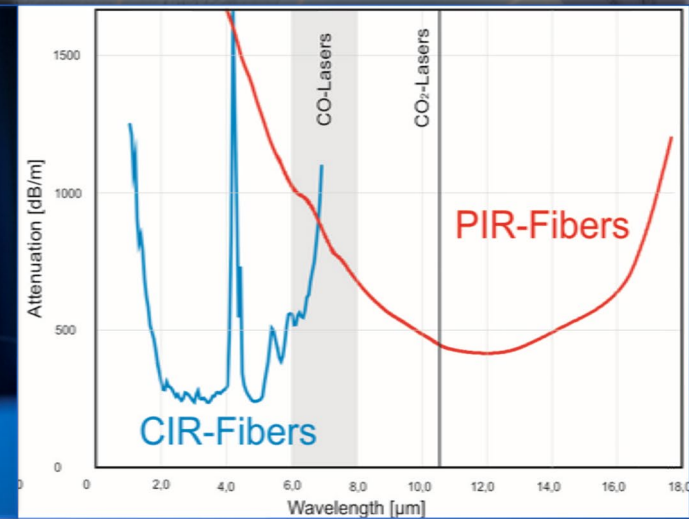
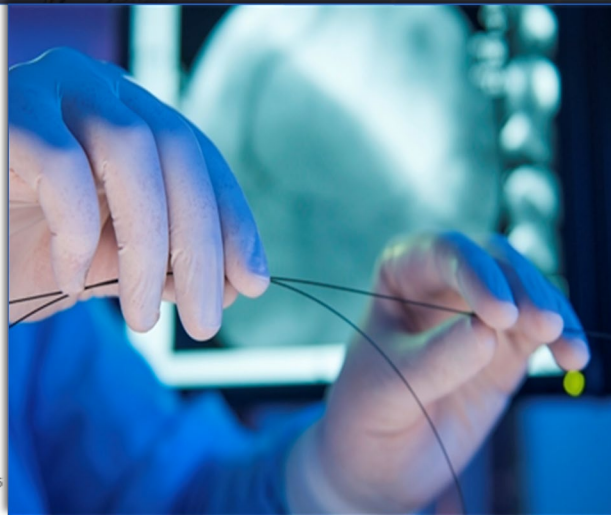
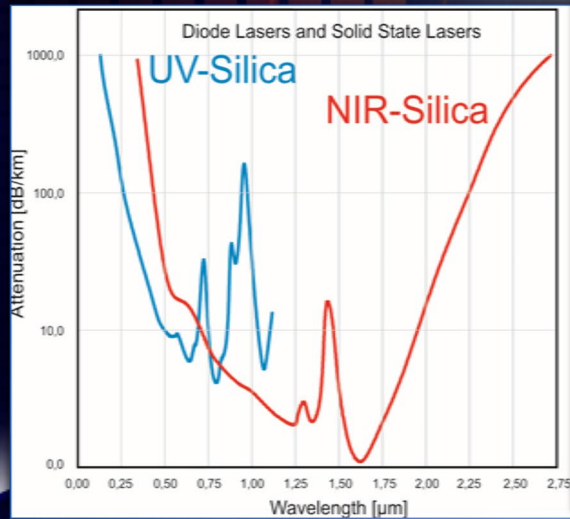


# Fiber imaging solution in 0.3-16 $\mu\text{m}$ range

*Viacheslav Artyushenko*  
art photonics GmbH, Berlin

**Monday, 4 May 2020, 16:00 CEST**

**EPIC Online Technology Meeting on In-vivo Imaging**



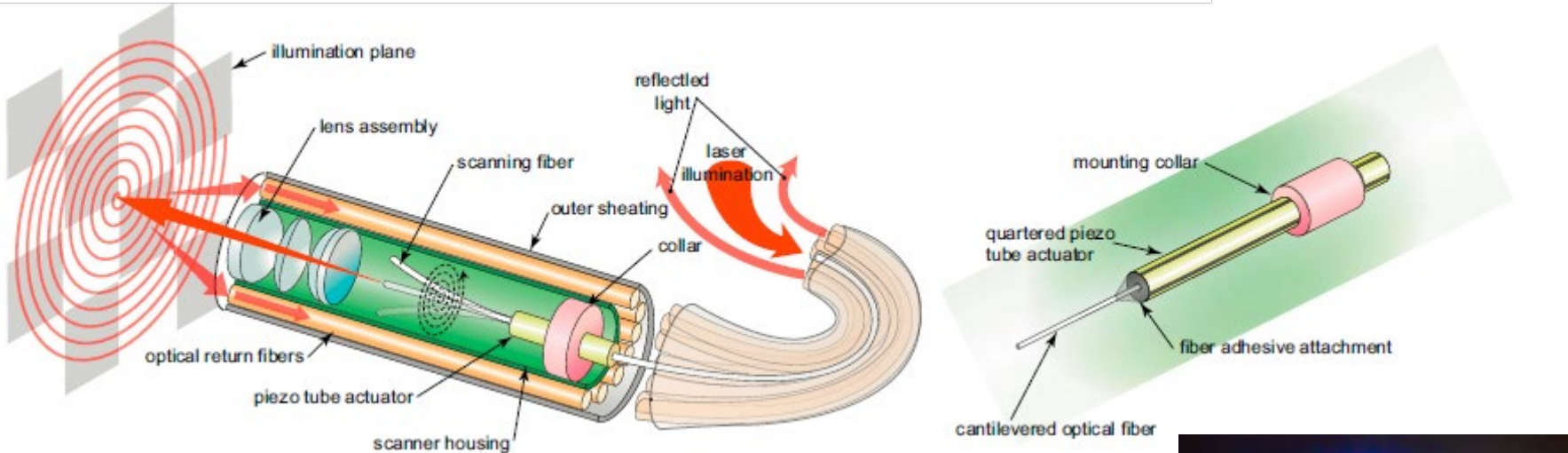
# Scanning fiber endoscopy with highly flexible, 1 mm catheterscopes for wide-field, full-color imaging

Cameron M. Lee<sup>1</sup>, Christoph J. Engelbrecht<sup>2</sup>, Timothy D. Soper<sup>1</sup>, Fritjof Helmchen<sup>2</sup>, and Eric J. Seibel<sup>\*,1</sup>

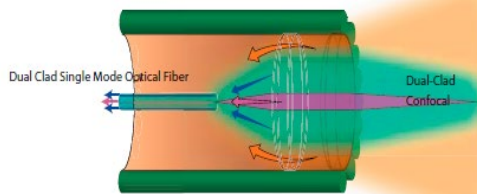
J. Biophoton. 3, No. 5–6, 385–407 (2010)

<sup>1</sup> University of Washington, Dept. of Mechanical Engineering, Stevens Way Box 352600, Seattle Washington 98195, USA

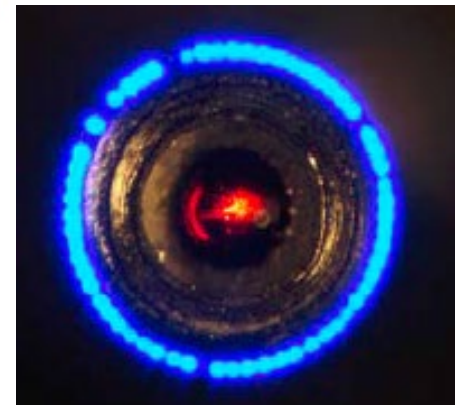
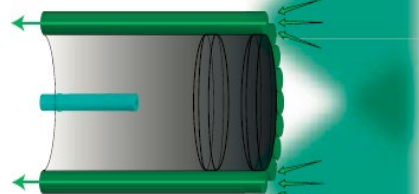
<sup>2</sup> University of Zurich, Dept. of Neurophysiology, Brain Research Institute, Switzerland



Confocal and Dual Clad Fiber Collection

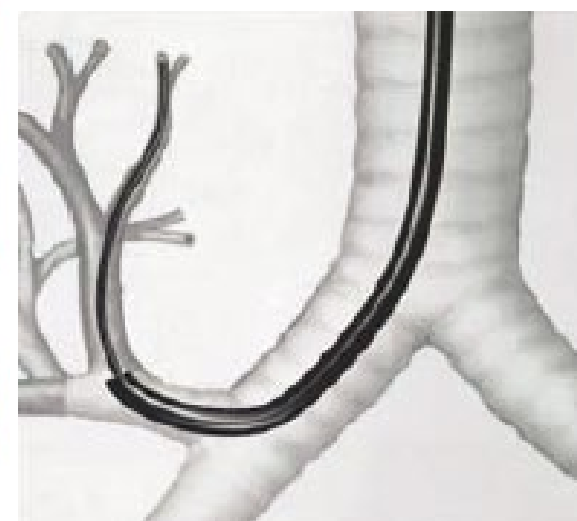
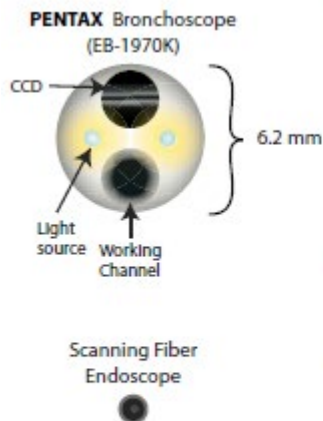
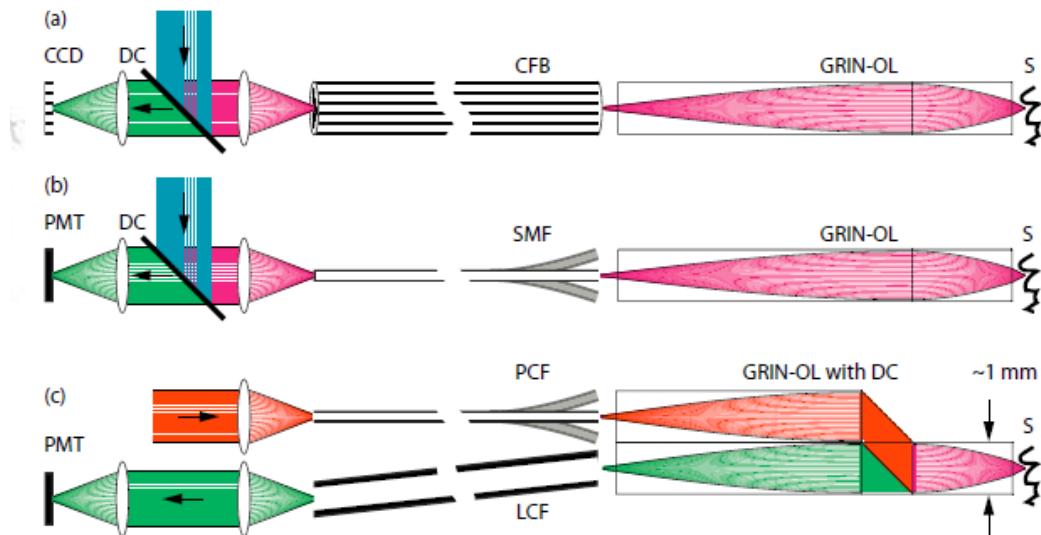


External Large Core Fiber Collection

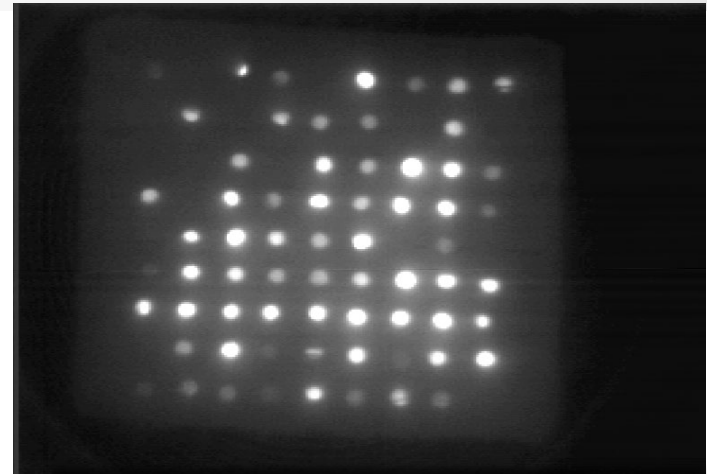
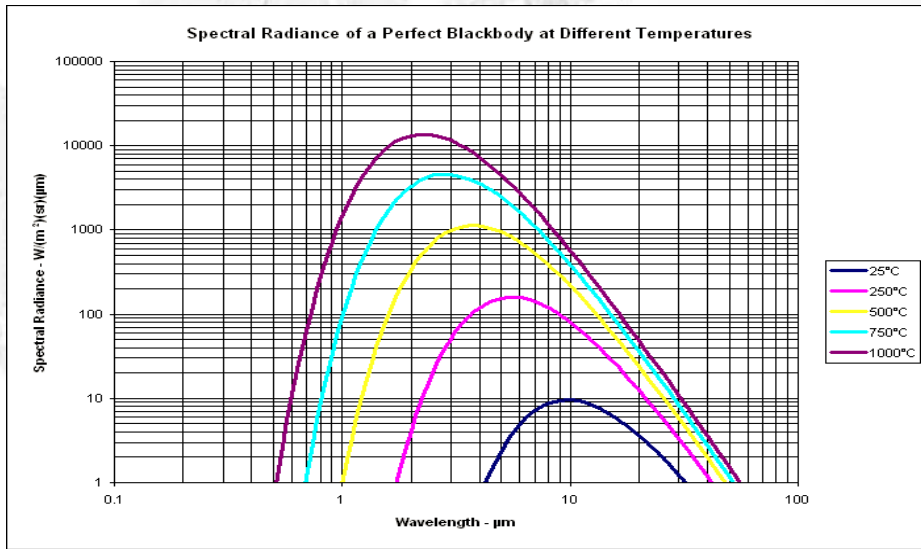


# Advantages of Scanning Fiber Endoscopes

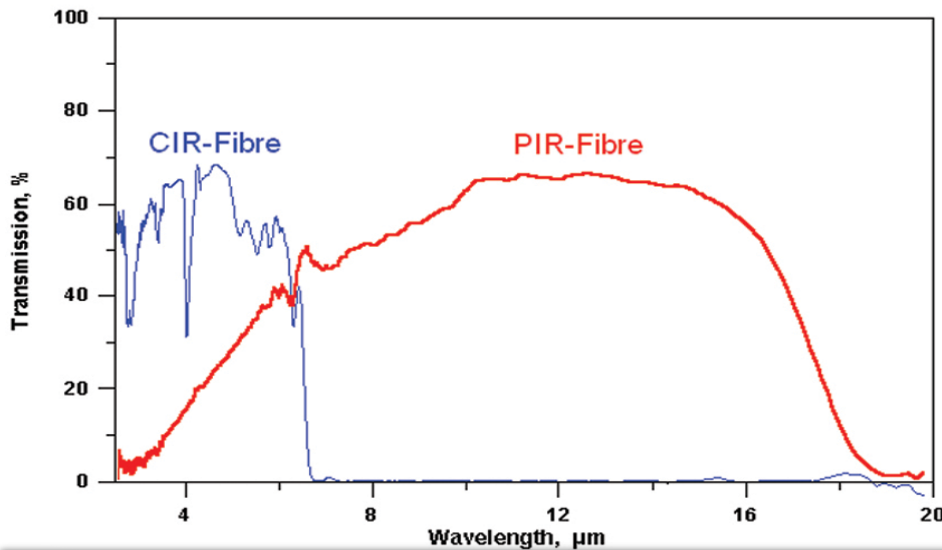
Fluorescence Imaging  
obtained with CBF vs  
SMF SFE or PCF/LCF  
ultrathin SFE using  
single- or two-photon  
excitation



# Mid IR-Fiber Imaging



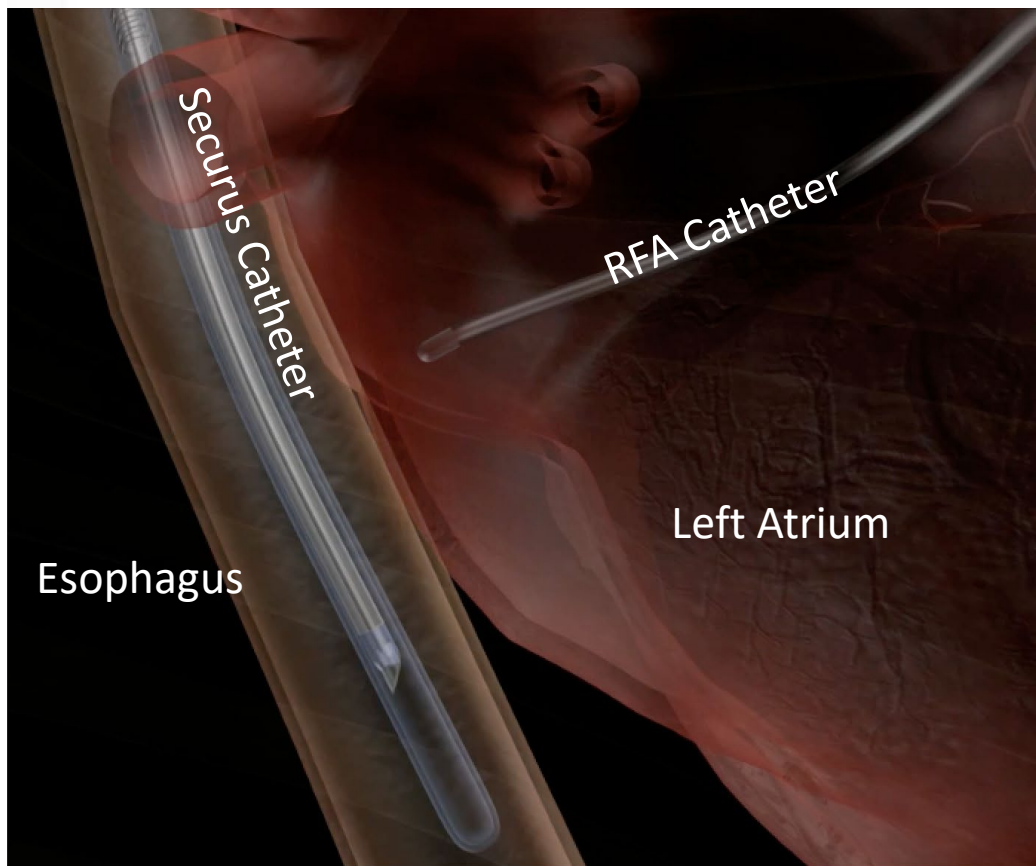
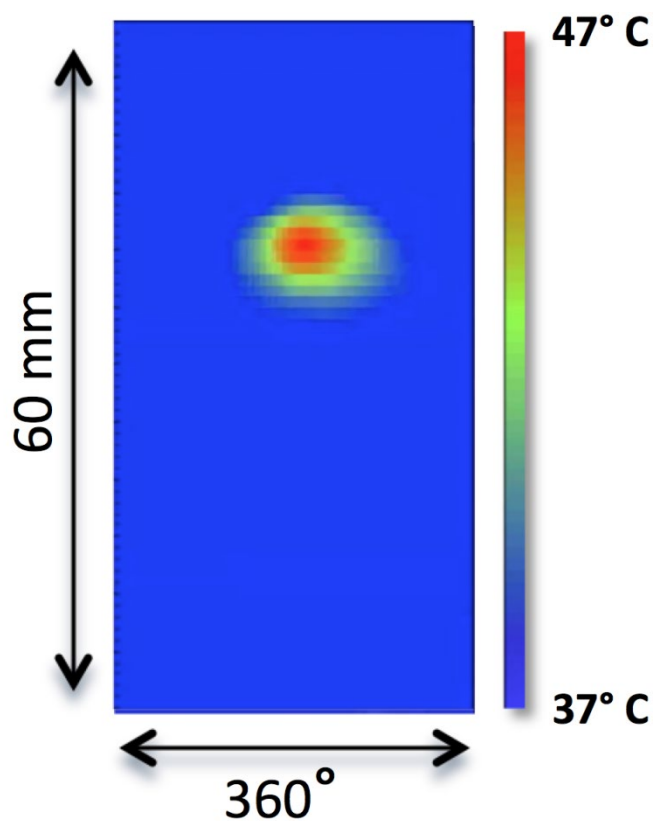
9x9 PIR-fiber coherent bundle



**Polycrystalline PIR-fibres for Mid IR-range: 3-18μm  
- extruded from Silver Halide solid solution crystals**

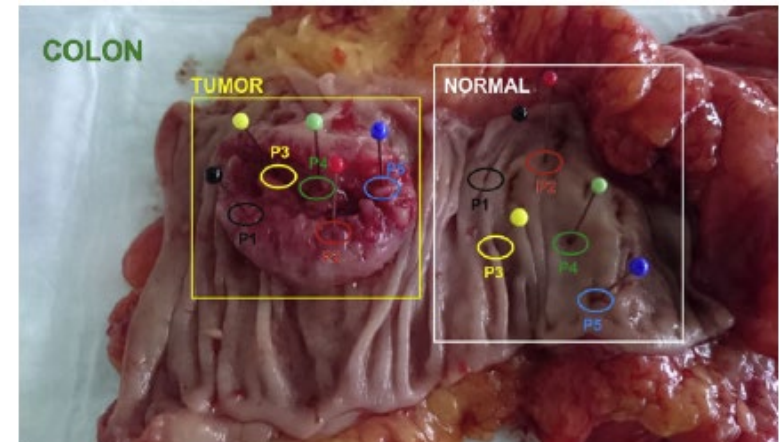
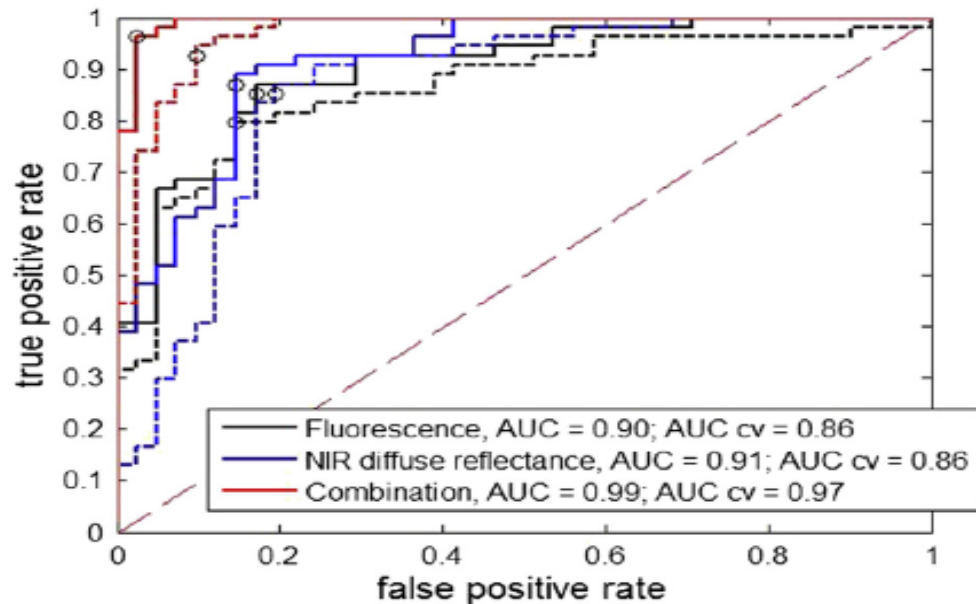
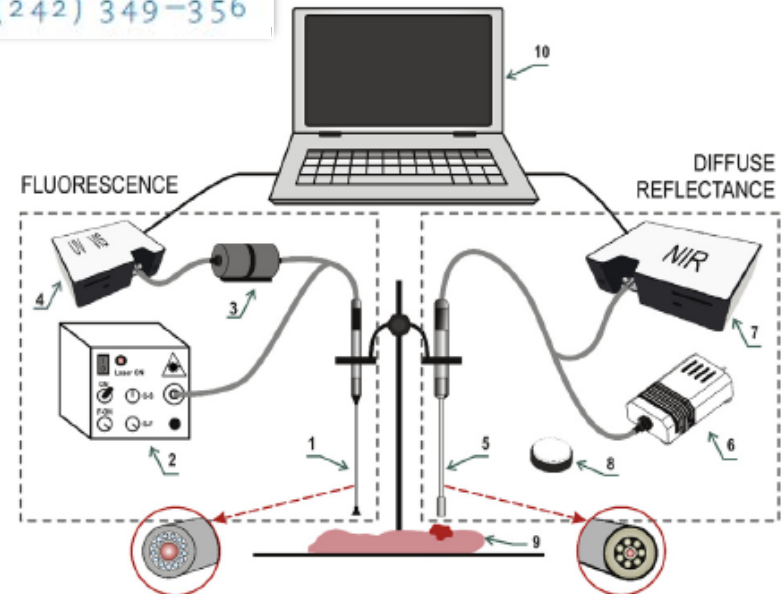
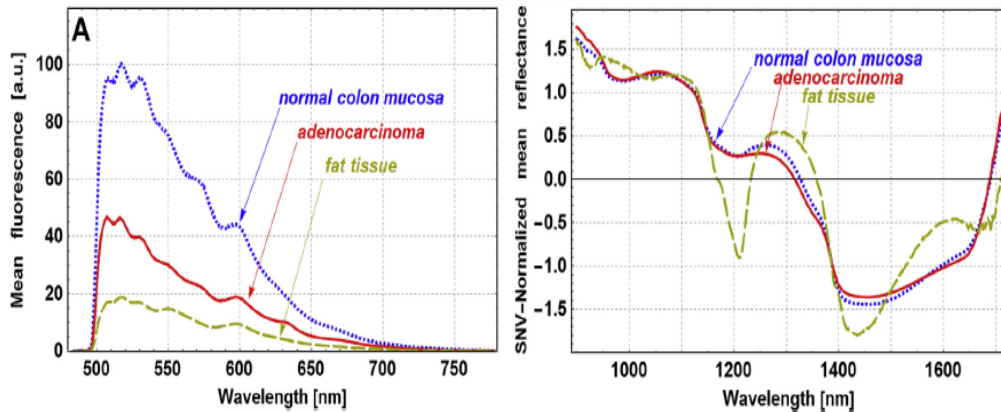
# PIR-fiber Endoscopic Pyrometry for 2D IR-imaging in 4-16 $\mu$ m range

## Securus PIR-Fiber IR-imaging System



# Data Fusion of Fluorescence with Near IR-absorption spectra for 2D Detection of Colorectal Cancer Margins

JOURNAL OF SURGICAL RESEARCH • OCTOBER 2019 (242) 349-356



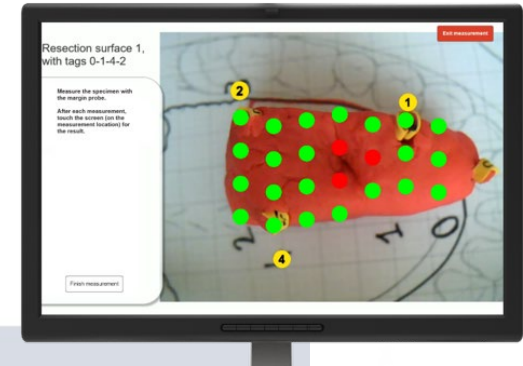
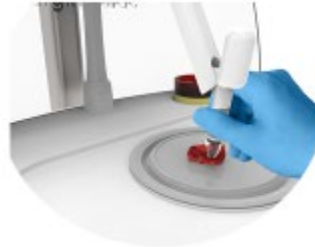
# HW-Raman Guided Oral Cancer Surgery

Eurostars-project: Ra-Sure (ESTAR18101)

300.000 new oral cancer patients/year

Surgery to remove tumour successful in only 15% of cases

Technology needed to support surgeon

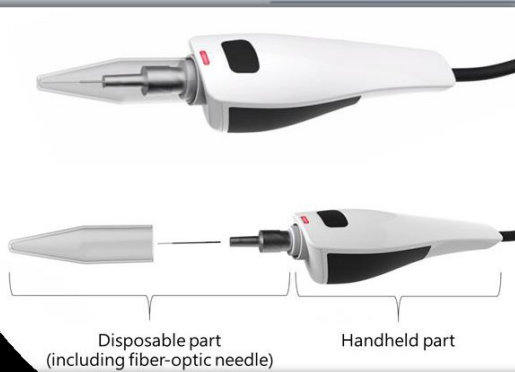


## SurGuide

Product: MarginGuide - device & disposables

Worldwide market (oral cancer): 1500 hospitals

Introduction: 2021 (Europe)



## Raman HW-Spectroscopy for 3D tumor margin detection ex-vivo

