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Sub-micron void structure during spallation fracture¹ JAMES BELAK, JOHN KINNEY, MUKUL KUMAR, Lawrence Livermore National Laboratory, J. ILAVSKY, Advanced Photon Source, LYLE LEVINE, National Institute of Standards and Technology — Samples of single and poly-crystal aluminum were shocked to incipient spallation fracture and recovered on the LLNL light gas gun. Previously, we analyzed the void structure in these samples using 3D x-ray tomography. Here, we extend this analysis to sub-micron length scales using ultra-small-angle scattering (USAXS and USANS). The USANS data overlaps in length-scale with the tomography data. The data displays novel power law scaling and a Guinier region suggesting a mean size for sub-micron voids of 60nm. These results will be compared to direct numerical simulation using molecular dynamics.

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