

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**X-ray structural and magnetic studies of the magnetic-martensitic transition in  $\text{Gd}_5\text{Si}_{0.5}\text{Ge}_{3.5}$** <sup>1</sup> DANIEL HASKEL, ZAHIRUL ISLAM, JONATHAN LANG, GEORGE SRAJER, Advanced Photon Source, Argonne National Laboratory, YAROSLAV MUDRYK, VITALIJ PECHARSKY, Materials and Engineering Physics Program, Ames Laboratory — Intermetallic  $\text{Gd}_5\text{Si}_{0.5}\text{Ge}_{3.5}$  undergoes a martensitic phase transition between two different orthorhombic polymorphs. This transition, which involves large shear displacements of atoms, expands the unit cell volume on warming and causes the disappearance of ferromagnetic ordering. We report Gd  $L_3$  and Ge  $K$ - edges XMCD and XAFS measurements on this compound as a function of temperature and magnetic field. The results indicate this transition appears to occur through an intermediate phase. This phase affects the magnetic ordering and can be transformed into the low temperature martensitic phase by the application of a magnetic field.

<sup>1</sup>APS is supported by DOE/BES, under contract No. W-31-109-ENG-38.

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Date submitted: 07 Dec 2004

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