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Electron Back-Scatter Diffraction Analysis of Pre and Post-Deformation Ti-6Al-4V Taylor Impact Specimens EUAN WIELEWSKI, JOSHUA EGGLESTON, CLIVE SIVIOUR, NIK PETRINIC, University of Oxford — Titanium alloys have seen wide spread, and ever increasing, use in the aerospace industry, due to a high specific strength and good resistance to corrosion. However, current understanding of the deformation mechanisms of Titanium alloys under complex high strain rate loading is limited. In order to improve understanding in this area, post-deformation microstructural analyses of Titanium alloys loaded under well controlled, but complex, high strain rate loading conditions, such as the Taylor impact test, are required. This paper presents the results of Taylor impact experiments carried out on specimens cut from the rolling and transverse material directions of two heavily textured Ti-6Al-4V plates with different microstructures. Electron back-scatter diffraction analysis has been performed on pre and post-deformation specimens with comparisons made between the deformed microstructures of the two plates in the rolling and transverse material orientations.

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