ELECTRICAL CHARACTERIZATION OF PZT FILMS FOR FERROELECTRIC PRINTING

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PZT ferroelectric thick films with thickness of 5 – 100 μm are widely used for various applications such as actuators, sensors, piezoelectric and pyroelectric transducers etc. due to their excellent physical properties. For ferroelectric printing applications microstructural defects like pores, microcracks or secondary phase inclusions with the linear sizes greater than 20 μm should be avoided to achieve a printing quality better than 1200 dpi. This effect in principal can be achieved using sol-gel derived PZT thin film (with the thickness of about 1 μm) deposited directly onto the PZT thick film.
In this presentation, we report the results of dielectric, surface potential, leakage current and polarization measurements as a function of position on the surface in correlation with the microstructure and composition of the top sol-gel thin film. Special attention was paid also to the surface potential versus elapsed time measurements after poling under different conditions. The distribution of polarization inside of the film was measured and analyzed using LIMM technique.
It has been shown that microstructural and physical properties of the surface of PZT films for ferroelectric printing can be improved by using an additional deposited sol-gel thin film with optimized composition.

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