

Abstract Submitted  
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**Phase diagram for Bi<sub>1-x</sub>Ca<sub>x</sub>MnO<sub>3</sub> ( $x < 0.5$ )** YUHAI QIN, TREVOR TYSON, New Jersey Institute of Technology, SANG-WOOK CHEONG, Rutgers University, XIAONONG XU, Nanjing University — The multiferroic BiMnO<sub>3</sub> system, in which ferroelectric and ferromagnetic orders can coexist, has attracted much research work in the past years for its potential technological applications. For the more general system Bi<sub>1-x</sub>Ca<sub>x</sub>MnO<sub>3</sub>, the phase diagram for the Ca rich region ( $x > 0.4$ ) has been established [1]. In order to understand the multiferroic behavior near the  $x=0$  system, the hole-doped region ( $0 < x < 0.5$ ) was investigated. We have completed the magnetic, transport, and structural phase diagram of Bi<sub>1-x</sub>Ca<sub>x</sub>MnO<sub>3</sub>, by performing detailed structural (XRD and XAFS), magnetization (ZFC/FC) and electrical measurements on Bi<sub>1-x</sub>Ca<sub>x</sub>MnO<sub>3</sub> ( $0 < x < 0.5$ ), showing the transition from the highly distorted monoclinic phase to the orthorhombic phase. This work is supported by NSF DMR-0512196.

[1] H. Woo, T. A. Tyson, M. Croft, S. W. Cheong, and J. C. Woicik, Physical Review B: Condensed Matter and Materials Physics 63, 134412/1 (2001).

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