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Characterization of PLZT Thin Films HASITHA GANEGODA, CARLO SEGRE, Illinois Institute of Technology, BEIHAI MA, Energy Systems Division, Argonne National Laboratory, LIDENS CHENG, JEFF TERRY, Illinois Institute of Technology — Ferroelectric lead lanthanum zirconate titanate ($\text{Pb}_{1.12}\text{La}_{0.08}\text{Zr}_{0.52}\text{Ti}_{0.48}$) of various thickness ($\sim 50\text{-}300\text{nm}$) were fabricated by spin-coating metallo-organic solutions on Pt/TiO/SiO₂/Si substrates, followed by heat treatment. The films were observed to be uniform and polycrystalline in nature. Slight modifications to the processing technique yielded either metallic or non-metallic samples. Increasing metallicity in the reaction products of the film may be one of the key factors that result in high leakage current in film-on-foil capacitors, which is detrimental to their operation as high voltage capacitors. In order to understand the mechanisms that resulted in metallic films, we utilized synchrotron radiation techniques for characterization. The samples were investigated using x-ray diffraction, photoemission, absorption spectroscopy, and resistance. Our preliminary measurements have shown interdiffusion of the metal foil into some of the thin films. Photoemission measurements show single peaks for Pb and Zr in the thinnest sample while thicker samples exhibit splitting for each of these peaks suggesting the existence of Pb and Zr in more than one chemical environment.

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