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Ferroelectric and magnetic properties of multiferroic $BaCoF_4$ thin films[1] TRENT JOHNSON, FELIO PEREZ, DAVID LEDERMAN, West Virginia University — Thin films of $BaCoF_4$ have been successfully fabricated by molecular beam epitaxy and e beam technique on sapphire substrate (110), with a buffer layer of palladium grown using sputtering dc in argon atmosphere. Here we investigated the structural, morphological and ferroelectric properties were analyzed by means of various characterization techniques. The x- ray patterns showed that the films were oriented, but RHEED showed that the films were polycrystalline in the plane. AFM images showed a relatively granular surface. Measurements of the dielectric polarization showed that the films were ferroelectric at room temperature. The effect of magnetic fields on the ferroelectric properties at cryogenic temperatures will be described.

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