FABRICATION AND CHARACTERIZATION OF MICRO RESONANT CANTILEVERS WITH INTEGRATED FLUIDIC CHANNELS

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Micro and nano cantilevers have become of increasing interest to detect bio molecules/particles in aqueous solutions. But immersing cantilevers into liquid highly degrades their performance due to viscous damping of the fluid. In our work we describe fabrication and characterization of cantilevers with integrated micro fluidic channels which are fabricated on top of the cantilevers. To detect molecules or particles, the fluid is passed through the fluidic channels. The change in resonance frequency of the cantilevers can be translated in density of the fluid or presence of particles in the fluid. This approach largely helps in reducing viscous damping and additionally very small volume of sample (2 µl -5 µl) is required to be tested.

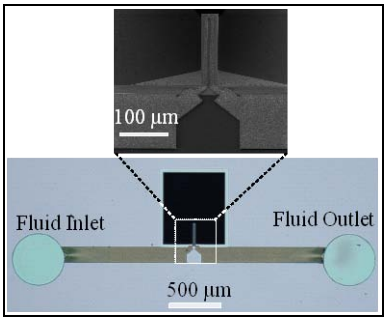

Figure 1. Micro cantilever with integrated fluidic channel

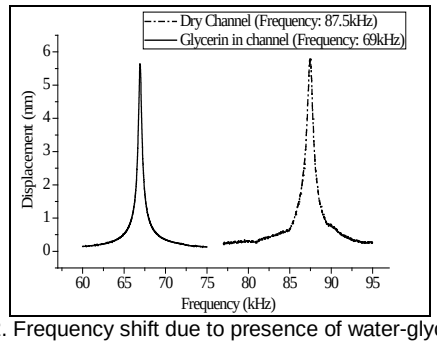

Figure 2. Frequency shift due to presence of water-glycerin solution in the channel.