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Doping effect on ferroelectric microstructure in YMnO_3 . S. MORI, J. TOKUNAGA, Y. HORIBE, Department of Physics, Osaka Prefecture University, T. ASADA, Y. KOYAMA, Department of Materials Science, Waseda University, T. KATSUFUJI, Department of Physics, Waseda University — YMnO_3 is one of the typical multiferroic materials showing the coexistence of the antiferromagnetic and ferroelectric orders at low temperature. In this work, we have investigated doping effect on ferroelectric microstructure in YMnO_3 by both electron diffraction and real-space imaging techniques. We found that the large ferroelectric domains with several micron meters change into the ferroelectric microdomains with the size of 20-30nm by substituting Y^{3+} ions for Ca^{2+} and Zr^{4+} ions. In addition, diffuse scatterings elongated along both the [110] and [001] directions were found, which were similar to those found in $\text{YMn}_{0.825}\text{Ti}_{0.175}\text{O}_3$ exhibiting the enhanced magnetocapacitance effect.[1] The lattice instability in the Mn triangle lattice induced by the partial substitution at Y^{3+} site should have some influence on the coupling between magnetic and ferroelectric orders.

[1] S.Mori et al., Phys.Rev.B (in press).

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