Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Ambient-temperature Conditioning as a Probe of Double-C Transformation Mechanisms in Pu-2.0 at. % Ga.[1] JASON R. JEFFRIES, K.J.M. BLOBAUM, M.A. WALL, A.J. SCHWARTZ, Lawrence Livermore National Laboratory — The gallium-stabilized Pu-2.0 at. % Ga alloy undergoes a partial or incomplete low-temperature martensitic transformation from the metastable delta phase to the monoclinic alpha-prime phase near -120 °C. This transformation has been shown to occur isothermally and it displays anomalous double-C kinetics in a time-temperature-transformation diagram. While the underlying mechanisms responsible for the double-C behavior are currently unresolved, recent experiments suggest that a conditioning treatment influences the upper-C. As such, the effects of the conditioning treatment can provide valuable insight into the mechanisms dominating the phase transition. A differential scanning calorimeter (DSC) is used to investigate the effects of conditioning temperature and time upon the delta/alpha-prime transition. The results will be discussed as they pertain to radiation damage, nucleation, embryo formation, or phase-field stability.

[1]This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

Jason Jeffries
Lawrence Livermore National Laboratory

Date submitted: 15 Nov 2007 Electronic form version 1.4