Probe Based Sensor For Bio / Chemical Applications

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The BioProbe group is located at the Departement of Micro and Nanotechnology on the campus of the Technical University of Denmark. Our main goal is to develop and test probe based bio/chemical sensors using micro/nano processing technologies in both silicon and plastics. Our inspiration has come from the development of atomic force microscope probes, where it was realized that cantilever based sensors could be used as bio/chemical sensors applications. This lead to the development of microcantilevers with integrated piezoresistive readout that are encapsulated thus optimized for measuring in liquid environments. From this starting point, many other sensor ideas have been pursed and investigated such as monolithically integrated nano-cantilevers with CMOS, SU-8 based cantilevers with integrated readout and microfluidic systems and even nanotube based mass sensors. In this presentation the different BioProbe activities will be briefly explained along with what core technologies we are using and what results have been obtained thus far.

The presentation will focus on both static and dynamic type sensors and will explain what the important optimization factors are for the two sensor types and how they complement each other. Finally, the importance of moving from MEMS to NEMS will be apparent and I hope a good discussion will lead to novel ideas and fruitful collaborations.