

VIBRATION ANALYZER MEASUREMENTS

We offer the measurement of dynamic properties and static displacements of your microstructures like membranes, cantilevers and several other MEMS.

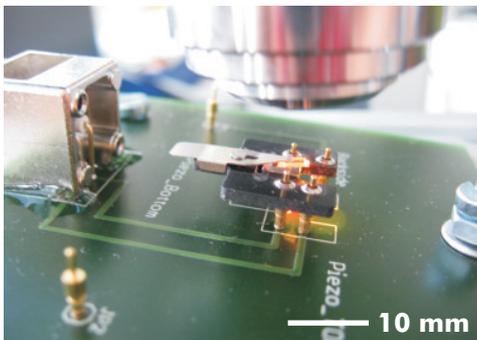
In detail we can measure the spectra of motion, the shapes of motion (vertical vibrations) or the resonant frequencies by a high precision noncontact vibration measurements method. The Nano Vibration Analyzer used is a fiber-coupled laserinterferometric vibrometer integrated in a precision technical microscope.



Nano Vibration Analyzer
(SP-S120/500),
SIOS Meßtechnik GmbH

Features:

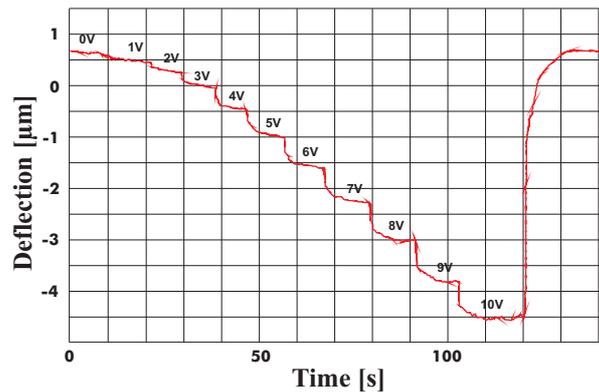
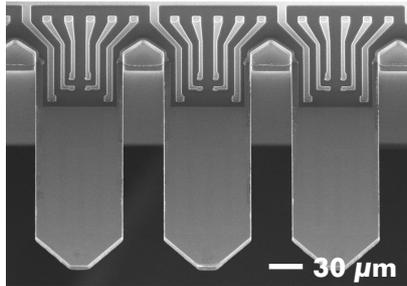
- Object frequency range: 0 - 6.25 Mhz (wavelength 632.8 nm)
- Amplitude resolution: < 0.1 nm
- Different changeable objectives: 10x, 50x
- Measurement spot diameter: < 10 μm (10x), < 2 μm (50x)
- Scan field range: 50 mm x 50 mm
- Flexible sample positioning
- FFT spectrum-analysis software
- Fiberoptic coupling of the laser (eliminates thermal influences on measurement results)



Typical sample setup for measuring the dynamic properties of a cantilever structure.

Application example A:

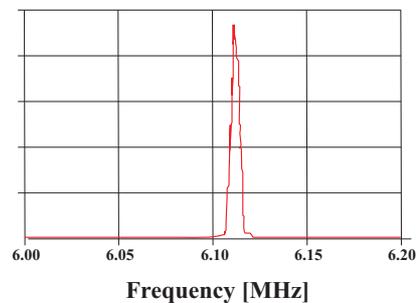
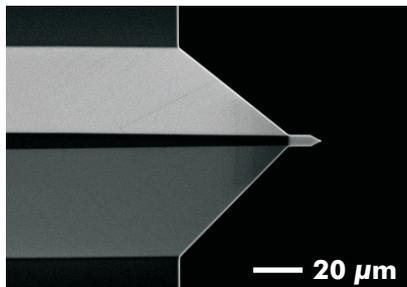
The result of a static deflection measurement is shown below: The bending behaviour of a single side fixed MEMS structure due to step-by-step increased actuation voltage. The structure consists of a 1 x 32 cantilever array with thermal bimorph actuator and piezoresistive Wheatstone bridge.



Deflection profile of the sample depending on the applied voltage (0-10V) - maximum deflection 4.5 µm

Application example B:

As shown in this application the measurement of the resonance frequency of a small sized single side fixed paddle (~ 15 x 5 µm) in the regime of several megahertz is possible.



Resonance spectrum of a 5 x 15 µm large pedal in the regime of 6 Mhz

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