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Investigation of the Stripe-Bubble Phase in $\text{La}_{2-2x}\text{Sr}_{1+2x}\text{Mn}_2\text{O}_7$ ($x=0.32$) by Magnetic Force Microscopy JUYOUNG JEONG, JINHO YANG, CALDES, Institute for Basic Science and Department of Physics, Pohang Univ of Sci & Tech, YUNWON KIM, CALDES, Institute for Basic Science, ILKYU YANG, Department of Physics, Pohang Univ of Sci & Tech, JIANSI ZHOU, Texas Material Institute, the University of Texas at Austin, NELIZA LEON, ROMAN MOVSHOVICH, Los Alamos National Laboratory, ALEX DE LOZANNE, Department of Physics, the University of Texas at Austin, H.W. YEOM, CALDES, Institute for Basic Science and Department of Physics, Pohang Univ of Sci & Tech, J.B. GOODENOUGH, Texas Material Institute, the University of Texas at Austin, NESTOR HABERKORN, Centro Atomico Bariloche, JEEHOON KIM, CALDES, Institute for Basic Science and Department of Physics, Pohang Univ of Sci & Tech — We constructed a home-built low temperature magnetic force microscope (LTMFM) with the fiber interferometer detection scheme: The base temperature is 4 K and magnetic field range is up to 6 T. The MFM system is applied to investigate unconventional magnetism of $\text{La}_{2-2x}\text{Sr}_{1+2x}\text{Mn}_2\text{O}_7$ ($x=0.32$) in a wide span of temperature and magnetic field. We imaged spin reorientation transition and found two types of bubble domains. The behavior of bubble domains shows the same upon field cycle, indicating a reversible magnetization property reported previously in the bulk magnetization measurement. The origin of the two types of the bubble domains will be discussed by comparing MFM and bulk magnetization data.

Juyoung Jeong
CALDES, Institute for Basic Science and Department of Physics,
Pohang Univ of Sci & Tech

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