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X-Ray Study of the Epitaxial Growth of Magnetron Sputtered Ni-Al Thin Films WOLFGANG DONNER, University of Houston, NOURED-DINE ANIBOU, University of Houston — Epitaxial growth of metals on semiconductors is of significant interest for both fundamental and technological reasons. Nickel-rich NiAl alloys are model materials for high-temperature shape-memory alloys. The sputter deposition growth of NiAl thin films and the X-ray study of the different phases grown on those films are the main purpose of this work. NiAl films were grown on different substrates. The Ni₆₃Al₃₇/Si(001) system is investigated and showed a fiber textured growth along the [111] direction of the low temperature phase L1₀. On the other hand, the system NiAl/Cu(001)/Si(001) with different compositions ranging from 36% to 50% Aluminium showed epitaxial BCC films with 2 different domains. The two domains grow in the [110] direction and are rotated 90 degrees with respect to each other. The FCC phase L1₂ (Ni₃Al) was seen to grow first in sample Ni₆₃Al₃₇/Cu(001)/Si(001).

Wolfgang Donner
University of Houston

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