

In Celebration of Basic Science: From the First Atomic Movies of Strongly Driven Phase Transitions to Star Trek Surgery

Host: **Franz X. Kaertner**

Department of Physics, University of Hamburg and Head of Ultrafast Optics and X-Rays Division, DESY, CFEL, CUI

16th October 2018, 4 - 6 pm, CFEL (Bldg. 99) Seminar rooms I-III

4 pm

The 2018 European Physical Society Award Lecture for Research in Laser Science and Applications:

The Picosecond Infrared Laser (PIRL) Scalpel: Achieving Fundamental (Single Cell) Limits to Minimally Invasive Surgery and Biodiagnostics

R. J. Dwayne Miller

Atomically Resolved Dynamics Department, MPSD;
The Hamburg Centre for Ultrafast Imaging (CUI);
Departments of Chemistry and Physics,
University of Toronto, Canada



5 pm

**The Future of PIRL Technology:
Presentations and Round Table Discussion**

1. PIRL for basic research in biochemistry & diagnostics:

Prof. Dr. H. Schlüter¹ & Dr. M. Kwiatkowski², Dr. C. Krisp¹ & Dr. C. Seifert³
Sampling of tissues via PIRL-induced cold vaporization for biomarker screening

2. PIRL for surgery:

Prof. Dr. S. J. Linke¹
Laser Vision correction 2020 in ophthalmology - what is next to femtosecond technology?

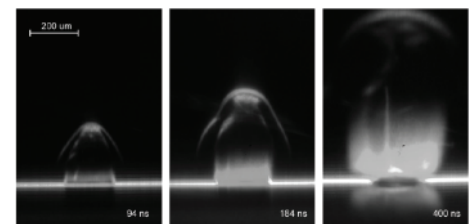
Prof. Dr. M. Hess¹
Application of PIRL in phonomicrosurgery

PD Dr. A. Böttcher¹ & H. Petersen⁴
PIRL application in Otorhinolaryngology

Prof. Dr. J. Regelsberger¹ & M. Wurlitzer¹
Guiding the PIRL scalpel in neurosurgery by real-time analysis of lipids with mass spectrometry

Prof. Dr. U. Schumacher¹, Prof. Dr. T. Lange¹ & L. Hänel¹
Sampling of human tumors in xenograft mice with PIRL

Prof. Dr. A. Schlaefer^{3,5}, L. Heikaus¹ & M. Blumreiter³ & M. Fuh¹
Guiding the PIRL-scalpel with OCT



Dark field time resolved plume expansion images from K. Franjic, RJDM, PCCP 2010



Histology view of incision in corneal tissue from S. Linke, RJDM et al., PLoS ONE 2015

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