

AFM-compatible near-field scanning microwave microscope

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The spatial resolution of a near-field microscope is far superior to that of a conventional far-field microscope. We are developing a near-field scanning microwave microscopy (NSMM) that allows probing of local electrodynamic properties, which can be utilized to study both fundamental physical processes and material science at the sub-micron level.

- NSMM is micro-fabricated onto atomic force microscope (AFM) cantilevers.
- The sensing electrode is separated from the excitation electrode to reduce shot noise.

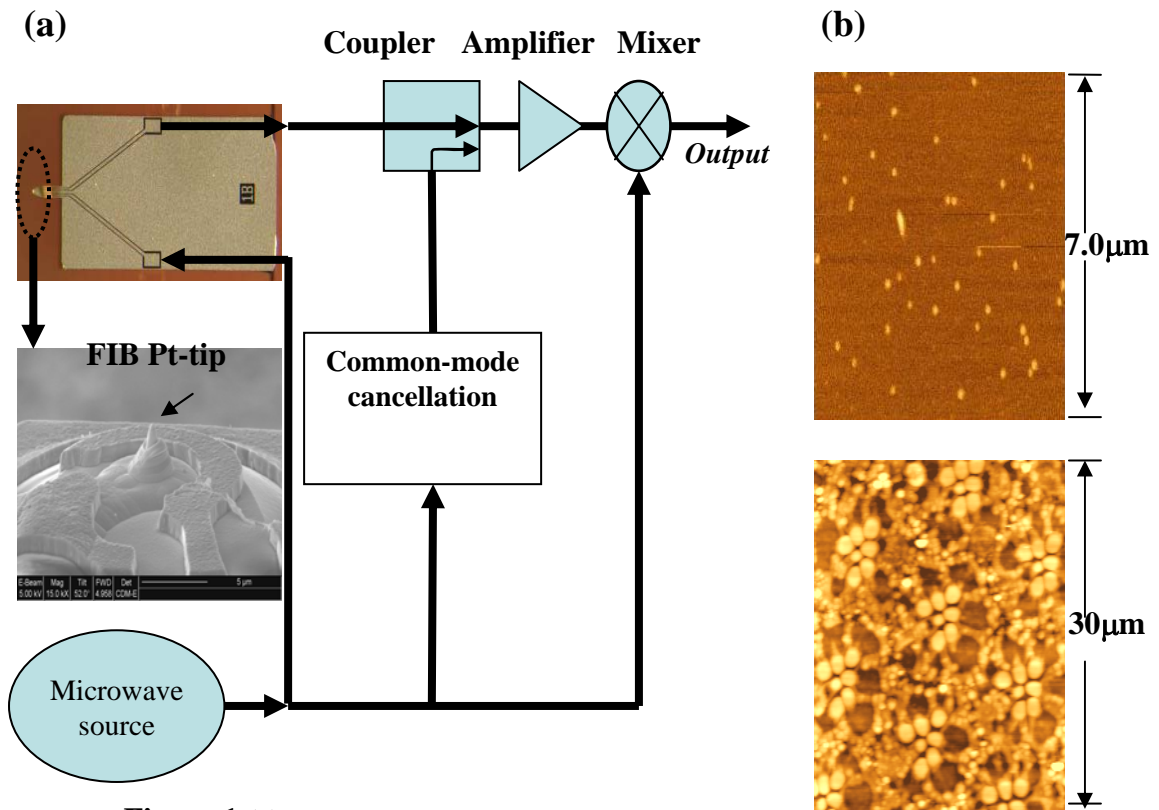


Figure 1 (a) Picture of the NSMM cantilever and the scanning electron microscope (SEM) image of the Pt-tip by focused-ion beam (FIB) deposition. The microwave circuit diagram is also shown in the figure. (b) Microwave images – Upper panel: Au nano-particles on SiO₂ substrate. Lower panel: Ommatidial clusters of the fruit fly *Drosophila*'s compound eyes.

Reference: AFM-compatible Near-field Scanning Microwave Microscope with Separated Excitation and Sensing Probes, K. Lai, M.B. Ji, N. Leindecker, M.A.

Kelly, and Z.X. Shen, accepted in Review of Scientific Instruments, 2007.