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**Lead-Free Textured Materials with Improved Dielectric and Piezoelectric Fabricated Using Scalable Processing and Forming Techniques,**

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Lead zirconate titanate, PZT, has been established as the material of choice for many ferroelectric and piezoelectric applications; however, increasing environmental restrictions surrounding lead use in industry have galvanized research seeking alternative materials with equivalent properties. Layer-structured perovskites offer a rich variety of potential alternatives, particularly the bismuth layered and alkali niobate-based solid solution ferroelectrics. Dielectric and piezoelectric properties are greatly improved by templated grain growth or reactive templated grain growth by producing preferably oriented microstructures. While it is of academic interest to explore alternative materials, the ultimate value to industry is the ability to fabricate these materials using scalable fabrication techniques. This work is focused on the production of textured layer-structure perovskites using the common industrial practices of screen printing and injection molding, as well as an aerosol deposition spray technique. The degree of texturing for each process was determined through microstructure, electron diffraction and x-ray diffraction analysis. The dielectric and piezoelectric properties of materials produced by scalable processing and forming techniques were determined, using PZT as a benchmark comparison.

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