Abstract Submitted
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Fabrication and Crystal Structure of [$REMO_3$ /ABO_3] (A=Ca, La, B=Fe, Mn, RE=Bi, La, M=Fe, $Fe_{0.8}Mn_{0.2}$) Superlattices Grown by Pulsed Laser Deposition Method[1] K. TAKASE, Y. WATABE, N. IWATA, T. OIKAWA, T. HASHIMOTO, Nihon University, M. HUIJBEN, G. RIJNDERS, University of Twente, H. YAMAMOTO, Nihon University — The superlattices of [$REMO_3$/ABO_3] (RE=Bi, La, M=Fe, $Fe_{0.8}Mn_{0.2}$ A=Ca, La, B=Fe, Mn) were prepared by Pulsed laser deposition (PLD) method grown on $SrTiO_3$(STO)(100) for the novel materials which show ferromagnetic and ferroelectric properties with giant magnetoelectric effect at room temperature. When the superlattices were prepared, seven units $LaFeO_3$(LFO) film was deposited first, and the required pulses for other materials to grow seven units were calculated using the growth rate ratio and the growth rate of the last three units of LFO. One of the superlattices, [7 units - $BiFe_{0.8}Mn_{0.2}O_3$(BFMO) / 7 units - $CaMnO_3$(CMO)] stacking for 14 times, the satellite peaks from -2 to +1 were observed. From the fitting to the X-ray reflection spectra, thickness of BFMO and CMO in [BFMO/CMO] one cycle was 2.139nm (5.3 units) and 2.042nm (5.5 units). Although the deposited number of units was definitely less than seven, the satellite peaks are derived from the superstructure. Reciprocal space mapping shows the *in-plain* lattice constant of [BFMO/CMO] superlattices was not fitted to that of substrate. The calculated *in-plain* lattice parameter was 0.382 nm longer than the value of 0.3732 nm, which is the bulk CMO and *in-plain* lattice parameter of CMO thin film grown on STO(001) substrate.

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