

Abstract Submitted
for the SHOCK05 Meeting of
The American Physical Society

Reverse Taylor Tests on Ultra-fine Grained Copper ANUJ MISHRA, UCSD, MORGANA MARTIN, Georgia Tech, FABIENNE GREGORI, CNRS, Paris-13, MARC MEYERS, UCSD, NARESH THADHANI, Georgia Tech, FABIENNE GREGORI COLLABORATION, N. N. THADHANI COLLABORATION — Reverse Taylor Tests have been carried out on ultra-fine grained copper processed by Equal Channel Angular Pressing. The samples were processed using route B_C with a channel angle of 102° . Tests were carried out after sequential ECAP passes (from 1 to 8) providing shear strains of up to 8. The average grain size ranged from $30.6 \mu\text{m}$ for the initial unprocessed sample to less than $0.5 \mu\text{m}$ for the samples processed by 8 passes. The microstructure was characterized by EBSD and TEM. Experimental results, captured by high speed camera (viewable through a timeline as opposed to an initial and final state) are compared with computer simulations run in Autodyne to model the impact. The constitutive response was obtained through quasistatic and dynamic mechanical tests and incorporation into constitutive model. This research is supported by the National Science Foundation under Grant CMS-0210173 (NIRT).

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Date submitted: 24 May 2005

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