2009

“ULTRAFAST DYNAMICS AND STRUCTURE. TOWARDS BIOLOGICAL AND BIOMEDICAL APPLICATIONS”

MARIE CURIE CHAIR AND ESF SUMMER SCHOOL 2009, 29 September - 3 October 2009, Rhodes, Greece

The Summer School 2009 on “ULTRAFAST DYNAMICS AND STRUCTURE. TOWARDS BIOLOGICAL AND BIOMEDICAL APPLICATIONS” aims at bringing together leading experts in the field of laser spectroscopy with graduate students and post-doctoral fellows, and to provide a pleasant learning atmosphere. This school will offer a broad view of the techniques and theoretical background used to follow molecular dynamics and structure namely ultrafast X-ray diffraction and spectroscopy, ultrafast IR and visible spectroscopies, Raman spectroscopy and imaging as well as the methods of generation and measurements of ultrafast pulses. The subjects addressed will cover electronic and vibrational energy transfer, hydrogen bond dynamics and solvent dynamics in general in biologically important systems as well as some biomedical applications in a single human cell and tissue and In addition to lectures, there will be young scientists presentations

MARIE CURIE CHAIR AND ESF SUMMER SCHOOL 2009
29 September - 3 October 2009, Rhodes, Greece

29 September2009

10.00-13.15 **Günter Steinmeyer**
Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie, Berlin, Germany
10.00-11.30 ***Ultrafast pulse generation: basics and femtosecond oscillators***
11.45-13.15 ***Ultrafast pulse generation: amplification and compression***

14.00-19.00 **Rick Trebino**
Georgia Tech School of Physics, Atlanta, Georgia, U.S.A
14.00-15.30 ***The Basics of Ultrashort Pulse Measurement***
16.00-17.30 ***FROG***
18.00-19.00 ***Interferometric Techniques and Spatio-temporal Measurements***

30 September 2009

10.00- **Shaul Mukamel**
Chemistry Department University of California, Irvine, U.S.A
Principles of Nonlinear Optical Spectroscopy: A Practical Approach

01 October 2009

10.00-12.15 **Halina Abramczyk**
Faculty of Chemistry, Technical University of Lodz, Institute of Applied Radiation Chemistry, Lodz, Poland, Max-Born-Institute, Berlin, Germany
10.00-11.00 ***Linear and Nonlinear Optical Methods for the Determination of Structure and Dynamics of Human Cell. Raman markers of breast cancer***
11.15- 12.15 ***Advances in ultrafast spectroscopies refine our understanding of quantum coherences, role of weak interactions and structural dynamics of biological systems: bacteriorhodopsin, lipid membranes and breast cancer tissue***

14.00-17.30 **R. J. Dwayne Miller**
Department of Physics University of Toronto, Ontario, Canada
14.00-15.30 ***Making the Molecular Movie: The Quest for the Structure-Function Correlation of Biology***
16.00-17.30 ***Do We Live in a Quantum World? A New Twist. Quantum State Dynamics Relevant to Biological Systems***

02 October 2009

10.00- 10.45 **Albrecht Lindinger**
Institut für Experimentalphysik, Freie Universität Berlin, Berlin, Germany
Simultaneous phase, amplitude, and polarization control of femtosecond laser pulses

14.00-15.30 **Stavros C. Farantos**
Institute of Electronic Structure and Laser Foundation for Research and Technology-Hellas, Department of Chemistry, University of Crete, Iraklion Crete, Greece
Energy Localisation in Molecules, Bifurcation Phenomena, and their Spectroscopic Signatures

03 October 2009

10.00-10.45 **Thomas Elsaesser**
Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie, Berlin, Germany
Ultrafast structural dynamics of condensed matter studied by femtosecond x-ray methods

14.00-16.00 **Poster session**