

Abstract 4th European Workshop on Piezoelectric Materials

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Perovskite based ferroelectrics represent an interesting class of materials for miniaturized piezoelectric devices. Deposited on various substrates, piezoelectric films can be used in Micro Electro-Mechanical Systems (MEMS) such as microfluidic devices, ultrasonic mixer, micromanipulators or micro-actuators. Depending on the application, the layer thickness may vary from less than 1  $\mu\text{m}$  to more than 100  $\mu\text{m}$ . In this work, the development of a sol-gel made dip coated PZT films for tactile interfaces is reported.  $\text{PbZr}_x\text{T}_{(1-x)}\text{O}_3$  is one of the best performing piezoelectric compounds. The use of sol-gel chemistry allows the control of the layer thickness. The solution has been prepared from a very stable diol based PZT sol which has been already developed for microelectronic applications. To deposit thicker films, powders made from the PZT sol were added to the solution. The influence of grain size and powder amount has been studied. To improve film densification, intermediate sol infiltrations have been processed. The coating parameters have been optimised to obtain homogeneous layers on various metal substrates. By using an original process, very high piezoelectric coefficients,  $d_{33}$ , measured with a berlincourt type piezometer, are reported. No direct relationship between the piezoelectric and dielectric properties of the films has been found.