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Properties and superlattice for multiferroics $BiMnO_3$.[1] C.Q. JIN, Z.H. CHI, H. YANG, R.C. YU, S.M. FENG, F. Y. LI, Institute of Physics, Chinese Academy of Sciences — Single-phase multiferroics $BiMnO_3$ceramic was synthesized via high-pressure high-temperature technique. Microstructure modification accompanied by emergence of superlattice due to electron-beam irradiation was observed wherein by means of ED and HRTEM. Magnetic evaluation manifesting a unique ferromagnetic phase transition at 103 K has corroborated our speculation that as-prepared BiMnO3 ceramic is free of polymorphism at room temperature. Furthermore, magnetization versus temperature ($M-T$) characterization combined with *in situ* variable temperature powder X-ray diffraction (XRD) and dielectric constant versus temperature (ε-T) spectrum scanning confirmed that as-prepared $BiMnO_3$ specimen exhibits simultaneous occurrence of ferromagnetism and ferroelectricity below its ferromagnetic Curie temperature (T_M)of 103 K. .

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C.Q. Jin
Institute of Physics, Chinese Academy of Sciences

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