Title:	Investigations on Film Bulk Acoustic Wave Resonator based on Aluminum Nitride
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Abstract:	Thin-film bulk acoustic wave resonators serve as an alternative to current dilelectric acoustic wave resonators for use in telecommunications [LAGG + 11]. Because it has high resonance frequency, the current research focuses on using FBAR for sensing purposes[ZC12]. It has many advantages such as small size, IC compatibility, which makes it possible to integrate on a chip. The FBAR has two modes for resonating: thickness extensional(TE) and thickness shear(TS). Studying these two modes is the main theme of this thesis. This thesis at first introduces the basic theory of the piezoelectric resonators and then discusses a handy equivalent circuit of the resonator called Butterworth van dyke Model. It then dives into Finite Element Analysis of a simple geometry of both Thickness Exten- sional and Thickness Shear Modes of an FBAR and discusses the results that come out of it. Under the section of experimental results various recipes for depositing Aluminum Nitride are discussed and what results come out from the characterization measurements of the deposited films are discussed.
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