

Abstract Submitted
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Imaging the evolution of the antiferromagnetic to ferromagnetic magnetostructural first order phase transition of FeRh thin films JONG-WOO KIM, MARTIN HOLT, ROBERT WINARSKI, Argonne National Laboratory, DARIO ARENA, Brookhaven National Laboratory, PHILIP RYAN, Argonne National Laboratory — Iron-Rhodium films undergo an antiferromagnetic (AFM) - ferromagnetic (FM) first order transition at ~ 380 K and this is accompanied by a 0.6 % volume expansion. Because different lattice parameter of each phase result in different diffraction conditions for the AFM and FM phases, each phase can be discriminated by the diffraction condition. Using the Nano-diffraction beam line at the Advanced Photon Source, the phase separation was imaged by scanning the beam across the sample and the phase evolution with temperature was measured in the Nano-scale. It is confirmed that the nucleation sites associate with defects. The temperature dependence of the phase separation will be discussed in conjunction with the rate of the phase evolution. Work at Argonne, including the Advanced Photon, is supported by the U.S. Department of Energy, Office of Science, and Office of Basic Energy Sciences, under Contract No. DE-AC02-06CH11357.

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