

Abstract Submitted  
for the MAR06 Meeting of  
The American Physical Society

**Sub-micron void structure during spallation fracture**<sup>1</sup> 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.

<sup>1</sup>Work performed under the auspices of the U.S. DOE by University of California, LLNL under Contract W-7405-Eng-48, at APS under Contract No. W-31-109-ENG-38.

James Belak  
Lawrence Livermore National Laboratory

Date submitted: 07 Dec 2005

Electronic form version 1.4