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Thin Film Piezoelectric MEMs Devices

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Thin film piezoelectric devices, processed in Si - related processes, are attractive for ultrasound transducers and piezoelectric switches. Thin film ultrasound transducer enable large bandwidth ($> 100\%$), high frequency operation. In piezoelectric micromachined ultrasonic transducers (PMUTs) the ultrasonic waves are generated by flexural motion of the membrane, which is coupled to strain in the piezoelectric film. We have investigated the piezoelectric properties of thin films for ultrasound transducers and piezoelectric switches. Thin film piezoelectric ultrasound transducers as well as piezoelectric switches have been designed, processed and characterized. Thin film piezoelectric devices with excellent quality and reliability have been realized.