

# Workshop Neutrons and X-rays meet biology

## Programme

### Wednesday 25 February 2009

- 13.00-13.45 Welcome and Registration
- 13.45-14.00 Workshop Opening, Prof. Dr.-Ing. Anke Pyzalla, Director of Helmholtz-Zentrum Berlin
- 14.00-15.25 **Session 1: Large Scale structure of biomolecules I**  
**chair: Marie-Claire Bellissent-Funel, HZB/LLB**
- 14.00-14.40 **Roland May**  
ILL, France  
*Studying the Structures of Biological Macromolecules Using Small-Angle Neutron Scattering*
- 14.40-14.55 **Karsten Vogtt**  
HZB, Germany  
*Beta-Lactoglobulin Dissociation and Aggregation*
- 14.55-15.10 **Stéphane Longeville**  
LLB, France  
*Influence of macromolecular crowding on protein stability*
- 15.10-15.25 **Mohamed Daoud**  
CEA Saclay, France  
*From beta casein to synthetic polymers*
- 15.25-15.45 Coffee break
- 15.45-16.45 Guided neutron tour
- 16.45-18.10 **Session 2: Large Scale structure of biomolecules II**  
**chair: Roland Steitz, HZB**
- 16.45-17.25 **Tim Salditt**  
Georg-August-Universität Göttingen, Germany  
*Structure and Dynamics of Lipid Membranes: from scattering to imaging*
- 17.25-17.40 **Michael Rappolt**  
Institute of Biophysics and Nanosystems Research, Austrian Academy of Sciences  
*The Biologically Relevant Lipid Mesophases as "Seen" by X-rays*
- 17.40-17.55 **Stephen Holt**  
ISIS, STFC, UK  
*Model Membrane Protein Assemblies at Interfaces*
- 17.55-18.10 **Claus Czeslik**  
Technische Universität Dortmund, Germany  
*Structure and Dynamics of Protein Adsorbates at Polyelectrolyte Films*
- 18.10-19.45 Poster Session & refreshments
- 19.45-21.30 Dinner at HZB restaurant

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### Thursday 26 February 2009

08.30-09.00 Starter: coffee, croissants, foyer lecture Hall

09.00-10.00 Bus transfer to BESSY

10.00-11.25 **Session 3: Crystallographic structures of biomolecules I**

**Chair: Uwe Müller, HZB**

10.00-10.40 **Ralf Ficner**

Universität Göttingen, Germany

*Structural basis for the nuclear import of sliceosomal UsnRNPs*

10.40-10.55 **Florian Evers**

Technische Universität Dortmund, Germany

*Probing the Structure of Protein Adsorbates and the Kinetics of Protein Adsorption at Solid Surfaces by X-Ray Reflectometry*

10.55-11.10 **Bert Nickel**

Ludwig-Maximilians-Universität München, Germany

*Lipid-protein interactions studied by x-ray and neutron reflectometry*

11.10-11.25 **Klaus Brandenburg**

Forschungszentrum Borstel, Germany

*SAXS of Bacterial Virulence Factors*

11.25-11.45 Coffee break

11.45-13.10 **Session 4: Crystallographic structures of biomolecules II**

**Chair: Andre Mitschler, IGBMC**

11.45-12.25 **Alberto Podjarny**

IGBMC, Illkirch, France

*Neutron and subatomic resolution X-ray diffraction studies of fully deuterated human aldose Reductase lead to quantum model of catalysis*

12.25-12.40 **Karin Nienhaus**

Universität Ulm, Germany

*Trans-Cis Isomerization is Responsible for the Red-Shifted Fluorescence in Variants of the Red Fluorescent Protein eqFP611*

12.40-12.55 **Sandra Puehringer**

Universität Salzburg, Austria

*Structural studies of the cofactorless oxidase PqqC*

12.55-13.10 **Fadel Samatey**

Okinawa Institute of Science and Technology, Japan

*Structure and mechanism of the flagellar universal joint*

13.10-14.00 Lunch at Bessy

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- 14.00-15.25 **Session 5 : Structure and dynamics of biomolecules**  
**Chair: Gerd Schneider, HZB**
- 14.00-14.40 **Martina Havenith**  
Ruhr-Universität Bochum, Germany  
*The Terahertz (THz) dance of the protein with water*
- 14.40-14.55 **Thomas Hauß**  
HZB, Germany  
*The dynamics in bacteriorhodopsin M-intermediate by time-resolved QENS*
- 14.55-15.10 **Giovanna D'Angelo**  
Messina University, Italy  
Microscopic origin of the very-low energy vibrational dynamics in proteins
- 15.10-15.25 **Loïc Auvray**  
CNRS, Université d'Évry, France  
*Complex of oppositely charged polyelectrolytes including DNA*
- 15.25-16.25 **Guided X-ray tour**
- 16.25-16.45 Coffee break
- 16.45-18.10 **Session 6 : Structure and dynamics of biomolecules under extreme conditions**  
**Chair: Thomas Hauß, HZB**
- 16.45-17.25 **Roland Winter**  
Technische Universität Dortmund, Germany  
*The Kinetics and Mechanisms of Pressure-Jump Induced Phase Transitions of Lyotropic Lipid Mesophases and Proteins*
- 17.25-17.40 **Judith Peters**  
ILL, France  
*Effect of pressure on the dynamics of lysozyme*
- 17.40-17.55 **Heloisa Bordallo**  
HZB, Germany  
*Hydrogen Bond Instabilities in Amino Acids: High Pressure Studies using Neutron Scattering, X-Rays Synchrotron Diffraction and Raman Scattering*
- 17.55-18.10 **Susan Böhme**  
Universität Ulm, Germany  
*Structural background of photoinduced transformations of IrisFP*
- 18.10-19.10 Bus transfer to the restaurant
- 19.30-22.00 Workshop Dinner

# Workshop Neutrons and X-rays meet biology

## Programme

### Friday 27 February 2009

08.15-08.45 Starter: coffee, croissants, foyer lecture Hall

08.45-10.10 **Session 7 : Dynamics of biomolecules**

**Chair: Mohamed Daoud, CEA Saclay, France**

08.45-09.25 **Frank Gabel**

IBS, Grenoble, France

*Dynamics of biomacromolecules, water and cells studied by incoherent inelastic neutron scattering*

09.25-09.40 **Adrien Lerbret**

LDSMM, Université de Lille, France

*Molecular Dynamics Simulations of Lysozyme in Sugar Aqueous Solutions*

09.40-09.55 **Vania Calandrini**

CBM-CNRS, France

*Self-similar Protein Dynamics: MD Simulations and Experiments*

09.55-10:10 **Alexandra Buchsteiner**

HZB, Germany

*Water in organic multilayer systems: information about structure and dynamics from neutron scattering and complementary methods*

10.10-10.30 Coffee break

10.30-11.55 **Session 8 : Dynamics and modelling of biomolecules**

**Chair: Tim Salditt, Georg-August-Universität Göttingen**

10.30-11.10 **Maikel C. Rheinstädter**

McMaster University, Hamilton, ON, Canada

*Collective Molecular Dynamics in Membranes and Proteins*

11.10-11.25 **Andrea Orecchini**

University of Perugia, Italy

*Collective Dynamics of RNase Hydration Water by Brillouin Neutron Spectroscopy*

11.25-11.40 **Vasile Tripadus**

National Institute of Physics and Nuclear Engineering, Romania

*Proton and Deuteron Diffusion Motions in Deuterated Sodium Alginate Solutions at Various Hydration Degrees*

11.40-11.55 **Helmut Durchschlag**

Universität Regensburg, Germany

*Anhydrous and Hydrated Protein Models Derived from X-ray Crystallography, Small-Angle X-ray Scattering, Electron Microscopy, and Hydrodynamic Techniques*

12.00-13.30 Lunch at Cafe Jahn

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Friday 27 February 2009

13.30-15.00 **Session 9 : Imaging techniques**

**Chair: Nikolay Kardjilov, HZB**

13.30-14.00 **Gerd Schneider**

HZB, Germany

*Nano-tomography of biological cells*

14.00-14.15 **Heinrich Haas**

Medigene AG, Germany

*Tracking of Gd-loaded liposomes in vivo by Monochromatic Quantitative Computed Tomography*

14.15-14.30 **Uzuki Matshushima**

Iwate University, Japan

*Non-destructive evaluation of water movement and water relations in plants using cold neutron radiography with D2O tracer*

14.30-14.45 **Alexander Rack**

ESRF, France

*Synchrotron-based Cineradiography using Coherent Hard X-rays for in vivo Studies of Organisms*

14.45-15.00 **Markus Kühbacher**

HZB, Germany

*Chemical Imaging of Trace Elements in 2D and 3D with Neutrons and Photons*

15.00 **Closing remarks**







