

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Statistical Analysis of Surface Roughness and Dynamic Friction Profiles During Metalforming STEVEN MATES, MARK STOUTD, JOSEPH HUBBARD, NIST — Laser confocal microscopy is used to image the surface roughness features of sheet metal before and after forming. This technique combines a statistically robust sampling protocol with fine-grained spatial resolution (approximately 100 nm) so that higher moments of the dynamic friction profiles and surface roughness profiles can be compared. These higher moments, including skew and kurtosis, are of interest because they characterize the extremes of the roughness distributions, which are thought to have a significant correlation with the overall friction behavior. Ultimately we seek an improved understanding of the relationship between surface roughness profiles, dynamic friction profiles, and metallurgical conditions in order to reliably predict the detailed friction behavior during actual metalforming operations.

Steven Mates
NIST

Date submitted: 07 Dec 2004

Electronic form version 1.4