CNST Center for Nanoscale Science & Technology

Optical Cavity for AFM Detection

PROJECT LEADERS: Kartik Srinivasan and Vladimir Aksyuk (NIST)

COLLABORATORS: Houxun Miao, Marcelo Davanço (NIST and University of Maryland); Matthew Rakher (NIST)

GOAL

To fabricate an integrated sensor combining a nanomechanical cantilever probe with a high sensitivity nanophotonic interferometer on a single silicon chip.

KEY ACCOMPLISHMENTS

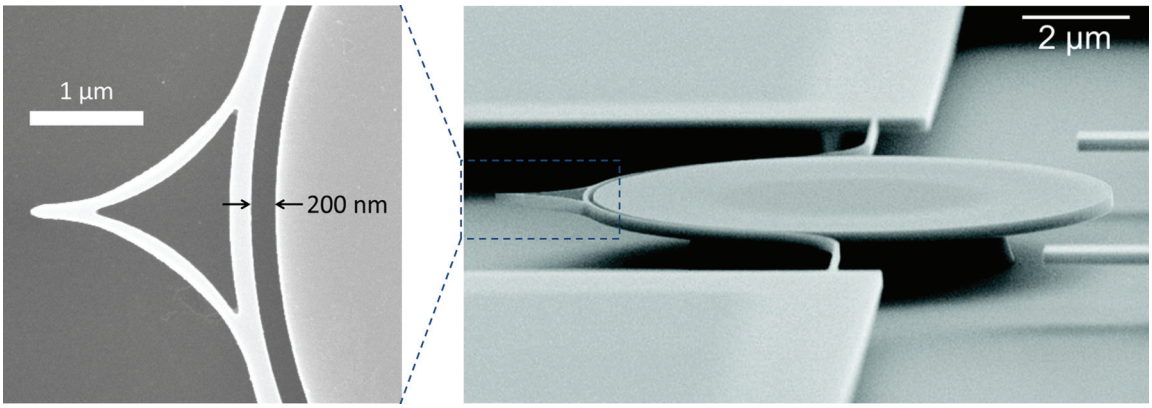
Demonstrated sensitive measurement of the motion of a nanoscale cantilever using a microdisk resonator fabricated on the same device layer.

Used light to adjust the cantilever's mechanical properties.

KEY NANOFAB PROCESSES

Electron-beam lithography, silicon dry etching, and critical point drying.

Scanning electron micrographs of the cantilever-microdisk system.



REFERENCE

Optomechanical transduction of an integrated silicon cantilever probe using a microdisk resonator, K. Srinivasan, H. Miao, M. T. Rakher, M. Davanço, and V. Aksyuk, *Nano Letters* **11**, 791-797 (2011).