Optical Biopsy Using MEMS Technology

NIH/NCI CA 91719 **9/1/2002-8/31/2007**

Objective: Develop a high-speed noninvasive endoscopic functional optical coherence omography (F-OCT) instrument using microelectromechanical system (MEMS) technology or early diagnosis of tumors in gastrointenstinal (GI), respiratory, and urogenital tracts.

Silicon MEMS Group
Co-PI: Dr. N. Tien, UC Davis
-D silicon MEMS scanning probe

Biomedical Imaging Group
PI: Dr. Z. Chen, UC Irvine
High speed F-OCT instrument

Polymer MEMS group
Drs. G. P. Li & M. Bachman, UC Ir
1-D/2-D Polymer MEMS scanning p

Integration of MEMS scanning probe with endoscopic OCT
Drs. Chen, Tien, Li, Bachman, and Chang

Clinical Study Group
Dr. Chang, M.D., UCI
Diagnosis of Barrett's esophagus and gastric cancer

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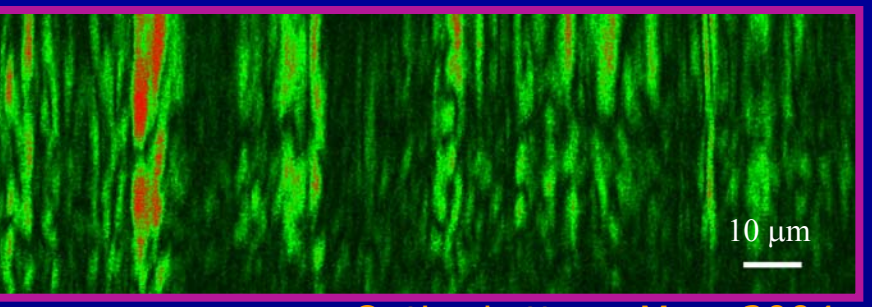
University of Califor

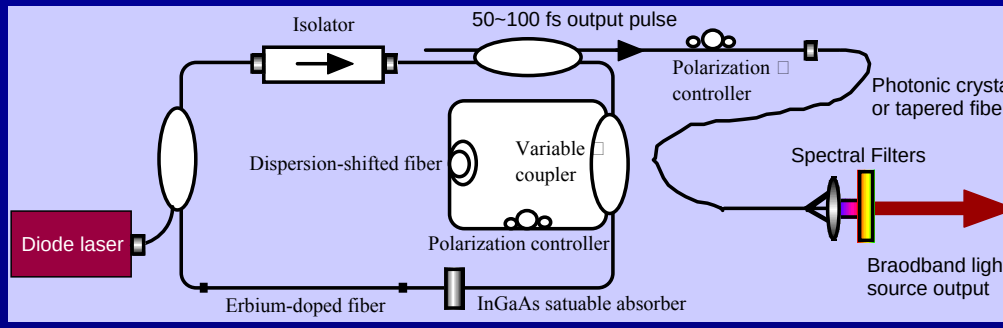
Optical Biopsy Using MEMS Technology

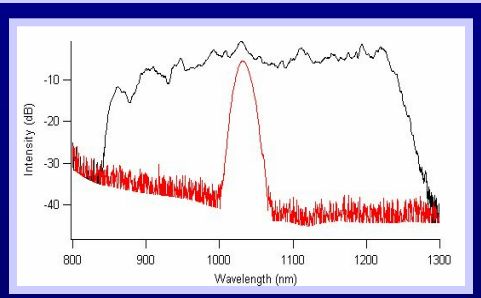
Second harmonic OCT

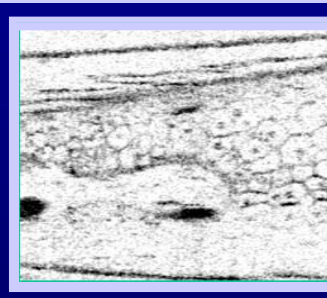


Optics Letters, May, 2004

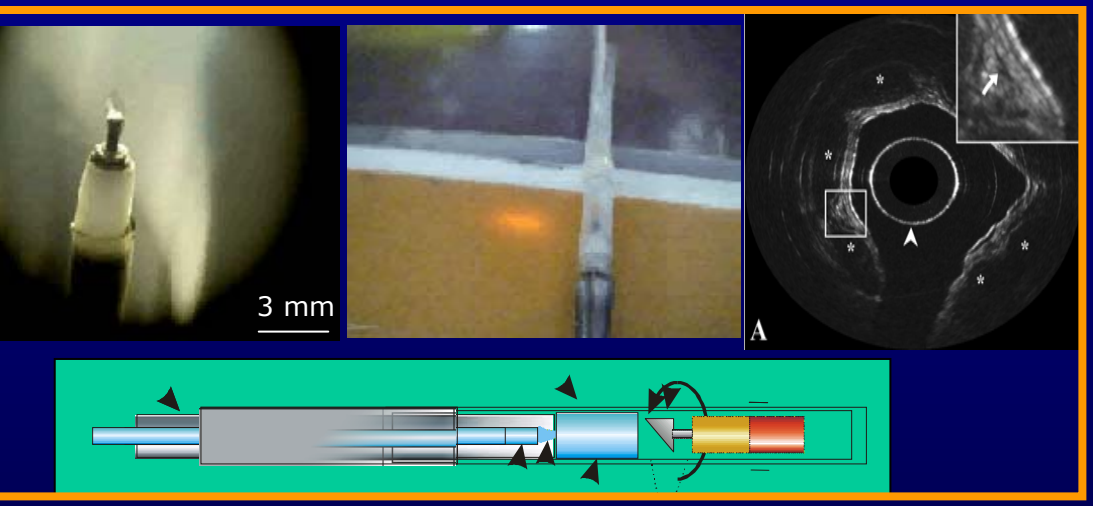
Portable broadband light for high resolution F-O







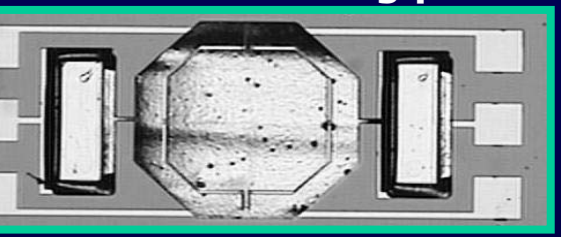
Rotational MEMS probe



Optics Letters, Jun, 2004

Clinical applications: Imaging and diagnosing cancers in GI, respiratory, & urogenital tracts.

EMS linear scanning probe



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