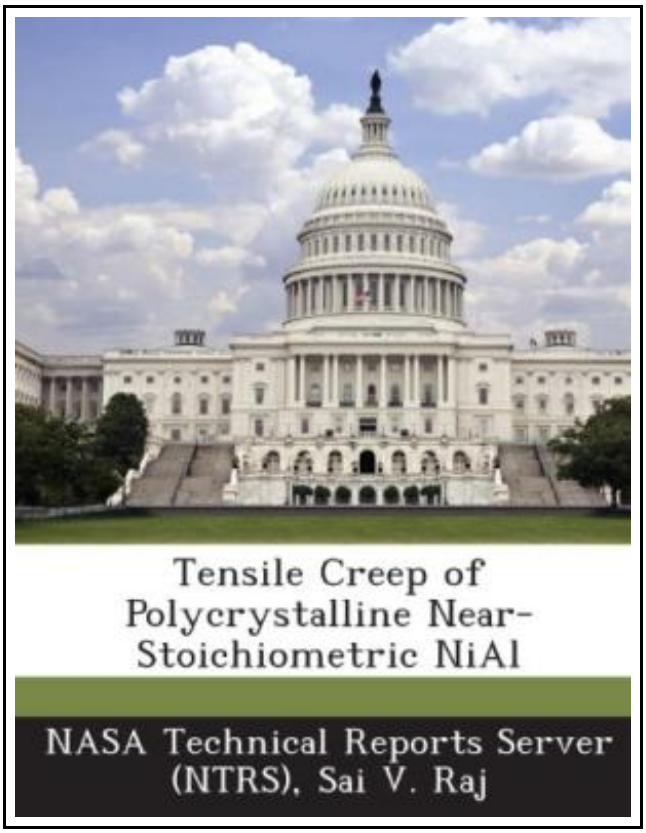
Tensile Creep of Polycrystalline Near-Stoichiometric Nial



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TENSILE CREEP OF POLYCRYSTALLINE NEAR-STOICHIOMETRIC NIAL

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 66 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.Long term tensile creep studies were conducted on binary NiAl in the temperature range 700-1200 K with the objectives of characterizing and understanding the creep mechanisms. Inverse and normal primary creep curves were observed depending on stress and temperature. It was concluded that the creep of NiAl is limited by dislocation mobility. The stress exponent for creep, n, increased from 5. 5 at 1200 K to 13. 9 at 700 K. The true activation energy for creep, Qc, was constant and equal to about 400 kJ per mole between 20 and 50 MPa but decreased to a constant value of 250 kJ per mole between 50 and 110 MPa. The activation energy was observed to be stress dependent above 110 MPa. The tensile creep results reported in this investigation were compared with compression creep data reported in the literature. A detailed discussion of the probable dislocation creep mechanisms governing compressive and tensile creep of NiAl is presented. It is concluded that the non-conservative motion of jogs on screw dislocations influenced the nature of the primary creep curves, where the climb of these jogs involves either the next nearest neighbor or the six-jump cycle vacancy diffusion mechanism. The probable nature of the atom vacancy exchange that occur within the core of an edge dislocation undergoing climb in NiAl are schematically examined. This item ships from La Vergne,TN. Paperback.

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