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Effects of temperature and strain-rate on the dynamic mechanical behaviour of a fine grained Al-Sc alloy Z.A. MAJOR, School of Engineering and Information Technology, UNSW Canberra, D. EAST, CSIRO Manufacturing Flagship, Clayton VIC, A.D. BROWN, School of Engineering and Information Technology, UNSW Canberra, M.Z. QUADIR, UNSW Australia, P.J. HAZELL, J.P. ESCOBEDO, School of Engineering and Information Technology, UNSW Canberra — The influence of temperature and strain-rate on the dynamic mechanical behavior of a fine grained Al-Sc alloy has been investigated. The effect of strain-rate (10^{-2}-10^{4}) and temperature (25-500C) on the mechanical behavior of this alloy was assessed by conducting compression and tensile experiments utilizing a Hopkinson pressure bar equipped with a high temperature furnace. The deformed specimens were characterized via optical and electron microscopy (electron backscatter diffraction). The examination of the microstructural evolution allowed the assessment of the active deformation mechanisms at more extreme loading conditions: dislocation-based vs. grain boundary sliding. The most important results of this study will be presented.

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