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Low Temperature Study of Mechanically Alloyed $EuFeO_3$[1]
SUMAN KHATIWADA, DEREJE SEIFU, Morgan State University — Rare-earth (R) and transition metal (T) perovskite Oxides RTO_3 are of great interest in Physics, besides potential applications in variety of devices. Here, we present study of $EuFeO_3$ synthesized by mechanical alloying. The Mössbauer measurement on $EuFeO_3$ is one of the rare cases where both the R and the T sites are probed in the same compound. Room temperature Mössbauer study is already reported [1], here we report low temperature Mössbauer measurements. Measurements indicate that hyperfine magnetic field increased with decreasing temperature. The ^{57}Fe Mössbauer spectra depicts that there is only a magnetic sextet at 20K implying pure ferromagnetic state. As temperature increased two non-magnetic states appeared and their propensity increased with temperature. The ^{151}Eu Mössbauer measurements show that the line width at half maxima has a peak between 50K and 100K. [1] Seifu, D., Takacs, L., Kebede, A., "^{151}Eu and ^{57}Fe Mössbauer study of mechanically alloyed $EuFeO_3$." J. of Mag. and Mag. Matt., **302**, pp 479 – 483, 2006.

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Suman Khatiwada
Morgan State University

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