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Nanoscale characterization of the ferroelectric domain structure in multiferroic RMnO_3 (R: rare earths) TAEKJIB CHOI, YOICHI HORIBE, HEE-TAEK YI, YOUNG JAI CHOI, WEIDA WU, SANG-WOOK CHEONG, Rutgers University — Recent progresses in fabrication and nanoscale characterization of high quality complex oxides have driven a significant understanding of underlying physics in the field of multiferroic and ferroelectric materials. The hexagonal manganites, RMnO_3 (R: rare earths), have been extensively studied because of the rich physics of the hexagonal system with both long-range electric and magnetic orders. In this work, intriguing ferroelectric domain structures coupled intimately with structural domains are spatially resolved using scanning probe microscopy. In addition, we explored the domain growth behavior by external stimulus. Our results provide critical insights into understanding the origin of remarkable magnetoelectric coupling in the hexagonal RMnO_3 .

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