Near Field Optical Microscopy Using a Vibrating Knife Edge or Stylus

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The problem studied was the detection of sub-wavelength detail by scanning near-field microscopy, using a vibrating knife-edge/stylus rather than an aperture probe. A related problem was phase detection of an optical field by such scanning, not necessarily in the sub-wavelength region.

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MOST IMPORTANT RESULTS

1. Demonstration of one-dimensional principle of operation.
2. Demonstration of non sub-wave length two-dimensional microscope with vibrating knife edge corner.
3. Demonstration of non sub-wave length two-dimensional tomographic microscope with vibrating knife edge.
4. Analysis and simulation of evanescent wave to plane wave conversion.
5. Analysis and demonstration of phase measuring properties of one-dimensional vibrating knife edge microscope.
FINAL TECHNICAL REPORT

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Principal Investigator: Adrian Korpel, University of Iowa

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5. Analysis and demonstration of phase measuring properties of one-dimensional vibrating knife edge microscope.

PUBLICATIONS


5. Adrian Korpel and Holly Snyder "Coherence properties of vibrating knife edge field sampling." In preparation.

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