XXI INTERNATIONAL SCHOOL OF PURE AND APPLIED BIOPHYSICS

_Time Resolved Methods in Biophysics_

Palazzo Franchetti
January 9 -13, 2017, Venice, Italy

Organised by:

**SIBPA** - Società Italiana di Biofisica Pura e Applicata
**IVSLA** - Istituto Veneto di Scienze Lettere ed Arti

**Director of the School**
Giorgio M. Giacometti (IVSLA and University of Padova)

**Scientific Coordinators**
Cristiano Viappiani (Università degli Studi di Parma)
Thomas Gensch (Forschungszentrum Jülich, Germany)
Giorgio M. Giacometti (IVSLA and University of Padova)

The School is held in the magnificent Palazzo Franchetti, the premises of the "Istituto di Scienze Lettere ed Arti" located in the historical centre of Venice, close to Canal Grande and Accademia (Palazzo Cavalli-Franchetti).
The focus of the 2017 School is *Time Resolved Methods in Biophysics*. The possibility of accessing structural, topological or spectroscopic information with the proper time resolution is at the basis of a variety of methods that are currently applied in biophysics. These methods allow unprecedented understanding of many biologically relevant processes such as mechanistics of biochemical reactions, energy transfer and fixation, protein folding, macromolecular conformational changes and cellular trafficking, to name just a few. This school proposes an overview on a selection of current spectroscopic, structural and microscopy methods that are inherently endowed with time resolution.

This year the School is organized with the contribution of:

1. Becker & Hickl
2. EDINBURGH INSTRUMENTS
3. HAMAMATSU
4. LOT Quantum Design
5. COHERENT
6. NIKON @ Istituto Italiano di Tecnologia

The school has the patronage of the University of Parma
Program of the school

Monday, January 9

16.00-17.00  **STED/RESOLFT optical nanoscopy for the life sciences**  
Ilaria Testa, KTH Royal Institute of Technology, Stockholm, Sweden

17.00-18.00  **Infrared Spectroscopy on Biomolecules**  
Tilman Kottke, University Bielefeld, Germany

18.00-19.00  **Welcome drink**

Tuesday, January 10

9.30-10.15  **Applications of Time-resolved FTIR Spectroscopy**  
Tilman Kottke, University Bielefeld, Germany

10.15-11.00  **Femtosecond infrared and visible spectroscopy; instrumentation, analysis and theory**  
Jasper van Thor, Imperial College London, UK

11.00-11.30  Coffee break

11.30-12.15  **Time and Space in Super Resolved Microscopy**  
Alberto Diaspro, Istituto Italiano di Tecnologia, Genova, Italy

12.15-13.00  **Ultrafast structural dynamics in protein crystals**  
Jasper van Thor, Imperial College London, UK

13.00-15.00  **Lunch break**

15.00-15.45  **Resources at the Nikon Imaging Center and Eurobioimaging**  
Alberto Diaspro, Istituto Italiano di Tecnologia, Genova, Italy

15.45-16.30  **Time-resolved X-ray scattering: a tool to investigate the structural dynamics of proteins in solution. Part 1.**  
Matteo Levantino, ESRF, Grenoble, France

16.30-17.00  Coffee break

17.00-18.00  **Time-resolved X-ray scattering: a tool to investigate the structural dynamics of proteins in solution. Part 2.**  
Matteo Levantino, ESRF, Grenoble, France
Wednesday, January 11

9.15-10.15  Coherent Raman Microscopy
Dario Polli, Politecnico di Milano, Italy

10.15-10.45  Laser based triggering methods
Cristiano Viappiani, Università di Parma, Italy

10.45-11.15  Coffee break

11.15-11.45  Theory and applications of flash photolysis in Biophysics
Maria Tesa, Edinburgh Instruments, UK

11.45-12.15  Microscopy Camera Technologies: Understanding CCDs and sCMOS cameras
Hamamatsu Giulio Simonutti

12.15-13.00  Genetically encoded fluorescent biosensors
Thomas Gensch, Forschungszentrum Jülich, Germany

13.00-15.00  Lunch break

15.00-15.45  Time-correlated single photon counting in fluorescence
Wolfgang Becker, Becker&Hickl, Germany

Johan Hofkens, KU Leuven, Belgium

16.30-17.00  Coffee break

17.00-18.00  Single molecule Biophysics: Applications
Johan Hofkens, KU Leuven, Belgium

Thursday, January 12

9.30-10.15  Single-molecule super-resolution microscopy in cells
Mike Heilemann, Johann Wolfgang Goethe-University, Frankfurt/Main, Germany

10.15-11.00  Lifetime-based fluorescence sensing
Ranieri Bizzarri, CNR-Istituto Nanoscienze, Pisa, Italy

11.00-11.30  Coffee break
11.30-12.15  Determination of [Cl]_{int} in acute brain slices using FLIM
Verena Untiet, Forschungszentrum Jülich, Germany

12.15-13.00  Overview of cryo-EM and examples of snapshots over time
Matteo Allegretti, European Molecular Biology Laboratory, Heidelberg, Germany

Free afternoon

Friday, January 13

9.30-10.15  Time-resolved studies of protein structures, the biochemist's point of view
Beatrice Vallone, Università di Roma La Sapienza, Roma, Italy

10.15-11.00  Time-resolved serial femtosecond crystallography
Martin Weik, Institut de Biologie Structurale, Grenoble, France

11.00-11.30  Coffee break

11.30-12.15  RapidFLIM - the new and innovative method for ultra-fast FLIM imaging
Uwe Ortmann, Picoquant, Berlin, Germany

12.15-13.00  Time-resolved absorption and emission techniques for the study of photosensitisation processes
Santi Nonell, Institut Quimic de Sarria, Barcelona, Spain

13.00-15.00  Lunch break

15.00-15.45  Spatiotemporal fluctuation analysis: a powerful tool for the future nanoscopy of molecular processes. Part 1
Francesco Cardarelli, Istituto Italiano di Tecnologia, Pisa, Italy

15.45-16.30  Spatiotemporal fluctuation analysis: a powerful tool for the future nanoscopy of molecular processes. Part 2
Francesco Cardarelli, Istituto Italiano di Tecnologia, Pisa, Italy

16.30  Final remarks

Further information is available through the scientific coordinators

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