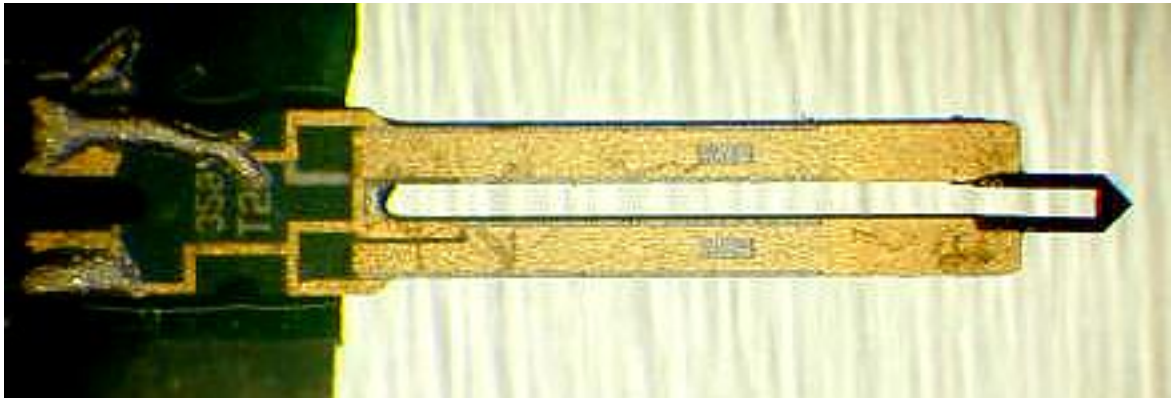
The first Akiyama-Probe prototype

- Like all industrial products, there is an idea first and, then, a prototype is fabricated to proof the concept. The picture below is the very first “Akiyama-Probe”. This probe was realized at the beginning of 2001.
- It looks very much like the current going Akiyama-Probe from NANOSENSORS. However, the commercialized probe is based on many years of R&D as well as outcomes of sub-projects. Without those efforts, the commercialization would not have been possible.
- The following slides in this note show typical R&D probes which have been already published. NANOSENSORS is not producing those probes. Information is provided as an additional customer service



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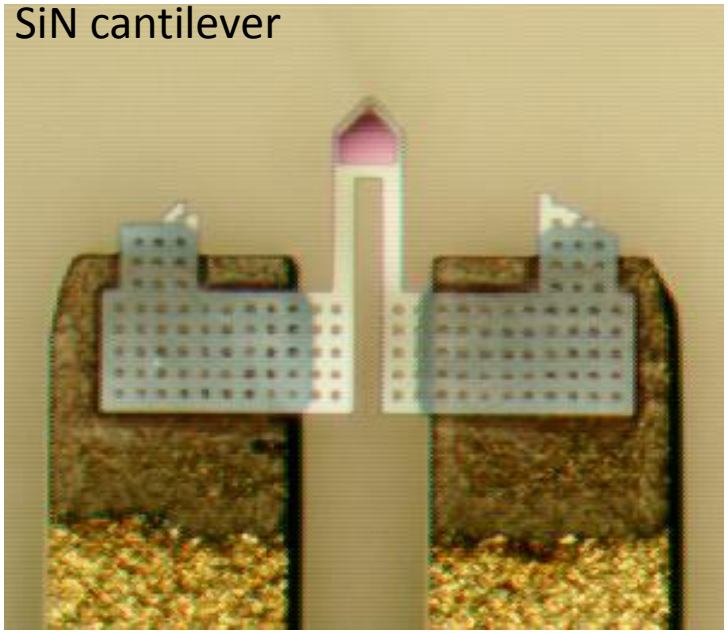
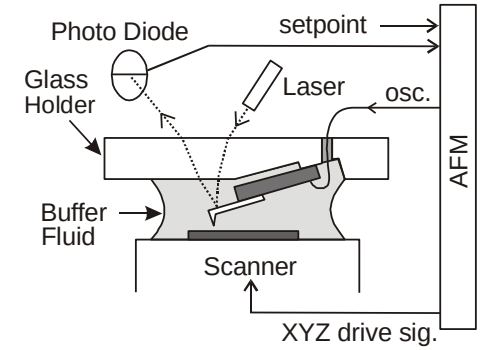
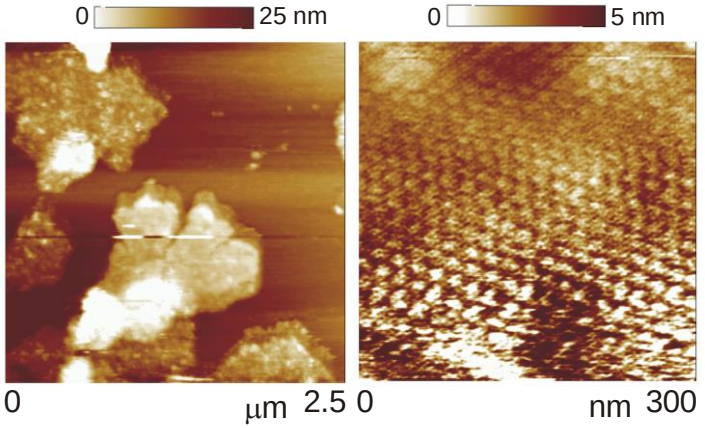
R&D Probe: Excitation of SiN cantilever in liquid





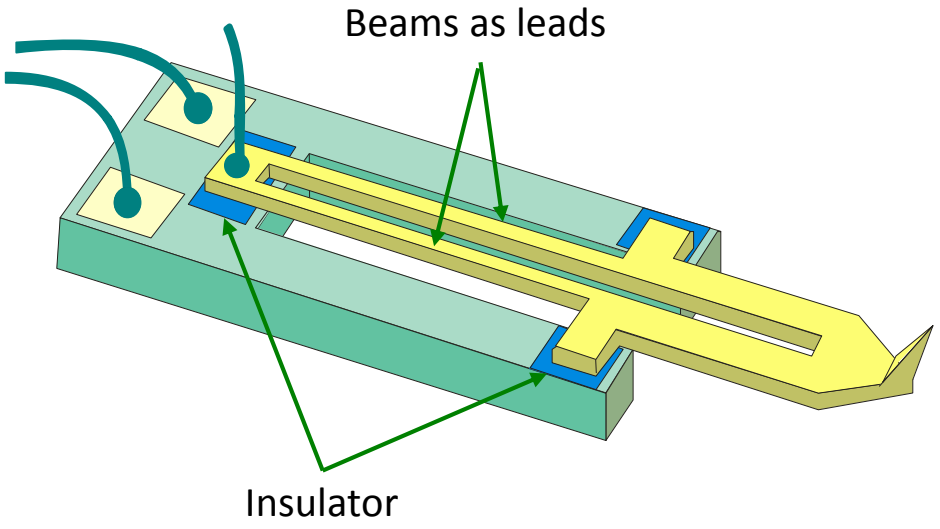


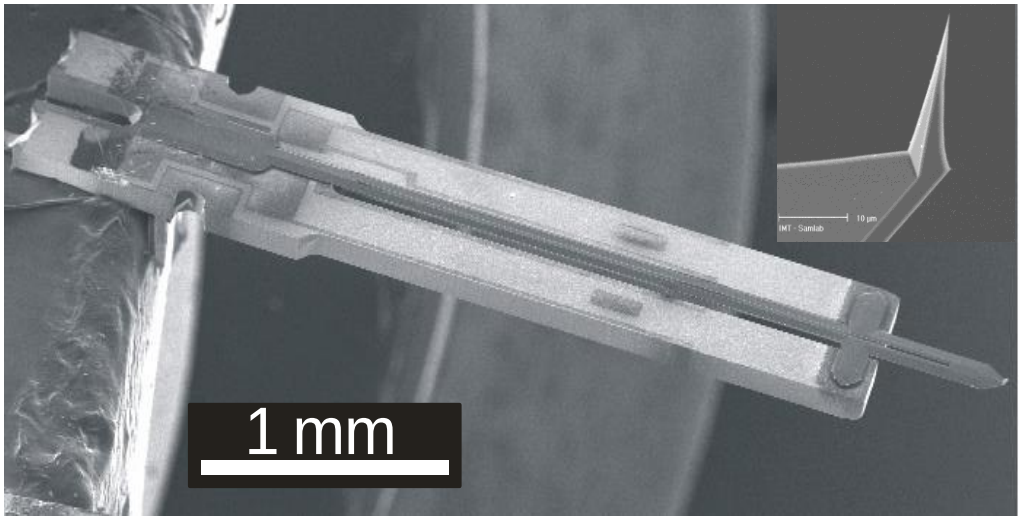
HPI layer of bacteria

NANOSENSORS is not producing this probe.
This information is provided as a customer service

- T. Akiyama, *et al.*, "Symmetrically arranged quartz tuning fork with soft cantilever for intermittent contact mode atomic force microscopy," Rev. Sci. Instrum. 74, 112 (2003); http://dx.doi.org/10.1063/1.1523631
- T Akiyama, *et al.*, "Self-sensing and self-actuating probe based on quartz tuning fork combined with microfabricated cantilever for dynamic mode atomic force microscopy," Applied Surface Science (ISSN: 01694332), vol. 210, num. 1-2 SPEC., p. 18-21 (2003), doi:10.1016/S0169-4332(02)01471-X

R&D Probe: Si cantilever with extension





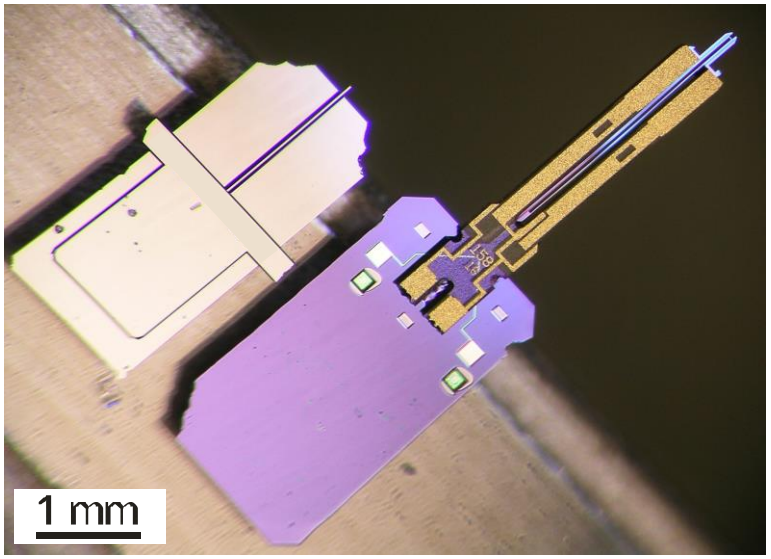
l = 500 µm, t = 12.5 µm,
w = 50 µm each, k = 66 N/m

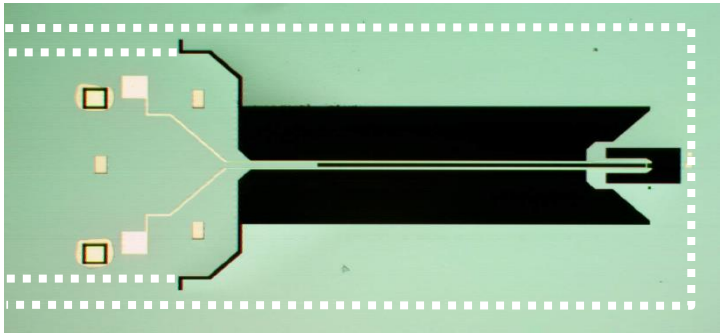
- T. Akiyama, *et al*. "Novel Dynamic Scanning Microscope Probe and its Application to Local Electrical Measurement in an Ion Sensitive Field Effect Transistor," MRS Proceedings, Volume 838, (2004), O11.1, DOI: http://dx.doi.org/10.1557/PROC-838-O11.1 (http://download.nccr-nano.org/nccr_network/awards/ribbon_award_akiyama_paper.pdf)

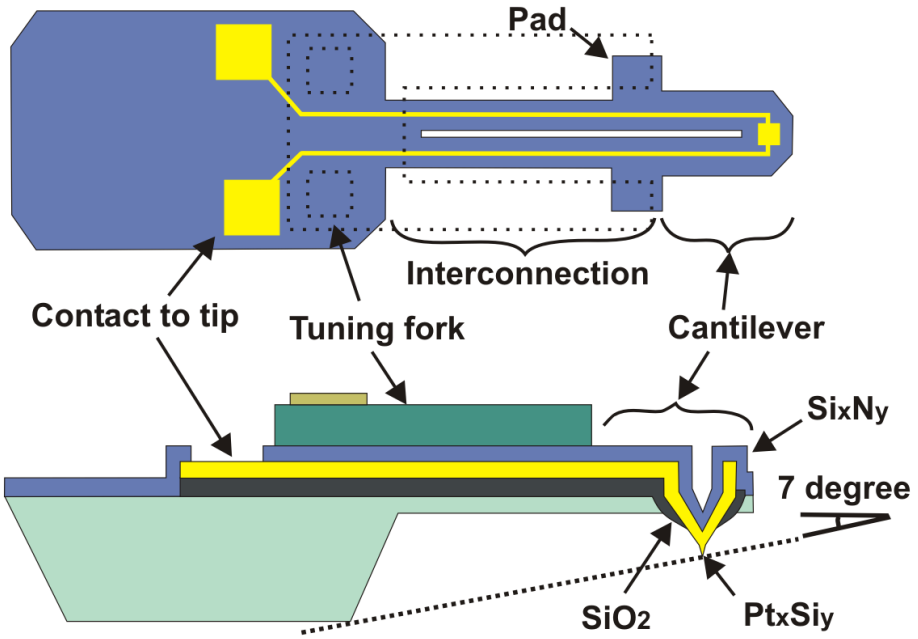
- K. Suter, *et al*., "Tuning Fork AFM with Conductive Cantilever," AIP Conf. Proc. 696, 227 (2003); http://dx.doi.org/10.1063/1.1639700

NANOSENSORS is not producing this probe.
This information is provided as a customer service

R&D Probe: TF probe for Low temperature applications



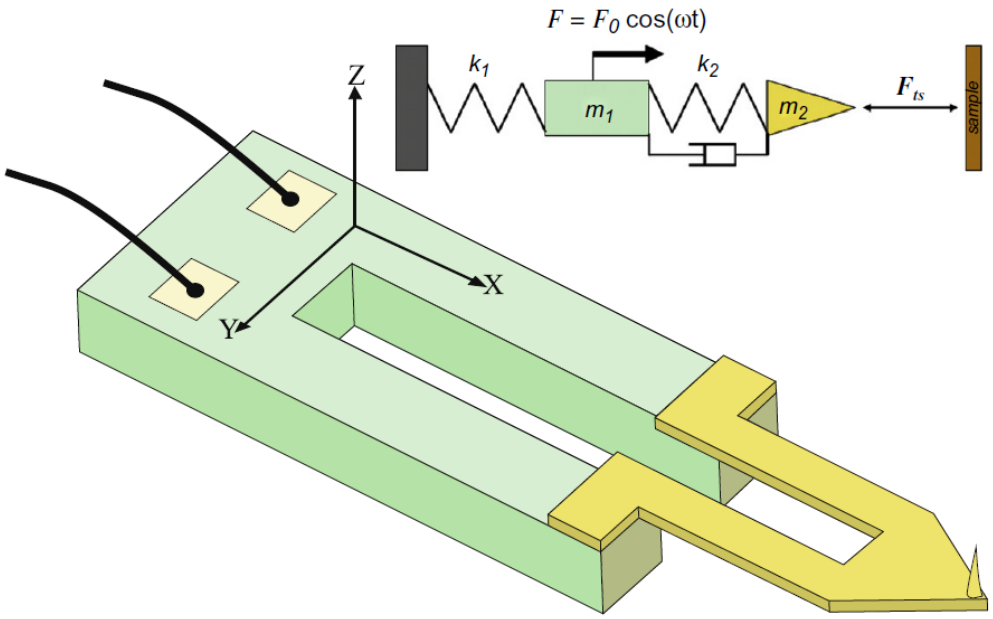


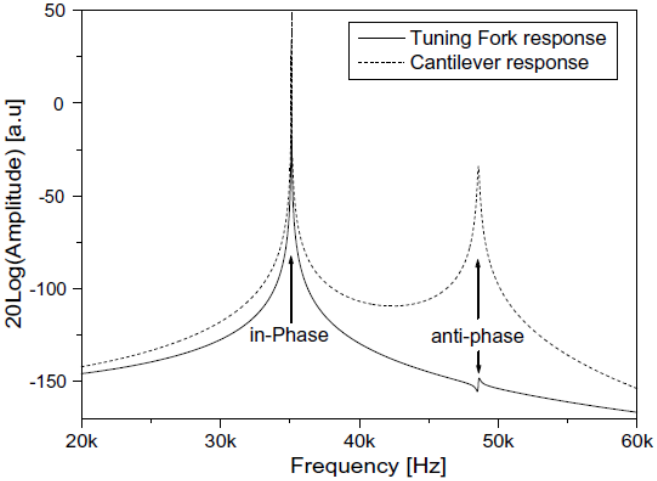


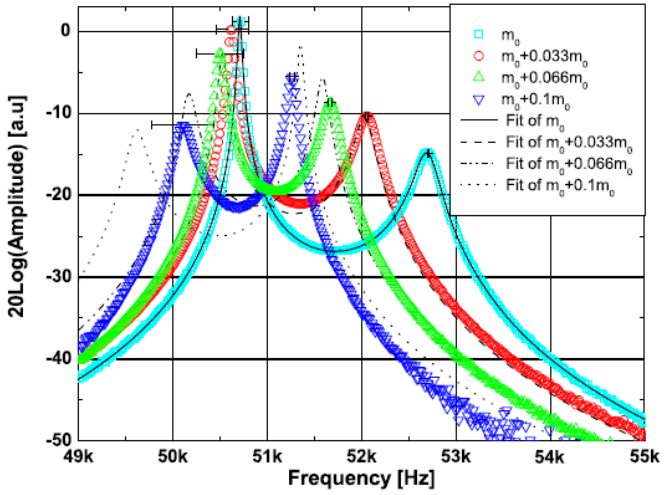
- T. Akiyama, *et al.*, "Scanning Probe with Tuning Fork Sensor, Microfabricated Silicon Cantilever and Conductive Tip for Microscopy at Cryogenic Temperature," Jap. J. of App. Phy., vol. 45, p. 1992-1995 (2006), doi:10.1143/JJAP.45.1992

NANOSENSORS is not producing this probe.
This information is provided as a customer service

R&D Probe: Analytical model







❑ D. Bayat, *at el.*, "Dynamic behavior of the tuning fork AFM probe," Microelectronic Engineering 85, issues 5-6, 1018-1021 (2008), http://dx.doi.org/10.1016/j.mee.2008.01.100