. Braz Fernandes, M.T. Vieira

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The effect of heating rate on the phase transformation of Ni/Ti multilayer thin films

A.J. Cavaleiro[a], A.S. Ramos[a*], R.M.S. Martins[b], F.M. Braz Fernandes[c], M.T. Vieira[a]

[a]CEMUC, Department of Mechanical Engineering, Universidade de Coimbra, R. Luís Reis Santos, 3030-788 Coimbra, Portugal

[b]Instituto de Plasmas e Fusão Nuclear, Instituto Superior Técnico, Universidade de Lisboa, Av. Rovisco Pais, 1049-001, Lisboa, Portugal

[c]CENIMAT/I3N, Department of Materials Science, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, 2829-516 Caparica, Portugal

Abstract

Ni/Ti multilayer thin films prepared by dual cathode magnetron sputtering were annealed in vacuum at different heating rates. The structural evolution of the multilayer thin films with nanometric modulation periods was studied in-situ by x-ray diffraction using synchrotron radiation. Independently of the multilayer period, a single step rapid reaction occurs at temperatures above 300ºC with the formation of the B2-NiTi austenite phase. The transformation temperature is inversely proportional to the multilayers period (higher temperature for shorter period - 12 nm) and to the heating rate (lower temperature for faster heating rates).

Keywords: NiTi; Multilayer thin films; Phase transformation; Synchrotron radiation; Heating rate

* Corresponding author (sofia.ramos@dem.uc.pt)