

New Masking Technique for PZT Thick Films Utilizing KOH Etched Trenches

T. Pedersen¹, C.C. Hindrichsen¹, K. Hansen², T. Zawada², R. Lou-Moeller³ and E.V. Thomsen¹

¹Department of Micro and Nanotechnology – DTU, Kgs. Lyngby, 2800 Denmark

²Ferroperm Piezoceramics A/S, Kvistgaard, 3490 Denmark,

³InSensor A/S, Kvistgaard, 3490 Denmark

Key words: PZT, Thick Film, Screen Printing, Masking

ABSTRACT

For high resolution patterning of piezoelectric PZT ($\text{PbZr}_x\text{Ti}_{1-x}\text{O}_3$) thick films a new technique is presented utilizing KOH etched trenches in silicon substrates as moulds for the PZT paste. Further processing such as deposition and patterning of top electrode is easy due to the near planar surface of the structure after sintering of the PZT thick film. Furthermore, this method allows for good alignment with prior or subsequent photolithography based processes. It is a versatile process that can be used in many different designs but one possible use is fabrication of 1D or 2D arrays of ultrasonic transducer elements.