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Strain Rate Dependence of a Single Crystal Alloy CLIVE SIVIOUR, EUAN WIELEWSKI, NIK PETRINIC, University of Oxford — In order to provide data for constitutive modelling, and to better understand mechanisms behind strain rate dependence of metals, characterisation experiments have been performed on the nickel based single crystal alloy CMSX-4. This material has received extensive characterisation in the literature, concentrating on metallurgical aspects as well as creep and fatigue behaviour, giving a good background to the high rate research. The current paper will report data from compression experiments performed at strain rates from 10^{-3} to 10^{3} s^{-1}, and Taylor Impact tests. Data obtained will be evaluated in the light of previous thermo-mechanical characterisation of this alloy, and compared to the high rate response of polycrystalline materials.

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