Program and Abstract Book

22nd International Workshop on

Single Molecule Spectroscopy and Super-resolution Microscopy in the Life Sciences

Berlin, Germany
September 14-16, 2016

PicoQuant

Program

Wednesday, September 14

12:00 - 13:15 Registration and collection of workshop material

13:15 - 13:30 **Rainer Erdmann**, Berlin, Germany, Opening Remarks

Session: FRET/FCS/FLIM 1 Chair: Thorben Cordes

13:30 - 14:00 ***Paul W. Wiseman**, Montreal, Canada (Invited Talk)*
ICS with a new focus…pairing image correlation spectroscopy with super-resolution imaging

14:00 - 14:20 ***Ali Ibrahim**, Orsay, France (Student Award)*
Spectral and fluorescence lifetime measurement of brain tumor tissues using a customized double-clad optical fiber

14:20 - 14:40 ***Jonas Mücksch**, Martinsried, Germany (Student Award)*
FCS on lipid membranes in sugar solutions: Disentangling the effects of viscosity and refractive index mismatch

14:40 - 15:00 ***Narain Karedla**, Göttingen, Germany (Student Award)*
Measurement of Thickness and Leaflet-Dependent Diffusion of Lipids in Lipid Bilayers using MIET and 2f-FLCS

15:00 - 15:35 COFFEE BREAK

Session: FRET/FCS/FLIM 2 Chair: Paul Wiseman

15:35 - 16:05 ***Thorben Cordes**, Groningen, Netherlands (Invited Talk)*
Dynamic structural biology of membrane transporters: mechanisms and tool development

16:05 - 16:25 ***Antonino Ingargiola**, Los Angeles, United States*
Multi-spot approach for high-throughput freely-diffusing single-molecule FRET

16:25 - 16:45 ***Iwo König**, Zürich, Switzerland (Student Award)*
Single-molecule spectroscopy of intrinsically disordered proteins in live eukaryotic cells

16:45 - 17:05 ***Piau Siong Tan**, Heidelberg, Germany*
Single molecule studies reveal conformational features and binding mechanisms of phenylalanine-glycine rich nucleoporins

17:05 - 17:25 ***Niels Zijlstra**, Zürich, Switzerland*
Rapid microfluidic dilution device for probing low-affinity biomolecular complexes with single-molecule spectroscopy

18:00 – 22:00 WELCOME RECEPTION

Thursday, September 15

Session: Biological applications — Chair: Anna Oddone

9:00 - 09:35 ***Viola Vogel**, Zurich, Switzerland (Invited Talk)*
Mechanobiology: from single molecules to disease

09:35 - 09:55 ***Falk Schneider**, Oxford, United Kingdom (Student Award)*
Lipid and protein diffusion in actin-free plasma membrane vesicles

09:55 - 10:15 ***Piotr Trochimczyk**, Warsaw, Poland (Student Award)*
How can macromolecular crowding inhibit biological reactions?
The enhanced formation of DNA nanoparticles.

10:15 - 10:35 ***Roman Tsukanov**, Göttingen, Germany*
Investigating conformational dynamics of DNA hairpin and Holliday junction using single-molecule fluorescence techniques

10:35 - 11:10 COFFEE BREAK and PRODUCT DEMONSTRATION

Session: Super-resolution 1 — Chair: Philipp Kukura

11:10 - 11:40 ***Melike Lakadamyali (presented by Anna Oddone)**, Castelldefels, Barcelona, Spain (Invited Talk)*
Decoding chromatin organization with super-resolution

11:40 - 12:00 ***Alex von Diezmann**, Stanford, United States (Student Award)*
Correcting nanoscale aberrations over the field of view in three-dimensional localization microscopy

12:00 - 12:20 ***Christian Franke**, Wuerzburg, Germany (Student Award)*
Three-dimensional localization microscopy based on accurate intensity estimation

12:20 - 12:40 ***Jörg Enderlein**, Göttingen, Germany*
Image Scanning Microscopy

12:40 - 12:50 GROUP PICTURE

12:50 - 14:20 LUNCH BREAK

Session: Methods and techniques 1 — Chair: Viola Vogel

14:20 - 14:50 ***Philipp Kukura**, Oxford, United Kingdom (Invited Talk)*
Towards label-free single molecule microscopy with interferometric scattering

14:50 - 15:10	***Felix Koberling**, Berlin, Germany* Fast TCSPC Based Confocal Microscopy Optimised for Hz Image Frame Rates with High Photon Throughput
15:10 - 15:30	***Sebastian Isbaner**, Göttingen, Germany (Student Award)* Dead-time correction of fluorescence lifetime measurements and fluorescence lifetime imaging
15:30 - 15:45	COFFEE BREAK
15:45 - 18:15	POSTER SESSION and PRODUCT DEMONSTRATION 15:45 – 17:00 odd poster numbers 17:00 – 18:15 even poster numbers
19:30 - 22:30	DINNER

Friday, September 16

Session: Super-resolution 2 & Material sciences — Chair: Yuval Ebenstein

9:00 - 09:35	***Katrin I. Willig**, Göttingen, Germany (Invited Talk)* STED microscopy of the living mouse brain
09:35 - 09:55	***Alexey Chizhik**, Göttingen, Germany* Metal-induced energy transfer for live cell nanoscopy
09:55 - 10:15	***Florian Steiner**, Regensburg, Germany (Student Award)* Spontaneous fluctuations of transition dipole orientation in OLED triplet emitters revealed by single-molecule spectroscopy
10:15 - 10:35	***Izabela Kaminska**, Braunschweig, Germany* DNA origami-based antennas for a broadband fluorescence enhancement
10:35 - 11:10	COFFEE BREAK

Session: Methods and techniques 2 — Chair: Katrin Willig

11:10 - 11:40	***Haw Yang**, Princeton, United States (Invited Talk)* Real-Time 3D Single-Particle Tracking Spectroscopy and Its Applications
11:40 - 12:00	***Dmitry Torchinsky**, Tel Aviv, Israel (Student Award)* Single-molecule counting highlights the efficiency and specificity of DNA repair enzymes
12:00 - 12:20	***Aquiles Carattino**, Leiden, Netherlands (Student Award)* Background-Suppression in the Detection of Gold Nanoparticles in Cells through Anti-Stokes Photoluminescence

12:20 - 12:40 ***Hao Cheng**, Göttingen, Germany (Student Award)*
Single-Molecule Brightness Analysis by Stroboscopic Imaging in Nanofluidic-Channels

12:40 - 14:10 LUNCH BREAK

Session: Methods and techniques 3 Chair: Haw Yang

14:10 - 14:40 ***Yuval Ebenstein**, Tel Aviv, Israel (Invited Talk)*
Beyond sequencing: Single-molecule genomics

14:40 - 15:00 ***Sebastian Kruss**, Göttingen, Germany*
Chemical imaging of cell communication using near infrared fluorescent carbon nanotube sensors

15:00 - 15:20 ***Gordon J. Hedley**, Regensburg, Germany*
Exploring Molecular Aggregation at the Single-Molecule Level in a High-Performance Organic Photovoltaic Polymer

15:20 - 15:30 STUDENT AWARD PRESENTATION

15:30 - 15:40 CONCLUDING REMARKS by Paul Wiseman

15:40 - END OF WORKSHOP

Overview: Poster presentations
(in alphabetical order)

Presenter	Presentation time	Poster #	Title
Abdollahzadeh, Iman	15:45 - 17:00	P1	Single Molecule Localization Microscopy (SMLM) of autophagy-relevant proteins in mammalian cells.
Adhikari, Subhasis	17:00 - 18:15	P2	Simultaneous detection of absorption and fluorescence of single conjugated polymer chains
Block, Alexander	15:45 - 17:00	P3	Tracking nanoscale energy transport in photosynthetic light-harvesting complexes
Budde, Jan-Hendrik	15:45 - 17:00	P29	Monitoring the dimerization of a large GTPase from sub-microseconds to minutes
Chizhik, Alexey I.	17:00 - 18:15	P4	Super-Resolution Optical Fluctuation Bio-Imaging with Dual-Color Carbon Nanodots
Chizhik, Alexey I.	15:45 - 17:00	P5	Is there Fluorescence after Photo-Bleaching?
Danaf, Nader	17:00 - 18:15	P6	Image Correlation Spectroscopy Based Assay to Investigate G-Protein Coupled Receptors
Haderspeck, Andreas	15:45 - 17:00	P7	Chemically switchable Fluorescent Probes:A versatile tool for Super-resolution Microscopy
Hänselmann, Siegfried	17:00 - 18:15	P8	Measuring the kinetics and stoichiometry of protein complex formation on a single-molecule level
Shabestari, Maryam Hashemi	15:45 - 17:00	P9	Phosphorylation and acetylation of TFAM have contrasting mechanisms for regulating non-specific TFAM-DNA interactions
Herten, Dirk-Peter	17:00 - 18:15	P10	Estimating the emitter number on diffusive complexes by means of photon statistics
Holanová, Kristýna	15:45 - 17:00	P11	Optical imaging of sub-protein sized scattering labels
Hou, Sen	17:00 - 18:15	P12	Enhanced DNA nanoparticle formation in macromolecular crowding environment studied by fluorescence correlation spectroscopy
Huisman, Maximiliaan	15:45 - 17:00	P13	Reconstructing discrete features of nucleocytoplasmic transport using projected density maps.

Presenter	Presentation time	Poster #	Title
Ibrahim, Ali	17:00 - 18:15	P14	FLIM and spectral non-linear imaging of human brain tumors samples
Klauss, André	15:45 - 17:00	P15	Light modulator based sensorless aberration correction for improved STED nanoscopy
Kraemer, Ben	17:00 - 18:15	P16	Expanding the Capabilities of Single Molecule STED with Advanced Pulsed Interleaved Excitation
Gámez, M. Alejandrina Martínez	15:45 - 17:00	P17	Can an Electromagnetic Pulse Evoke a Neural Olfactory Response?
Mateos, Luis	17:00 - 18:15	P18	Gold porous microcavities for plasmon-enhanced DNA sequence analysis
Ochmann, Sarah	15:45 - 17:00	P19	Diagnostics based on Fluorescence Enhancement with Nanoantennas
Orthaus-Mueller, Sandra	17:00 - 18:15	P20	Rapid FLIM: the new and innovative method for ultra-fast imaging of biological processes
Petrova, Dina	15:45 - 17:00	P21	Microscopic vizualization of contacts and friction
Polo, Elena	17:00 - 18:15	P22	Impact of Redox-Active Molecules on the Fluorescence of Polymer-Wrapped Carbon Nanotubes
Reina, Francesco	15:45 - 17:00	P23	Comparative iSCAT and STED-FCS measurements on diffusing gold-tagged phospholipids
Schreiber, Frank	17:00 - 18:15	P24	Correlative imaging of gene expression and metabolic activity by combining single-molecule mRNA FISH and nanometer-scale secondary ion mass spectrometry
Torchinsky, Dmitry	15:45 - 17:00	P25	Single-molecule counting highlights the efficiency and specificity of DNA repair enzymes
Wang, Dongfang	17:00 - 18:15	P26	A DNA Walker in the plasmonic hotspot for fluorescence enhancement
Weigert, Florian	15:45 - 17:00	P27	Photoluminescence Properties of core-shell CdSe Nanocrystals with Different Shells and Surface Chemistries Derived from Ensemble and Single Particle Measurements
Jiang, Shan	17:00 - 18:15	P28	Enhanced SOFI algorithm with deconvolution pre-processing

Organized by

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