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Title:	Damping Variation by the Deposition of Thin Solid Films and Liquid on Quartz Crystal
Authors:	Gautam, Varun (/jspui/browse?type=author&value=Gautam%2C+Varun)
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Abstract:	Acoustic transducers, such as the Quartz Crystal Microbalance (QCM), are widely used. In sensor applications, it is by far the most extensively used and most popular acoustic transducer. In chemical and biosensor industries it has been widely used sensitive and selective, resilience, small size and ease of connection with electronic measuring equipment. QCM must, however, be covered in a sensing film. Its selection and sensitivity cannot be achieved without the use of coating materials. Oscillators and dedicated measuring circuits have made this an issue obsolete at this time. I present an overview of QCM sensors based on its core knowledge so that at some point someone may be interested in learning more about QCM sensors. I followed by the introduction of QCM theory, which is explained using piezoelectric stress equations as well as the Mason equivalent circuit. A discussion of QCM behaviour in the context of resonant frequency as well as resistance is followed by a look at the traditional equations governing these phenomena. Based on the acoustic wave equation and the Mason equivalent circuit, then I demonstrate QCM's behaviour using a solid film. Then, measuring change in damping in resonance frequency, quality factor and doing impedance matching with the QCM with and without thin solid films
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