

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Evolving Magnetism from self damage in α and δ -Pu SCOTT MCCALL, LLNL, MICHEAL FLUSS, BRANDON CHUNG, MICHEAL MCEL-FRESH, DAMON JACKSON — As a consequence of the unusual nature of plutonium's electronic structure, point- and extended-defects are expected to, and do exhibit extraordinary properties. Low temperature magnetic susceptibility measurements on Pu and fcc-Pu(Ga) show that the magnetic susceptibility increases as a function of time, yet upon annealing the specimen returns to its initial magnetic susceptibility. This excess magnetic susceptibility (EMS) arises from the α -decay and U recoil damage cascades which produce vacancy and interstitials as point and extended defects. The time dependence of the EMS leads to an estimate of the number of atoms influenced by each α -decay, as well as a temperature dependence well described by a Curie-Weiss law. These results will be described in context of recent time dependent studies of the elastic modulus in delta Pu. Work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract W-7405-Eng-48.

Scott McCall
LLNL

Date submitted: 30 Nov 2005

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