



Contribution ID : 65

Type : poster

Optimization of near-field acoustic sensing in a SANM system

In Shear-force Acoustic Near-field Microscopy, the sensitivity of the acoustic detection system is crucial to reliably characterize the dynamic response of fluids subjected to confinement and shear stress. Herein we report a method to increase the signal-to-noise ratio of the amplification system, as reflected in approach/retraction test undertaken using a SiO₂ sample and a silicon pyramid probe. In this method the inherent capacitance present in the acoustic sensor system (a pile of piezoelectric plates) is matched with a parallel inductor forming a tank circuit optimizing the signal at a desired operating frequency ~32kHz. A detailed construction of the circuit amplifier, its frequency response, and detailed noise characterization is included.

Primary author(s) : BROCKMAN, Theodore (Portland State University); Dr LA ROSA, Andres (PSU - USA)

Presenter(s) : BROCKMAN, Theodore (Portland State University)

Session Classification : Poster session

Track Classification : Materials Science and Nanotechnology