

High density Arrangement of BiFeO₃ nanoislands in Large Area: Multiferroics at room temperature

현승, 김진곤*

POSTECH

(jkkim@postech.ac.kr*)

BiFeO₃ (BFO) has attracted great interest due to its promising application to magnetoelectric devices. Although ferroelectric and ferromagnetic properties (namely, coupling effect) are shown in bulk or thin film BFO, there is no report on this behavior of nano-sized BFO islands. In this study, we prepared a high density array of BFO nanoislands on a single crystalline substrate by using porous polymer template. The porous template was obtained by plasma etching on a polystyrene film with alumina membrane as an etching mask. The BFO precursor dropped into the porous template, followed by spin-coated. During complete removal of the polymer template at high temperature, the crystal of BFO nanoislands was epitaxially grown on the substrate. Crystal structure and the magnetoelectric coupling of BFO nanoislands were studied by X-ray diffraction, and piezoresponse and magnetic force microscopy, respectively.