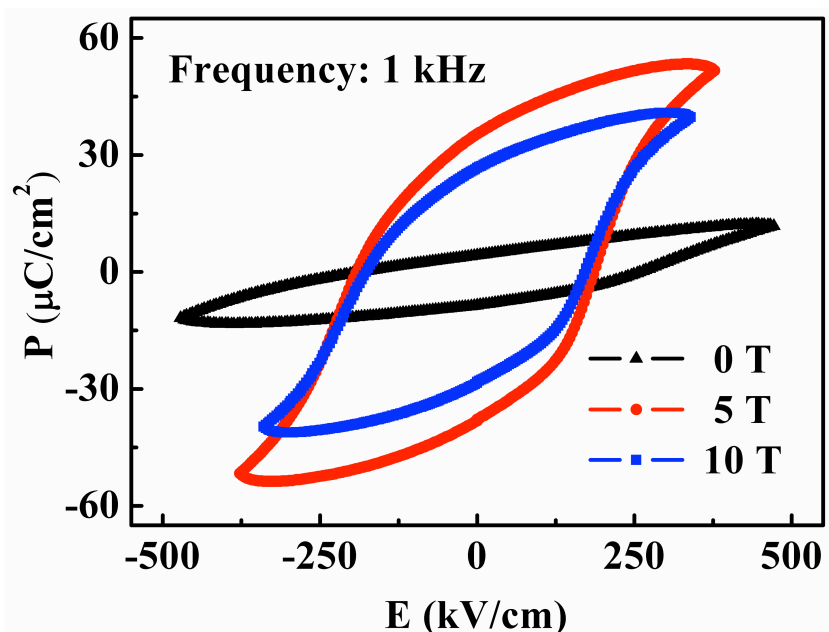


Significantly improved multiferroic properties of BiFeO₃/PZT bilayer films by magnetic field annealing

磁場中アニールによる BiFeO₃/PZT2層膜のマルチフェロイック性能向上



We report a novel method of synthesizing multiferroic BiFeO₃/Pb(Zr_{0.52}Ti_{0.48})O₃ (BFO/PZT) bilayer films based on the use of a high magnetic field. Simultaneously enhanced magnetization and electric polarization were observed at room temperature in the films annealed under an external magnetic field. Compared with the control samples annealed at zero field, the saturated magnetization and double remanent polarization were increased by a factor of 6 at room temperature. These results demonstrate that the strong magnetic annealing method is an alternative way to fabricate high-performance BiFeO₃ films.

IEE, Chinese Academy of Sciences: S. Zhang, X. Zhang, D. Wang, Yanwei Ma

IMR, Tohoku University: S. Awaji, K. Watanabe

Reference: S. Zhang, X. Zhang, D. Wang, Z. Gao, Y. Ma, S. Awaji, and K. Watanabe, "Significantly improved multiferroic properties of BiFeO₃/Pb(Zr_{0.52}Ti_{0.48})O₃ bilayer films by magnetic field annealing", Appl. Phys. Express 5 (2012) 041802.

BiFeO₃/Pb(Zr_{0.52}Ti_{0.48})O₃ (BFO/PZT)膜を外部磁場中でアニールすることで、室温の磁化特性と電気分極特性が同時に改善されることを発見した。磁場中でアニールすると、ゼロ磁場でアニールした膜と比較して飽和磁化と残留分極が約6倍となった。すなわち強磁場中アニールが高性能 BiFeO₃膜を得る新たな有効手法であることを実証した。

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