

CONFERENCE PROGRAM SUMMARY

Wednesday, November 28

Eden on the Park Hotel

Morning session of MultiDimensional Microscopy Conference

MultiDimensional Microscopy Program
Eden on the Park, Wednesday, November 27

- Parkside (PK) rooms 1&2*
- Applications II*
- 9:00 Simulation analysis of virtual tip in near-field optics (invited)
Chair: H. Schneckenburger
- 9:25 Wang, J., Hong, T., Sun, L., Tian, Q.
Quantitative tissue analysis based on two-photon microscopy (invited)
- 9:50 So, P.
Femtosecond coherence spectroscopy of biological molecules (invited)
- 10:15 Lincoff, C., Dao, L., Lowe, M., Rowlands, W., Hamdorf, P.
Fluorescence resonance energy transfer illuminates subunit assembly of yeast mitochondrial ATP synthase *in vivo*
- 10:30 Gavin, P., Nagley, P., Devenish, R.J., Prescott, M.
Imaging biological tissue cultures through small apertures
- 10:45 Wood, A., Anderson, V., Cranfield, C.
Construction and Characterisation of a two-photon fluorescence microscope based on an optical fibre coupler
- 11:00 Bird, D., Gu, M.
Tea/Coffee
- Parkside (PK) rooms 1&2*
- Turbid Media*
- 11:30 Microscopic imaging through turbid tissue media (invited)
Chair: L. Wang
- 11:55 X. Gan, M. Gu
Effects of numerical aperture on resolution in fluorescence microscopic imaging through turbid medium (invited)
- 12:20-12:45 Luo, Q., Liu, Q.
The use of masks in confocal microscopy for imaging through scattering media (invited)
- Shamma, M., Cox, F., Cooper, I., Sheppard, C.
Measurement of angular distribution of photon pairs with Zeeman confocal microscopy in a highly scattering medium
- Chang, H., Chou, C., Yau, H.
- 1:00 Lunch

Commencement of Asia-Pacific Workshop on Near-Field Optics

Plenary Joint Session (Parkside Room 2)

Session Chair: KA Nugent/Min Gu

- 2:00 Haina Rubinsztein-Dunlop
The University of Queensland
Quantum Effects In Colloidal Quantum Dots (invited)
- 2:30 Kawata, S., Sun, H.-B., Takada, K.
Department of Applied Physics, Osaka University
Two-photon micro-polymerization: resolution, function and scaling effects (invited)
- 3:00 Tea Break
- 3:30 *Session Chair: A.Roberts*
- 3:30 M. Ohshi
Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology
Developing nano-photonic devices and their integration by optical near-field (Invited)
- 4:00 J. Tomminga, J. H. Kim, D. Büchel, C. Mihaleca, T. Shima, T. Nakano, H. Fujii¹, T. Kikukawa², and N. Aotoa
Laboratory for Advanced Optical Technology (LAOTTECH), National Institute of Advanced Industrial Science and Technology (AIST),
Optical diffraction and surface plasmons over small marks
- 4:20: Takashi Nakano, Nobutsumi Aotoa¹, Junji Tomimaga and Takashi Kikukawa
National Institute of Advanced Industrial Science and Technology (AIST)
Polarisation and laser power dependence of small pits image formation with germanium thin layer
- 4:40 Wei Chih Lin, Fu Han Ho, Hsun Hao Chang, Chien Wen Huang, Yo Hsuan Lin, Din Ping Tsai
Department of Physics, National Taiwan University,
Near field optical properties of AgO₂ thin-film photonic transistor
- 5:00 Dominique Barchiesi, Radouane Fikri, Stéphane Petit and Olivier Bergossi
Université de technologie de Troyes
Influence of surface and localised plasmon resonance in the window size of the readout layer of a super-reus type multiplexer.
- 5:20 End of proceedings for the day
- Parallel Session**
- Parkside (PK) room 1*
- 3:30 *Live Cells II*
Total internal reflection fluorescence lifetime imaging (TIR-FLIM) of living cells (invited)
Chair: P. C. Cheng
Schneckenburger, H., Sailer, R., Stock, K., Lytchek, M., Strass, W.
- 3:55 Live specimen microenvironment for multidimensional imaging (invited)
Lin, P.-C., Yu, H.
- 4:25 Close

Thursday, November 29
Hercus Theatre, The University of Melbourne

Optical Trapping

Session Chair: KA Nugent

8:30 **Opening Ceremony**

9:00 W.Jhe

Department of Physics, Seoul National University
Toward real-time near-field optical microscopy

(Invited)

9:30

S. M. Ittigger, Haruhiko Ito, Akifumi Takamizawa and Motoichi Ohsu
ERATO Localized Photon Project, Japan Science and Technology Corporation
Excitation of a funnel shaped optical near field by the Laguerre-Gaussian doughnut

9:50

A. Takamizawa, S. M. Ittigger, H. Ito, M. Ohsu
 Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology,
 Takamizawa
Observation of cold atom reflection in a near-field optical funnel

10:10

J. R. Arias-González and M. Nieto-Vesperinas
 Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Científicas,
Electromagnetic resonances and Optical Forces on nanoparticles: modelling photonic force
microscopy.

10:30

Tea Break
 Spectroscopy

Session Chair: W.Jhe

11:00

Yoshihito Nariai, Tsutomu Inoue, and Shigeyuki Kimura
 JASCO Corporation Nariai
Near-Field FTIR Spectroscopy

11:20

N.Hayazawa, Y. Inouye, Z.Sekkat and S.Kawata,
 Department of Applied Physics, Osaka University,
Near Field Raman Imaging of Organic Molecules by an apertureless metallic probe scanning
optical microscope

11:40

Tatsuhito Masaki, Atsushi Ono, Kazuya Goto, Yasushi Inouye and Satoshi Kawata
 Department of Applied Physics, Osaka University
Mid Infrared Near-field Imaging-spectroscopy with free-electron laser

12:00

Hiroharu Tamaru, Hideki T. Miyazaki, Hiroshi Kuwata, and Kenjiro Miyano
 RCAST, The University of Tokyo
Spectroscopic Analysis of light scattered by individual silver nanoparticles

12:20

Lunch

Photonics & Imaging I

Session Chair: M. Ohsu

1:30

Min Gu, X. Gan, J. Chon, D. Gamie, D. Morfisch (Invited)
 Centre for Micro-Photonics, School of Biophysical Sciences and Electrical Engineering
 Swinburne University of Technology
Scanning TTR microscopy: near-field Mie scattering and localized morphology-dependent
resonance

2:00

Shane Huntington & John Canning
 School of Chemistry, University of Melbourne
Precision Fabrication Of Fresnel Lenses Directly Onto Optical Fibre Tips Using Etching And
Atomic Force Microscopy

2:20

S.K Rhodes, KA Nugent and A Roberts
 School of Physics, University of Melbourne, Victoria, 3010, Australia Roberts
Precision Characterisation Of Fields In The Focal Regions Of High Numerical Aperture Lenses
Using Tapered Fibre Probes

2:40

Fu Han Ho, Yuan Hsing Fu, Din Ping Tsai
 Department of Physics, National Taiwan University
Three-dimensional near-field imaging of a focussed point

3:00

Tea Break

Session Chair: S. Huntington

Probes I

3:30

Shinya Okubo and Norihiro Umeda
 Department of Technology, Tokyo University of Agriculture and Technology
Electromagnetic field analysis for circularly polarized light at the apex of near field optical
probe

3:50

Dominique Barchiesi, Radouane Fikri and Pascal Royer
 Laboratoire de nanotechnologie et d'instrumentation Optique, Université de technologie de Troyes
Finite element model for both realistic micrometric near-field optical probes and nanometric
structures: application to wavelength interactions

4:10 – 6:00 **Poster Session**

Poster session
Hercules Lecture Theatre Foyer, The University of Melbourne

Resolution Limit To Scanning Near-Field Optical Microscopy Related To Optical Fiber Parameters

Lydia Alvarez, Angel Saucedo and Mufei Xiao
Instituto de Ingeniería, Universidad Autónoma de Baja California, CP 21280, Mexicali, Baja California, México

New Methods for improved optical near-field fiber probes

Surface Plasmon Generation In Photoactivated Silver Oxide Thin Films
H.N. Aiyer, T. Kawazoe and M. Ohisu
ERATO Localized Photon Project, Japan Science and Technology Corporation

Surface Plasmon Generation in Photoactivated Silver Oxide Thin Films

D. Bitchel, C. Mihaleca, M. Kuwahara, N. Aoda, J. Tomimaga
National Institute of Advanced Industrial Science and Technology
Laboratory for Advanced Optical Technology

Scanning Probe Microscopy Using A Digital Phase-Locked Loops Integrated Circuits

Mun-Heon Hong, Changhoon Gim, Yongho Seo and Wonho Jhe
School of Physics & Center for Near-field Atom-photon Technology,
Seoul National University

Single-Molecule Assay Of Biomolecules Using GFP.

Asutko Hikkoshi Iwane, So Nishikawa, Kayo Hibino, Mitsuhiro Iwaki, Yasunori Komori, Yasushi Saito & Toshio Yamagata.
Department of Physiology, Osaka University Medical School

Diffraction Of Strongly Focused Light Beams

N.I. Petrov
Storage Lab, Samsung Advanced Institute of Technology

Effect Of Metal Doping Into Ago, Films Used As A Probe For Super-Resolution Readout

Takayuki SHIMA, Dorothea BÜCHEL, Christophe MIHALCEA, Jooho KIM, Nobutumi ATODA and Junji TOMINAGA
Laboratory for Advanced Optical Technology (Laotech), National Institute of Advanced Industrial Science and Technology (AIST)

Near-field Spectroscopy of Modulation-doped GaAs Quantum Structures under High Magnetic Fields

T.Tokuzaki, T.Onuki, Y. Watanabe, T.Tsutsya, T.Tani and H.Yokoyama
National Institute of Advanced Industrial Science and Technology, Tsukuba

Development of the scanning near-field $\delta\phi$ optical microscope measuring component

Y.Toriyama, K.Masumita, Y.Miyazaki, Y.Sugawara and S.Moriai
Department of Electronic Engineering, Graduate School of Engineering, Osaka University.

Position Control and Rotation of Micrometer-Sized Object with Evanescent Photon Force

N. Umeda, S.Nam, S. Shimada, and A.Takayanagi
Tokyo Univ. of Agriculture and Technology

Surface plasmon coupling on a gold thin film with indented array

Hsia Yu Lin, Chien Wen Huang, Wei-Chih Lin, Din Ping Tsai
Department of physics, National Taiwan University

Scanning Near-Field Optical Microscope with a small protrusion probe and optical distance control

Noriaki Yamamoto and Takeshi Hiraga
National Institute of Advanced Industrial Science and Technology (AIST) KANSAI

A plasmon waveguide for optical/near field conversion

T. Yatsui, T. Abe, M. Koutogi, and M. Ohisu
Japan Science and Technology Corporation

Near-field components of the photoluminescence in silicon nano-structure and its evaluation

T. Yatsui, T. Kawazoe, and M. Ohisu
Japan Science and Technology Corporation

Optical transition process in AgO_x films

Fu Han Ho, Hsun Hao Chang, Yu Hsuan Lin, Din Ping Tsai
Department of Physics, National Taiwan University

Friday, November 30
Hercus Theatre, University of Melbourne

Probes II

Session Chair: D.P.Tsai

9:00 King Zhu, Shifa Xu, Yumin Shen, Xiaoding Liu, Jiancheng Hu, Ping Lu, Heian Zhou, Jingshan Hao, Zhonghe Zhai, Peter von Blanckenberg
(Invited)
State Key Laboratory for Mesoscopic Physics and Department of Physics, Peking University
Sub-Micron Imaging And Spectroscopy Of Appositised Helix Cells

9:30 Y. Inouye, A. Tarun, N. Hayazawa, and S. Kawata
Department of Applied Physics, Osaka University
Near-Field nano-fabrication of photorefractive film using tip-enhanced field

9:50 Jia Wang, Tiejun Xu, Liqun Sun, Jiyong Xu, Qian Tian
State Key Laboratory of Precision Measurement Technology and Instruments
Tsinghua University
Aperture design of nano-aperture semiconductor laser and analysis of near-field distribution

10:10 Y. Kawata,
Shizuoka University
Localisation of surface plasmon using a metal coated axicon prism

10:30 **Tea break**

Photonics & Imaging II

Session Chair: S.Kawata

11:00 S. T. Huntington and P. Hartley
School of Chemistry, University of Melbourne
Application Of Evanescent Wave Optics To The Determination Of Absolute Distance In Surface Force Measurements Using A Combined AFM/NSOM System

11:20 T. Ohnki, T. Saito, T. Tani and T. Tokizaki
National Institute of Advanced Industrial Science and Technology
Nanomere size optical waveguide with metal clad layers

11:40 C.W.J Hillman, W.S. Brocklesby, T.M Moore, W. Belardi and D.J Richardson
Optoelectronics Research Centre, University of Southampton
Structural and optical characterisation of holey fibres using scanning probe microscopy

12:00 E. Ampen-Lassen, A. Roberts and S.T. Huntington
School of Physics, The University of Melbourne
Application Of NSOM To Optical Fibre Refractive Index Profiling

12:20 **Lunch**

Near Field Optical Interactions I
Session Chair: M.Nieto-Vesperinas

1:30 Din Ping Tsai, Wei-Chih Liu, Wei-Chih Lin, Fu-Han Ho, Yuan-Hsing Fu, Hsun-Hau Chang, Yu-Hsuan Lin
Department of Physics, National Taiwan University
Near-field optical effects of the surface plasmons of the super-resolution near field optical structures

2:00 K. Kobayashi, S. Sangu, T. Kawazoe, A. Shojiyuchi, and M. Ohtsu
ERATO Localized Photon Project, Japan Science and Technology Corporation
Optical near-field interaction and its application to nanodevice

2:20 S. Sangu, K. Kobayashi, T. Kawazoe, and M. Ohtsu
ERATO Localized Photon Project, Japan Science and Technology Corporation
Inter-quantum dot energy transfer via optical near field interaction

2:40 A. Shojiyuchi, K. Kobayashi, K. Kitahara, S. Sangu, M. Ohtsu
International Christian University
Excitation transfer by optical near field interaction: localised photon picture

3:00 **Tea break**

Near-Field Optical Interactions II

Session Chair: X. Zhu

3:30 Tadashi Kawazoe, Kiyoshi Kobayashi, Suguru Sangu, Jungshik Lim, Yoshitiro Naria and Motochichi Ohtsu
Exploratory Research for Advanced Technology (ERATO), Japan Science and Technology Corporation (JST)
Dipole forbidden energy transfer via optical near-field interaction between cuprous chloride quantum cubes

3:50 Masanobu Haraguchi, Toshitiro Okamoto and Masuo Fukui
Faculty of Engineering, The University of Tokushima
Non-linear microscope optical switching device due to near field coupling: numerical analysis

4:10 Wei-Chih Liu and Din Ping Tsai
Department of Physics, National Taiwan Normal University
Near-field distributions of localised surface plasmon resonances in metallic nanostructures

4:30 Yasuhiro Sugawara, Yosuke Toriyama, Kanehiro Masumitsu and Seizo Morita
Department of Electronic Engineering, Graduate School of Engineering,
Osaka University
Force imaging of optical near field with 1.5nm lateral resolution

4:50 K.A.Nugent
Closing comments

5:00 **End of technical proceedings.**