



Der Wissenschaftsfonds.



RESEARCH CONFERENCES

ESF-FWF Conference in Partnership
with LFUI

Trends in Optical Micromanipulation

Universitätszentrum Obergurgl
(Ötz Valley, near Innsbruck) | Austria
4-9 February 2007

Chair: **Monika Ritsch-Marte** Medical University
Innsbruck, AT | Vice-Chair: **Stefan Bernet** Medical
University Innsbruck, AT

www.esf.org/conferences/07220

With support from The Tiroler Zukunftsstiftung



Trends in Optical Micromanipulation



www.esf.org

Final Programme

Sunday 4 February

Late afternoon / early evening	Registration at the ESF-RC desk
19.00	Welcome Drink
20.30	Supper

Monday 5 February

Optical Vortices and Angular Momentum

08.15-08.30	Conference Opening
08.30-09.10	Halina Rubinsztein-Dunlop University of Queensland, AU <i>Integrated optomechanical microelements: Rotating tweezers and their applications</i>
09.10-09.50	Kishan Dholakia St. Andrews University, UK <i>Optical micromanipulation takes hold: Studies using optical landscapes and optical binding</i>
09.50-10.20	Coffee break
10.20-11.00	Kris Helmerson NIST, US <i>Vortices and persistent currents: Rotating a condensate using photons with orbital angular momentum</i>
11.00-11.40	Grover Swartzlander Arizona University, US <i>Partially Coherent Optical Vortices and the Potential for Optical Micromanipulation</i>
12.30	Lunch
13.30-16.30	Lunch break
16.30-17.00	Coffee break

Quantitative Applications I

17.00-17.40	Kirstine Berg-Sørensen TU Denmark, DK <i>Quantitative Biophysical Studies in Living Cells</i>
17.40-18.20	Pavel Zemánek Czech Academy of Sciences, CZ <i>Employment of interference fields for delivery and sorting of Brownian particles</i>
19.00	Dinner
20.00-21.30	Poster Session I

Tuesday 6 February

Holographic Tweezers and Optical Rotors

- 08.30-09.10 **Miles Padgett**
Glasgow University, UK
Holographic Optics Tweezers: Hands, Pumps and Sensors for Microfluidic Devices
- 09.10-09.50 **Jesper Glückstad**
Risø National Laboratory, DK
3D drag-and-drop biophotonics workstation
- 09.50-10.20 Coffee break
- 10.20-11.00 **Wolfgang Losert**
Maryland University, US
Optically forced shape deformations of interfaces and biopolymer networks
- 11.00-11.40 **Pál Ormos**
Hungarian Academy of Sciences, HR
Optical manipulation with microstructures of special shape
- 11.40-12.10 **Michael Warber**
Universität Stuttgart, DE
New concepts for holographic optical tweezers (short talk)
- 12.30 Lunch
- 13.30-16.30 Lunch break
- 16.30-17.00 Coffee break

Molecular Applications

- 17.00-17.40 **Gerhard Schütz**
Johannes Kepler University, AT
Single molecule fluorescence microscopy: applications to biology
- 17.40-18.10 **Laura Mitchem**
University of Bristol, UK
Controlling and Characterising the Coagulation of Aerosol Droplets Using Optical Tweezers Coupled with Cavity Enhanced Raman Scattering (short talk)
- 19.00 Dinner
- 20.00-21.30 Poster Session II

Wednesday 7 February

Biological Applications

- 08.30-09.10 **Josef Käs**
Leipzig University, DE
Can polymer physics help biomedicine?
- 09.10-09.50 **Karl Otto Greulich**
Institut für Molekulare Biotechnologie e. V., DE
Laser microbeams and optical tweezers: From basic biological applications to the study of heart attacks.
- 09.50-10.20 Coffee break

10.20-11.00	Karsten König Universität des Saarlandes, DE <i>Optical Nanoprocessing of biomaterials using fs-lasers</i>
11.00-11.40	Karin Schütze P.A.L.M. Microlaser Technologies AG, DE <i>Laser micromanipulation and capture of living cells</i>
11.40-12.20	Antonio Sasso Università di Napoli "Federico II", IT <i>Optical tweezers: A tool to investigate complex systems</i>
12.30	Lunch
Afternoon	Free time
19.00	Dinner
20.00-21.00	Forward Look Plenary Discussion

Thursday 8 February

Many-Particle Systems and Microfluidics

08.30-09.10	Gabriel Spalding Illinois Wesleyan University, US <i>Colloidal Traffic in Static & Dynamic Optical Lattices</i>
09.10-09.50	Mattias Goksör Chalmers University of Technology & Göteborg U., SE <i>Biological applications using optical tweezers combined with a microfluidic system</i>
09.50-10.20	Coffee break
10.20-11.00	Jochen Arlt Reading University, UK <i>Linear and nonlinear microrheology of dense colloidal suspensions and glasses</i>
11.00-11.40	Jean-Marc Fournier EPFL Ecublens, CH <i>Optical binding and optical trapping: Self-consistency in field-particle interaction</i>
11.40-12.20	Alfons van Blaaderen Utrecht University, CH <i>Manipulating colloidal self-organization by electric fields</i>
12.30	Lunch
13.30-16.30	Lunch break
16.30-17.00	Coffee break

Quantitative Applications II

17.00-17.40	Erik Fällman Umeå University, SE <i>Bacterial adhesion organelles studies at a single molecule level by the use of force measuring optical tweezers.</i>
-------------	---

17.40-18.20 **Veronika Kralj-Iglič**
Ljubljana University, SL
Budding of bilayer membranes

20.00 Conference Dinner

Friday 9 February

Related Technologies

08.30-09.10 **Maria Allegrini**
Università di Pisa, IT
Near-field microscopy for nano-optics

09.10-09.50 **Vahid Sandoghdar**
ETH Zürich, CH
Interferometric imaging and tracking of nonfluorescent nanoparticles

09.50-10.20 Coffee break

10.20-11.00 **Dmitri Petrov**
ICFO, ES
Raman spectroscopy of single optically trapped living cells

11.00-11.30 **Alexander Jesacher**
Medizinische Universität Innsbruck, AT
Biomedical applications of spatial light modulators (short talk)

11.30-12.10 **Jörg Schmiedmayer**
TU Wien, DE
Micromanipulation with magnetic fields and RF induced adiabatic potentials

12.30 Lunch & Departure

Abstracts, Posters & Short Oral Presentations

There will be no short talks other than those listed on the programme.

All other abstracts are accepted as posters. The list of accepted posters is available from www.esf.org/conferences/07220.

Posters can be fixed with magnets and pins onto poster panels. Recommended poster size is 140 cm high x 100 cm wide. Use letters and drawings that can be read from approximately 100 cm distance.