

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Resonant X-ray Scattering Study of Quadrupolar Ordering in DyB₄ SUNGDAE JI, C. SONG, J. KOO, K.-B. LEE, eSSC and Dept. of Physics, Pohang University of Science and Technology, Pohang, 790-784, South Korea, Y.J. PARK, Pohang Accelerator Laboratory, Pohang University of Science and Technology, Pohang, 790-784, South Korea, J.S. RHYEE, B.K. CHO, Center for Frontier Materials and Dept. of Materials Science and Engineering, GIST, Gwangju, 500-712, South Korea — Resonant x-ray scattering was performed on DyB₄ to observe a quadrupolar ordering. It is demonstrated that anisotropic tensor susceptibility (ATS) resonances due to ordering in Dy 4*f* states can be separated from those due to atomic displacements, such as Jahn-Teller distortion, by tuning the incident x-ray energies. An ATS resonance at 7.792 keV, corresponding to antiferro-type quadrupolar (AFQ) ordering, was observed to have different azimuthal angular dependence and polarizations from those of magnetic resonance. The AFQ order parameter is developed concomitantly with monoclinic phase transition below 12.3 K, and its magnitude is proportional to quadratic of the monoclinic angle.

Sungdae Ji
eSSC and Dept. of Physics, Pohang University of Science and Technology, Pohang, 790-784, South Korea

Date submitted: 16 Jan 2006

Electronic form version 1.4