Abstract Submitted
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Investigation of $SmFe_{1-x}Co_xAsO$ using ^{57}Fe Mössbauer spectroscopy as a function of temperature and applied magnetic field[1] G. LONG, Dept. of Physics, University at Buffalo, SUNY, NY 14260, J. STEINER, M. DEMARCO, D. COFFEY, Dept. of Physics, Buffalo State College, NY 14222, H. ZENG, Dept. of Physics, University at Buffalo, SUNY, NY 14260, Y. LI, G. CAO, Z. XU, Dept. of Physics, Zhejiang University, Hangzhou 310027, China — The Mössbauer spectra(MS) of $SmFe_{1-x}Co_xAsO$, where x=0.0, 0.05, and 0.1, were measured in applied fields up to 9 T and at temperatures between 4.2 K and 298 K. SmFeAsO is magnetically ordered with T_N=138 K and has a hyperfine magnetic field of 5.05 T at 4.2 K. In a 9 T magnetic field the MS is consistent with a distribution of hyperfine magnetic fields and has a width of $H_{apllied} + H_{hyperfine} \simeq 13T$, suggesting that the sample is not polarized and evidence of strong magnetic anisotropy. The MS of $SmFe_{0.95}Co_{.05}AsO$ is well-described by a Lorentzian peak from room temperature to 4.2 K. From room temperature to ∼25 K the linewidth is 0.30 mm/sec but then increases to 0.72 mm/sec when cooled from 25 K to 10 K. Below 10 K it remains constant. The MS of $SmFe_{0.9}Co_{.1}AsO$ shows no evidence of internal field at any temperature.

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