The Shock Hugoniot of the Intermetallic Compound, Ni₃Al I.

KNAPP, Cranfield University, J.C.F. MILLETT, Cranfield University, G.T. GRAY, Los Alamos National Laboratory, N.K. BOURNE, University of Manchester — Interest in the shock-induced mechanical response of the intermetallic material, Ni₃Al lies in two areas. The first is in blade containment in the failure of jet turbine engines. As Ni₃Al is the main strengthening phase in nickel based superalloys, the behaviour of these materials under impact conditions is of great importance. Secondly, from a more fundamental point of view, Ni₃Al, with the ordered face centred cubic L1₂ structure, will possess a different response to shock loading to a simpler face centred cubic counterpart such as nickel. In this paper, we thus examine the shock-induced behaviour of Ni₃Al, and compare it to the known response of pure nickel.

J.C.F. Millett
Cranfield University

Date submitted: 08 Apr 2005