Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Resolving Interface Interactions in Layered Structures in 3 Dimensions[1] ROZALIYA BARABASH, JON TISCHLER, JOHN BIDAI, Oak Ridge National laboratory, WENJUN LIU, Advanced Photon Source — 3D micro-Laue diffraction was used to probe interface interactions in layered structures. Indented Cr/NiAl composite with alternating submicron size Cr and NiAl lamellae was chosen as a model material. Differential aperture microscopy revealed a twin orientation relationship at the interface between the Cr and NiAl lamellae in the as grown state. The indentation-induced alternation of compressive/tensile residual strains in the neighboring Cr and NiAl lamellae was observed. Line broadening analysis found a two orders of magnitude increase of dislocation density in the near-surface zone in the center of the indent.

[1]Research supported by the Division of Materials Sciences and Engineering, U.S. Department of Energy. Data collection was carried out on beamline ID-34-E at the Advanced Photon Source.

Rozaliya Barabash
Oak Ridge National laboratory

Date submitted: 18 Nov 2011 Electronic form version 1.4