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Dynamic damage evolution in Lean Duplex Stainless Steel 2101 JUAN PABLO ESCOBEDO, ALI AMERI, ANDREW BROWN, MAHMUD ASHRAF, PAUL HAZELL, School of Engineering and Information Technology, The University of New South Wales, Canberra, ACT 2600, Australia, MD. ZAKARIA QUADIR, Faculty of Science and Engineering, Curtin University, Perth, WA 6102, Australia — The dynamic tensile response and associated microstructural evolution of lean duplex stainless steel 2101 (LDSS 2101) have been investigated. Plate impact experiments to peak compressive stresses in the 2-6 GPa range were conducted on annealed as well as previously quasi-statically deformed LDSS 2101 specimens. The post-impact microstructural characterization was investigated by optical microscopy, X-ray diffraction (XRD) and electron-backscattered diffraction (EBSD). Correlations between features in free surface measurements, e.g. spall strength, and dynamic damage development (void nucleation, growth and coalescence) for specimens with varying amounts of plastic deformation will be presented.

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