Tentative Itinerary for Matthew Kyrish

Wednesday (8/7)

12:00	Jeeseong Hwang	Arrival / lunch
2:00 – 3:00	**Seminar**	
3:30-4:00	Daniel Stark	Hyperspectral microscopy
4:00-4:30	Bonghwan Chon	FCS / phothermal microscopy
4:30-5:00	Kimberly Briggman	Non-linear optical methods for interfacial properties / Project Leader
5:30	Dinner	

Thursday (8/8)

9:00 – 9:15	Bob Hickernell	Quantum Electronics and Photonics Division Chief
9:15 – 10:00	Jeeseong Hwang /1-3005	Hwang lab overview: optical medical imaging standards / nano-biophotonics for quantitative biophysics
10:00 – 10:30	David Plusquellic /1-3013	fully-state resolved studies of biomolecules and bichromophores in the microwave (MW), terahertz (THz), and ultraviolet (UV) spectral regions
10:30 – 11:00	Stephen Russek /2-1234 stephen.russek@nist.gov	MRI standards
11:00 – 11:30	Alexandra Curtin/1-5532 alexandra.curtin@nist.gov	Helium Ion Microscope
11:30 Lunch		
1:30 – 2:00	Kevin Dean kevin.dean@colorado.edu	Biofrontiers Advanced Imaging Resource
2:00 -2:30	Stephanie Bryant sbryant@colorado.edu	Functional Tissue Engineering
3:00 – 3:30	Won Jhang Park won.park@colorado.edu	Nanoparticle-based hyperthermia therapy for cancer
4:00 – 4:30	Kevin Coakley 1-4055 kevin.coakley@nist.gov	Neutron Imaging/computational Biology
4:30 – 5:30	Jeeseong Hwang	Wrap-up

Talk Announcement

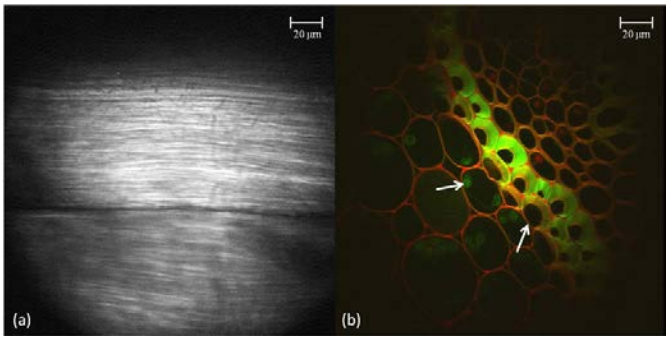
"An endomicroscope with an integrated ultra-slim objective for the diagnosis of breast cancer."

Matthew Kyrish, Ph.D
Rice University

Wednesday, Aug. 7, 2013
2:00 P.M.

NIST Boulder Campus
Room 1-4020

One in eight women in America will develop breast cancer at some point in their lives. When a suspicious region of the breast is detected, the tissue is diagnosed by removing a sample, preparing an H&E section, and performing histopathology. This procedure is expensive, invasive, and can take days to return a diagnosis. An alternative to excision biopsies is to perform an optical biopsy using an endomicroscope. Two issues limiting current endomicroscopes are addressed: insufficient resolution and inability to reject out of focus light. Ultra-slim objectives using optical plastics and zero alignment fabrication techniques are used to improve the endomicroscopes' spatial resolution. These objectives outperform alternative endomicroscope objectives in terms of performance across the field of view and chromatic aberration correction, while remaining as narrow as a biopsy needle. Next, an endomicroscope utilizing structured illumination to perform optical sectioning is designed, tested, and evaluated on *ex vivo* breast biopsy samples. The new endomicroscope provides high contrast images by reducing out of focus background light. Finally, an achromatic, ultra-slim objective and the structured illumination endomicroscope are integrated to form an optical biopsy system with improved lateral resolution and axial response. This integrated system is a step forward for *in vivo* microscopy and cancer diagnoses.



For more information, contact Jeeseong Hwang at (303)497-6588, jch@nist.gov