Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

The fluctuation of charge/orbital/spin ordering structure in $Sm_{1-x}Sr_xMnO_3$ (x = 0.55 and 0.6)[1] XIUZHEN YU, National Institute for Materials Science, YASUHIDE TOMIOKA, AIST, TORU ASAKA, JFCC, KOJI KIMOTO, NIMS, YOSHINORI TOKURA, Tokyo Univ., YOSHIO MATSUI, NIMS — In over-doped $Sm_{1-x}Sr_xMnO_3(x > 0.5)$, the disorder due to ionic size mismatch of Sm and Sr cations is very large. A large disorder decreases the electronic correlation length and induces the electronic structure competition and hence the spatial phase fluctuation. In this study, the charge/orbital ordering (CO/OO) structure and magnetic domain structure in $Sm_{1-x}Sr_xMnO_3$ with doping levels of 0.55 and 0.6 have been examined by transmisstion electronic microscopy (TEM). For $x = 0.55$, the CO/OO structure with commensurate modulation vector $\boldsymbol{Q} = (0, 1/3, 0)$ is seen above the A-type transition temperature ($T_{NA} \sim 180$ K) and that with the incommensurate one below T_{NA}. For $x = 0.6$, typical 180-degree magnetic domains were observed in the (110) plane below 50 K, indicating the canted AFM structure. This AFM structure locally collapses because of the existence of short-range CO.

[1]This work was partly supported by the Nanotechnology Support Project of Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan.

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Date submitted: 04 Jan 2010 Electronic form version 1.4