



**XL Zakopane School of Physics  
International Symposium  
Zakopane, Poland, 20-25 May,  
2005**

Organized by:



The H. Niewodniczański Institute of  
Nuclear Physics, Kraków  
The M. Smoluchowski Institute of Physics  
of the Jagiellonian University, Kraków  
and  
Committee of Physics, Polish Academy of  
Sciences



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**Breaking Frontiers:  
Submicron Structures in  
Physics and Biology**

**PROGRAM**

**Friday, May 20**

**18:30              Dinner**

**19:30              Opening of the School**

**20:00              Special evening session**



**Saturday, May 21**

- 8:45 – 9:30 M. Toulemonde (Caen)**  
Inelastic Thermal Spike Model as a Mechanism for Track Formation

- 9:45 – 10:30 S. Cottenier (Leuven)**  
Getting Insight into Condensed Matter by ab initio Calculations



**Coffee break**

- 11:00 – 11:45 U. Schröter (Konstanz)**  
Electronic Transport through Quantum Point Contacts

- 12:00 – 12:45 M. Takai (Osaka)**  
Nanoprobe Applications in Low Dimensional Systems

**Evening session**

**19:00**

- 19:00 – 19:30 H. Wolf (Saarbrücken)**  
Investigation of Nanocrystalline Materials by Perturbed Angular Correlation and Supplementing Experimental Techniques

- 19:35 – 19:50 B. Kalska-Szostko (Bialystok)**  
Studies of the Iron Oxides Nanoparticles by Means of Mössbauer Spectroscopy

- 19:55 – 20:10 A. Kukunin (Mainz)**  
Spin-Polarized Scanning Tunnelling Microscopy of Ultrathin Films

- 20:15 – 20:30 A. Garcia-Bórquez (Mexico D.F.)**  
Surface Nanofeatures Induced by High Energy Heavy Ions Irradiation

- 20:35 – 20:40 G. Matei (Iasi)**  
Submicron Structure in Biocompatible Ferrofluids

**Sunday, May 22**

- 8:45 – 9:30 M. Folkard (Northwood)**  
Understanding Radiation Damage to Cells Using Microbeams
- 9:45 – 10:30 M. Folkard (Northwood)**  
Investigating Mechanisms of Radiation-Induced DNA Damage  
Using Low Energy Photons
-  **Coffee break**
- 11:00 – 11:45 A. Hauptner (München)**  
Irradiation of Living Cells with Single Ions at the Ion  
Microprobe SNAKE
- 12:00 – 12:45 K. Burda (Kraków)**  
Energy and Electron Transfer in Photosynthesis Investigated  
with Mössbauer Spectroscopy

**Evening session**

**19:00**

**19:00 SOCIAL EVENING - Grill party**



**Monday, May 23**

**9:00 – 14:00 EXCURSION**



**Afternoon session**

**15:15**

**15:15 – 16:00 H. Hahn (Darmstadt)**

Interface Characterization of Nanostructured Metallic Systems



**Coffee break**

**16:30 – 17:15 H. -J. Elmers (Mainz)**

Picosecond-resolution Photoelectron Microscopy of Fast Magnetization Processes

**17:15 – 18:00 C. L'abbé (Leuven)**

Nuclear Resonant Scattering of Circularly Polarized Synchrotron Radiation for Site-Selective Magnetization Measurements

**Evening session**

**19:30**

**19:30 – 20:15 P. Korecki (Kraków)**

Holographic Fine Structure in Nuclear Resonant Absorption

**20:20 – 20:35 J. Gryboś (Kraków)**

The Interaction Forces of the Bovine Albumin to Different Ligands Studied by AFM

**20:40 – 20:55 J. C. Li (Manchester)**

Neutron Spectroscopic Studies of Interaction between Water and DNA/Proteins and Amino Acids

**21:00 – 21:15 W. Polak (Kraków)**

Single Proton Hit Facility at the IFJ PAN in Cracow

**21:20 – 21:35 Ph. Barberet (Darmstadt)**

The GSI Heavy Ion Microbeam: a Tool for the Investigation of Cellular Response to High LET Radiations

**Tuesday, May 24**

- 8:45 – 9:30 A. Marcelli (Frascati)**  
Protein Structure and Function in the Time-Domain of Vibrational Spectroscopies. The Promising Applications of IR Synchrotron Radiation Micro-Spectroscopy
- 9:45 – 10:30 P. E. Marszalek (Durham)**  
Mechanical Properties of Single Polysaccharide, DNA and Protein Molecules Studied with the Atomic Force Microscope and Computer Simulations



**Coffee break**

- 11:00 – 11:45 G. Klingelhöfer (Mainz)**  
Mössbauer Studies of the Surface of Mars and Its Implications on the History of Water
- 12:00 – 12:45 K. W. Jones (Brookhaven)**  
Properties of New York/New Jersey Harbor Sediments

**Afternoon session**

**15:15**

- 15:15 – 15:45 A. J. Kulik (Lausanne)**  
Mechanical Properties and Anisotropy of Carbon Nanotubes and Biological Microtubules
- 15:50 – 16:05 K. Lebed (Kraków)**  
Studying of Lectin-Carbohydrate Interaction
- 16:10 – 16:25 A. Dąbrowska (Kraków)**  
Mechanical Unfolding of Native Fibronectin Using the Atomic Force Microscopy
- 16:30 – 16:45 M. Targosz (Kraków)**  
Molecular Interaction between Bacterial Antigens and Macrophage Receptors Studied by Atomic Force Microscopy

**Poster session**

**19:00**

## Wednesday, May 25

- 8:45 - 9:30** **L. Dobrzański (Białystok)**  
Bayesian Analysis of the Spectroscopic Data
- 9:45 – 10:30** **P. Esquinazi (Leipzig)**  
Magnetism in Carbon: Past, Present and Future Research
-  Coffee break
- 11:00 – 11:45** **P. E. Wigen (Columbus)**  
Ferromagnetic Resonance Force Microscopy in Micromagnetic Materials
- 12:00 – 12:45** **Closing remarks**
- 14:00** Departure of the School bus to Kraków

