Micronano System Workshop
MSW 2014

Innovation Arena for Research & Industry
10th Micronano System Technology Event
15-16 May, Uppsala

Welcome

Welcome to a jubilee event! MSW 2014 is the 10th workshop and is held 20 years after the first workshop in 1994. We are happy to invite you back to Uppsala, where it all started!

MSW is the meeting place for those interested in Micro- and Nanosystems in Scandinavia. Participants will get a good insight in on-going research and development.

Application areas addressed

Topics covered include materials, processing and simulation of micro- and nanosystem components; such as sensors, actuators, microfluidics and integrated optics and electronics.

MSW is a forum where industry, researchers and national organizations can have stimulating meetings on research, development and industrial use of MEMS/MST in Scandinavia. A key factor has been the informal atmosphere, which has stimulated many interesting contacts and projects at the previous workshops. Some participants know much about microsystems, others have strong application know-how, while still others have ideas or a general curiosity.

MSW was held in Uppsala in 1994, 1996, and 1998, in Stockholm/Bålsta in 2002, in Ystad in 2004, in Västerås in 2006, in Göteborg in 2008, in Stockholm in 2010, and in Linköping in 2012. MSW will continue to be organized every second year in different key industrial regions.

MSW uses local organizers and is run on a non-profit basis.

Klas Hjort
Chairman of MSW 2014

Invited Speakers

Following the tradition of MSW, we are proud to have two of the most distinguished scientists of our field as invited speakers: Prof. Roland Zengerle, IMTEK, University of Freiburg and Prof. Aydogan Ozcan, UCLA.

Prof. Aydogan Ozcan,

Prof. Roland Zengerle, UCLA
IMTEK

Best Poster Award

A Best Poster Award will be given at the end of the Workshop.

The winner will be able to attend one of COMSOL's one-day training courses for free (value 5,950 SEK).

Exhibition

The exhibition will be located in the poster area of the conference venue. Companies and organizations will present themselves and their products.

Azpect, the leading Nordic supplier for the Photonics market

BioNavis, providing excellence in Surface Plasmon Resonance

COMSOL, Multiphysics Software, with an interactive environment for modelling and simulating scientific and engineering problems

Conventor, having an integrated platform for MEMS innovation

Myfab, the Swedish national research infrastructure for micro and nano fabrication

Piezomotor, motors with precision beyond imagination

Host

MSW2014 is organized by Uppsala University

Divison of Microsystems Technology
Department of Engineering Sciences

Organizing Committee

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Greger Thornell, Microsystems Technology
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Program

Thursday, May 15

9.00 Registration opens

10:00 Opening of MSW 2014

10:20 Computational Microscopy, Sensing and Diagnostics, Invited speaker Aydogan Ozcan, UCLA

11:00 Session 1

12:00 Lunch

13:20 Session 2

14:00 Poster presentations

15:00 Poster session 1, Coffee

15:40 Session 3

17:00 end of session

17:10 visit to the MSL Cleanroom

17:20 Bus to Uppsala travel centre

18:20 Bus to Uppsala travel centre

19:00 Banquet at the Botanical Garden

Friday, May 16

9:00 Session 4

10:00 Microfluidic Platforms, Microfluidic Apps and Microfluidic Foundry Services, Invited speaker Roland Zengerle, IMTEK, University of Freiburg

10:40 Poster session 2, Coffee

11:20 Session 5

12:20 Poster session 3 with lunch wraps

13:20 Session 6

14:40 Poster session 4, Coffee

15:20 Session 7

16:40 Workshop ends

16:50 visit the MSL Cleanroom

17:00 Bus to Uppsala travel centre

17:50 Bus to Uppsala travel centre

Oral Sessions Thursday, May 15

10:20 COMPUTATIONAL MICROSCOPY, SENSING AND DIAGNOSTICS, Invited speaker Aydogan Ozcan, UCLA

11:00 Session 1 (Chair: Klas Hjort)

RF TO MILLIMETER-WAVE MEMS AT KTH
J. Oberhammer et al.

ROBUST MICRODEVICE MANUFACTURING BY DIRECT LITHOGRAPHY AND ADHESIVE-FREE BONDING OF OSTE+ POLYMER
A. Vastesson et al.

COMSOL MULTIPHYSICS SIMULATIONS FOR MICRO/NANO SYSTEMS APPLICATIONS
M. Fredenberg

13:20 Session 2 (Chair: Jonas Tegenfeldt)

FAST REVERSIBLE PHOTO-SWITCHING FROM CASSIE TO WENZEL WETTING STATES USING A MICROHOODOO-STRUCTURED SURFACE
S. Hoshian et al.

PROBING PHYSICAL PROPERTIES OF DNA-PROTEIN COMPLEXES USING NANOFLUIDIC CHANNELS
F. Westerlund et al.

15:40 Session 3 (Chair: Cristina Rusu)

OPTICAL MAPPING OF SINGLE DNA MOLECULES IN NANOCHANNELS: A NOVEL METHOD FOR IDENTIFICATION AND CHARACTERIZATION OF ANTIBIOTIC RESISTANCE
L. Nyberg et al.

NON-CONTACT ACOUSTIC TRAPPING PLATFORM FOR BEAD INCUBATION FOR MULTIPLEX ASSAYS,
M. Tenje et al.

INTEGRATION OF POLYMER MICROFLUIDIC SWITH SILICON PHOTONIC SENSORS BY COMBINED PHOTOPATTERNING AND MOLDING OF OSTE
C. Errando-Herranz et al.

MYFAB – SWEDEN'S OPEN-ACCESS NANOTECHNOLOGY RESEARCH INFRASTRUCTURE
T. Swahn et al.

Oral Sessions Friday, May 16

9:00 Session 4 (Chair: Göran Stemme)

BIOCHEMICAL SENSING BASED ON PLASMON ENHANCED SILVER QUANTUM CLUSTER FLUORESCENCE,
K. B. Mogensen et al.

SYMMETRIC, PLANAR WAVEGUIDE PLATFORM FOR EVANESCENT-WAVE MICROSCOPY IN AQUEOUS ENVIRONMENTS, B. Agnarsson et al.

FABRICATION TECHNIQUES FOR NANO-FOCUSING X-RAY ZONE PLATES, J. Rahomäki et al.

10:00 MICROFLUIDIC PLATFORMS, MICROFLUIDIC APPS AND MICROFLUIDIC FOUNDRY SERVICES
Invited speaker Roland Zengerle, IMTEK, University of Freiburg

11:20 Session 5 (Chair: Klaus Bo Mogensen)

MEMS GYRO FOR INERTIAL MEASUREMENT UNIT,
C. Rusu et al.

A FAST LIQUID ALLOY PATTERNING TECHNIQUE FORMICROFLUIDIC STRETCHABLE ELECTRONICS,
S. H. Jeong et al.

TOWARDS INTEGRATION OF PCR AND CE WITH PNEUMATIC MEMBRANE PUMP AND VALVE, K. Kolari et al.

13:20 Session 6 (Chair: Sami Franssila)

WATER MIST-INDUCED PARALLEL SELF-ALIGNMENT OF MICROCHIPS ON HYDROPHILIC/SUPER-HYDROPHOBIC NANOSTRUCTURED SURFACE, B. Chang et al.

DROPLET MICROFLUIDICS BASED DIRECTED EVOLUTION DOUBLES PRODUCTION OF INDUSTRIAL ENZYMES IN YEAST CELL FACTORIES, H. Jönsson et al.

MICRO SYSTEM ASSISTED HIGH PRESSURE GAS STORAGE, L. Stenmark et al.

APPLICATION OF INKJET DEPOSITION INMICROSYSTEMS FABRICATION, K. Eiroma et al.

13:20 Session 7 (Chair: Kai Kolari)

THERMOMECHANICAL BEHAVIOUR AND PRESSURE SENSING OF CERAMIC WIRELESS DEVICES FOR HIGH-TEMPERATURE ENVIRONMENTS, P. Sturesson et al.

A REVIEW OF NON-INVASIVE CONTINUOUS BLOOD GLUCOSE MEASUREMENT TECHNIQUES, P. Øhlckers et al.

TOWARD THE REALIZATION OF AN ELECTRICALLY DRIVEN SOURCE OF SINGLE PHOTONS, H. Machhadani et al.

Posters

1. AN EFFICIENT ELECTROSTATIC PRECIPITATION SAMPLER FOR BREATH-BASED POINT-OF-CARE DIAGNOSTICS, L. Ladhani, et al.
2. DEVELOPMENT OF NEW METALLIZATION PROCESSES FOR HIGH ASPECT RATIO THROUGH-SILICON-VIA, S. Moulodi et al.
3. QUANTUM PHASE SLIPS, A. Ergűl et al.
4. HIGH TEMPERATURE THERMOELECTRIC ENERGY HARVESTERS FOR WIRELESS SENSORS, J. E. Köhler et al.
5. A BIOCOMPATIBILITY STUDY OF OSTE POLYMERS BY CELL GROWTH EXPERIMENTS, C. Errando-Herranz et al.
6. PLASMONIC SENSING BASED ON SURFACE SCREENING OF SMALL SILVER NANOPARTICLE FILMS DURING CONTROLLED DISSOLUTION IN AQUEOUS SOLUTION, K. B. Mogensen et al.
7. ENHANCEMENT OF FLORESCENT SIGNAL FROM QUANTUM-DOT APTAMER BEACONS USING 3D PHOTONIC CRYSTAL STRUCTURES, C. Young Lim et al.
8. SUSPENDED GRAPHENE MEMBRANES FOR PIEZO-RESISTIVE SENSING OF PRESSURE, A.D. Smith et al.
9. MICROMACHINED GAP WAVEGUIDE DEVICES FOR ABOVE 100 GHz, S. Rahiminejad et al.
10. FLIP-CHIP BONDING: KEY APPROACH FOR HYBRID INTEGRATION, Q Wang, et al.
11. DEVELOPMENT OF A DROPLET GENERATOR TOWARDS APPLICATIONS USING ACOUSTOPHORETIC SORTING, L. Jonsson et al.
12. MP-SPR NEW CHARACTERIZATION METHOD FOR SURFACE INTERACTIONS AND NANOLAYER PROPERTIES, A. Jokinen et al.
13. CHARACTERIZATION OF MICROMACHINED MILLIMETERWAVE MEDICAL PROBE USING SILICON TEST SAMPLES WITH TAILOR-MADE PERMITTIVITY PATTERN, F. Töpfer et al.
14. RAPID FABRICATION OF OSTE+ MICROFLUIDIC DEVICES WITH LITHOGRAPHICALLY DEFINED HYDROPHOBIC/ HYDROPHILIC PATTERNS AND BIOCOMPATIBLE CHIP SEALING, X. Zhou et al.
15. IMAGE-BASED MEASUREMENTS OF PAPER FIBERS FOR AUTOMATIC MANIPULATION, J. Hirvonen et al.
16. MAREX -EXPLORING MARINE RESOURCES FOR BIOACTIVE COMPOUNDS, K. Fogel et al.
17. DEVELOPING A POINT OF CARE DEVICE FOR RAPID TUBERCULOSIS DIAGNOSTICS, D. Ilver et al.
18. INVESTIGATION FOR MEASUREMENTS OF BODY PARAMETERS WITH SENSORS, J. Du et al.
19. MICRORobotic PLATFORM FOR CHARACTERIZATION OF MICROSCALE FIBROUS MATERIALS: EXEMPLARY CASE ON PAPER FIBERS, P. Saketi et al.
20. TOWARDS SELF-ASSEMBLED ELECTRONICS; CONDUCTING DNA ORIGAMI USING METALLIC POLYMERS, E. Benson et al.
21. FABRICATION OF NANOPORE ARRAYS IN SILICON, M. Zhang et al.
22. MICROFLUIDIC ACOUSTIC TRAPPING FOR SEPSIS DIAGNOSIS USING MALDI-MS, S. Ekström et al.
23. SEPARATION OF BACTERIA FROM BLOOD CELLS BY ACOUSTOPHORESIS FOR RAPID SEPSIS DIAGNOSTICS, P. Ohlsson, et al.
24. INDIUM TIN OXIDE THIN FILMS FOR FORMALDEHYDE AND ACETALDEHYDE SENSING, P. C. Lansåker et al.
25. CELL CULTURE ENVIRONMENTS FOR STEM CELL STUDIES IN VITRO, J. Kreutzer et al.
26. LOW STRESS PACKAGING FOR MEMS DEVICES USING DOUBLE-SIDED WIRE BONDING, S. Schröder et al.
27. LITHIUM NIOBATE BASED OPTICAL DEVICES, M. Amin Baghban et al.
28. POLYMER FUNCTIONALIZATION OF NANOSTRUCTURES, G. Emilsson, et al.
29. A DISPOSABLE MICROFLUIDIC IMMUNOASSAY CARTRIDGE FOR POINT OF CARE APPLICATIONS, J. Väliahoa et al.
30. CARBON NANOFIBRES FROM CELLULOSE AS ELECTRODES FOR ELECTRONIC DEVICES, V. Kuzmenko et al.
31. TOWARDS POLYMER GATES IN NANOPORES, A. B. Dahlin et al.
32. MICRONEEDLE BASED SAMPLING FOR LIPID ANALYSIS, A. Hokkanen et al.
33. LOW GAS PERMEABLE AND NON-ABSORBENT RUBBERY OSTE+ FOR PNEUMATIC MICROVALVES, J. Hansson et al.
34. LUND NANO LAB - NANOFABRICATION CENTER WITHIN THE NANOMETER STRUCTURE CONSORTIUM AT LUND UNIVERSITY, I. Maximov et al.
35. A HIGH-PERFORMANCE MICROPLASMA SOURCE FOR HIGHLY SENSITIVE AND ROBUST GAS ANALYSIS, M. Berglund et al.
36. MICROARRAY ON LAB-ON-DVD PLATFORM FOR NUCLEIC ACID ANALYSIS, H. Ramachandraiah et al.
37. A DISPOSABLE CHIP FOR THE COLLECTION OF QUANTITATIVE DRIED BLOOD SPOT SAMPLES, G. Lenk et al.
38. INTEGRATED HIGH-PRESSURE FLUID MANIPULATION IN MICROFLUIDIC SYSTEMS, M. Andersson et al.
39. MANNITOL FOR HIGH TEMPERATURE PHASE CHANGE ACTUATORS, S. Knaust et al.
40. FUNCTIONALIZATION OF GRAPHENE FOR BIOSENSORS CAPABLE OF MEASURING BOTH CURRENT AND CAPACITANCE, M. Hinnemo et al.
41. HYBRID MICROASSEMBLY IN ENVIRONMENTAL SCANNING ELECTRON MICROSCOPE USING ROBOTIC MANIPULATOR AND ADHESIVES, V. Liimatainen et al.
42. GRAPHENE/GALINSTAN CONTACTS FOR RELIABLE LIQUID INTERCONNECTS, P. Ahlberg et al.
43. MOLECULAR PLACE EXCHANGE IN A NANOELECTRODE BASED PLATFORM AS A PREPARATION FOR A NOVEL GAS AND BIOMOLECULE SENSOR, A. Hayat et al.
44. MELT MAPPING OF DNA IN NANOCHANNELS FOR BACTERIAL IDENTIFICATION, S. Scaramuzza et al.
45. IMPROVING GRAPHENE BASED GAS SENSOR COMPONENTS BY ATOMIC SCALE DEFECT ENGINEERING, H. Li et al.
46. INVESTIGATION ON PARAMETERS FOR HYDROTHERMAL SYNTHESIS OF UNIFORM ZnO NANOWIRES WITH DIAMETER OF 20 nm, M. Jiao et al.
47. DRY ADHESIVE BONDING OF POROUS MEMBRANES TO MICROSTRUCTURED SILICON WAFERS USING THE OSTE(+) DUAL-CURE POLYMER, F. Saharil et al.
48. FLUORESCENCE IMAGING OF MOLECULE TRANSPORT IN HIGH MOLECULAR WEIGHT CUT-OFF MICRODIALYSIS, J. Chu et al.
49. PLASMONIC NANOPORES IN METAL-INSULATOR-METAL FILMS, K. Xiong et al.
50. ALBANOVA NANOFABRICATION FACILITY, A. Liljeborg

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