

# Concurrent Magnetic and Ferroelectric Transitions in Quasi-layered Multiferroics

Chan-Ho Yang<sup>1,2\*</sup>

<sup>1</sup>Department of Physics, KAIST, Daejeon 305-701, Republic of Korea

<sup>2</sup>KAIST Institute for the NanoCentury, Daejeon 305-701, Republic of Korea

Our quest for the ultimate multiferroic material over the last year has drawn our focus on the highly strained ( $c/a \sim 1.26$ )  $\text{BiFeO}_3$  phase and we have found very astonishing results [1]. The antiferromagnetic transition temperature of the highly-elongated phase is largely suppressed to near room temperature and moreover the ferroelectric order undergoes a first order transition to another ferroelectric state simultaneously at the magnetic transition temperature indicating strong spin-lattice coupling. The c-axis lattice parameter change at the magnetic transition temperature is  $\sim 0.2\%$  which is comparable with current commercialized magnetostrictive alloys like Terfenol-D. Our findings reveal a unique example of a concurrent magnetic and ferroelectric transition at the same temperature in a proper ferroelectric, potentially providing an avenue for room temperature magnetoelectric applications.

## 참고문헌

[1] K. T. Ko *et al.*, *Nature Communications* 2, 567 (2011)