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**Self-modulated growth of a super-large-period multiferroic BiFeCoTiO33 thin-film** YALIN LU, DECHAO MENG, XIAOFANG ZHAI, CHAO MA, HAOLIANG HUANG, YU YUN, YAN HUANG, ZHENGPING FU, RANRAN PENG, University of Science and Tech of China, XIANGYU MAO, XIAOBING CHEN, Yangzhou University — The epitaxial growth of super-large-period Aurivillius thin films has been explored in order to study their period-modulated multiferroic property. BiFeCoTiO33 thin films with a pseudo-period of ten have been grown on SrTiO3 single crystal substrates using pulsed laser deposition. The films are found to be coherently strained to the substrates and atomically smooth. The X-ray diffraction indicates an average layer period of 10. While the high resolution scanning transmission electron microscopy reveals a self-modulated nanostructure in which the period changes as the thickness increases. The modulation to the period is tentatively explained by the volatile bismuth stacking difference between hetero-epitaxial growth and homo-epitaxial growth. Nonetheless, the self-modulated large period films exhibit intrinsic ferromagnetic and ferroelectric properties at room temperature.

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