New Technique for Fabrication of High Frequency Piezoelectric Micromachined Ultrasound Transducers

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ABSTRACT

For A novel technique for fabrication of linear arrays of high frequency piezoelectric Micromachined Ultrasound Transducers (pMUT) on silicon substrates is presented. Piezoelectric elements are formed by deposition of PZT ($(PbZr_xTi_{1-x})O_3$) into etched features of the silicon substrate such that the depth of these features determine the element thickness and hence the resonance frequency. The process leaves a near planar surface which is ideal for further wafer level processing such as top electrode and interconnect formation. A fabricated single element is characterized by pulse echo response.