Abstract Submitted
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On the dynamic response of additively manufactured 316L. LIAM SMITH, DANIEL EAKINS, DAVID CHAPMAN, Institute of Shock Physics, Imperial College London, PAUL HOOPER, Imperial College London — Understanding the dynamic performance of Additively Manufactured (AM) materials is important when designing components for real-world applications. A series of Taylor tests were carried out on AM and conventionally manufactured 316L Stainless Steel. AM specimens were produced with a Renishaw AM250 selective laser melting machine. Taylor tests were conducted in a reverse anvil-on-rod configuration with soft capture and post loading measurements used to corroborate high speed deformation imaging. The influence of microstructure orientation and surface roughness was investigated by manufacturing samples parallel and perpendicular to build direction and with both as-built and machined finishes. Results were compared with optimised Johnson-Cook and Zerilli-Armstrong constitutive models within AUTODYN FE software.

Liam Smith
Institute of Shock Physics, Imperial College London

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