

Identification of Piezoelectric Material Parameters With an Optimization Toolbox

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Simulation of the behavior of microelectronic devices for imaging and therapeutic ultrasound provides significant advantages to the manufacturing industry of such devices. One of the difficulties faced when attempting to achieve reliable results from numerical experiments is the lack of knowledge of the basic material properties such as elasticity constants, permittivity, density and damping coefficients. In this presentation we will show how an Optimization Toolbox has been utilized to solve the problem of identifying material parameters from experimental measurements by solving an inverse problem. We will show how a component based software development approach enables us to solve a mathematical problem in an engineering context and deliver a commercial product to the medical device manufacturing industry.