



Innovation Arena for Research & Industry 11th Micronano System Technology Event

17-18 May, Lund

**Local organizing Committee** 

**Program Committee** 

Jonas Tegenfeldt, Division of Solid State Physics

Christelle Prinz, Division of Solid State Physics

Heiner Linke, Division of Solid State Physics

Assoc Prof Christelle Prinz, Lund University

Prof Peter Enoksson, Chalmers Technical University

Prof Pasi Kallio, Tampere University of Technology Prof Per Øhlckers, Vestfold University College

9:45 Opening of MSW 2016 (Jonas Tegenfeldt)

Jönsson, KTH, Stockholm

"High selectivity single-cell protein assays enabled by

"Synthetic Microfluidic Paper for capillary driven

microfluidics", Jonas Hansson, Tommy Haraldsson, and

"Soft, Stretchable and Sticky PDMS", S. H. Jeong, K. Hjort,

and Z. G. Wu, Huazhong University of Science and

"Viability and cell division in droplet microfluidics based cell

culture from single CHO cells depends on droplet size",

Prem Kumar PR, Helene Andersson-Svahn and Håkan N.

"Particle Enrichment In Droplet Acoustofluidics", A. Fornell,

... and M. Tenje, Lund University, Lund; SciLife, KTH,

microfluidic design", Amy Herr, Berkeley, CA

Wouter van der Wijngaart, KTH, Stockholm

Technology: Uppsala University, Uppsala

10:40 Session 1 - Fluidics, materials and cells (Chair: Jonas

10:00 KEYNOTE (Chair: Thomas Laurell)

Prof Göran Stemme, KTH, Royal Institute of Technology

Prof Jonas Tegenfeldt, Lund University

Prof Thomas Laurell, Lund University

Prof Heiner Linke, Lund University

Prof Klas Hjort, Uppsala University

Prof Sami Fransilla, Aalto University

Prof Robin Ras. Aalto University Assoc Prof Cristina Rusu, Acreo

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**Congress Secretariat** 

Tuesday, May 17, 2016 9.00 Registration opens

Reachem AB

**Program** 

Tegenfeldt)

Thomas Laurell, Department of Biomedical Engineering

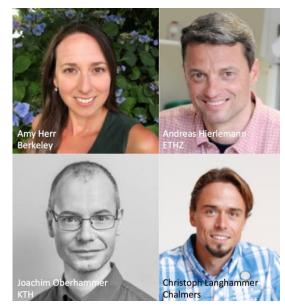
## Welcome

MSW 2016 is the 11th workshop and is held 22 years after the first workshop in 1994. We are happy to invite you to Lund!

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

Jonas Tegenfeldt Chairman of MSW 2016

## **Keynote and Invited Speakers**



## **Exhibition**

Our exhibitors will showcase their products and services in the poster area of the conference venue.

Bergman Labora AB and Nikon

Zeiss

LRI and Olympus

Mengel Engineering and LabSmith















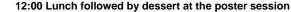












13:30 INVITED (Chair Peter Enoksson)

"THz MEMS - Micromachining enabling new solutions at millimeter and submillimeter frequencies", Joachim Oberhammer, KTH, Stockholm

14:00 Session 2 - Fabrication, materials and characterization (Chair Heiner Linke)

- "Crack-junctions: crack-defined electronic nanogaps", V. Dubois, F. Niklaus, and G. Stemme, KTH, Stockholm
- "In Operando X-Ray Characterization of Electrically Induced Strain and Bending in Nanowire Devices", J. Wallentin, M. Osterhoff, and T. Salditt, University of Göttingen, Göttingen, Lund University, Lund
- "Gap adapters for screw redundant high frequency measurements". Sofia Rahimineiad. ... Peter Enoksson. Chalmers University of Technology, Gothenburg

### 15:00 Refreshments

15:15 Panel discussion – How to transform needs to products (Chair:

- Ebba Fåhraeus, CEO Lund Life Science Incubator
- Assoc Prof Christoph Langhammer, Chalmers
- Prof Amy Herr, Berkeley University
- Prof Andreas Hierlemann, ETH Zürich

### 16:15 Poster session and snacks

18:45 Bus transport to Grand Hotel (details announced separately)

## 19:15 Banquet at Grand Hotel

## Wednesday, May 18, 2016

9:00 KEYNOTE (Chair Christelle Prinz):

"Highly integrated CMOS microsystems to interface with neurons at subcellular resolution". Andreas Hierlemann. ETH. Zürich

9:40 Session 3a - Tissue Engineering and Viability (Chair: Christelle Prinz)

- "Ultrasonic tissue micro-engineering", K. Olofsson, ... and M. Wiklund, KTH, Stockholm
- "Acoustic Separation, Enrichment And Microchip PCR Detection of Bacteria from Blood", P. Ohlsson, ... T. Laurell, Skåne University Hospital, Lund; University of Turku, Turku; Diagnostica OY: Turku University Hospital. Turku: Lund University, Lund

# 10:20 Poster session and refreshments

11:00 INVITED (Chair: Sampo Tukkanen)

"Single Particle Plasmonic Nanospectroscopy", Christoph Langhammer, Chalmers, Gothenburg













Stockholm; Uppsala University, Uppsala











Session 3b – Plasmonics and sensors (Chair: Göran Stemme)

- "Opto-fluidics and Localized Surface Plasmon Resonance (LSPR) Biosensing: Multiplexing and Miniaturization", S. S. Acimovic and Mikael Käll, Chalmers, Gothenburg
- "Plasmonic Nanopores For Single-Molecule DNA Sensing", Nicoli, D. Vershueren, ... and <u>M.P. Jonsson</u>, TU Delft, Delft, University of Illinois at Urbana Champagne; Linköping University, Linköping

## 12:30 Lunch followed by dessert at the poster session

14:00 Session 4 – Information and Energy (Chair: Robin Ras)

- "Parallel Biocomputational Devices Based On Molecular Motors In Nanostructures", F. W. Lindberg, ... H.Linke, Lund University, Lund and coworkers
- "Fungal foraging in microfluidic artificial soil environments",
  K. Aleklett, ... and E.C. Hammer, Lund University, Lund
- "The Smart Mems Piezo Based Energy Harvesting With Integrated Supercapacitor And Packaging", C. Rusu, ... T. Ebefors. Acreo Swedish ICT and coworkers

### 15:00 Refreshments

15:15 Concluding lecture (Chair: Cristina Rusu)

 "Dynamics of magnetic droplets on superhydrophobic surfaces", Robin H. A. Ras, Department of Applied Physics, Aalto University. Helsinki

15:45 Prize ceremony (Chair: Jonas Tegenfeldt)

- BergmanLabora/Nikon prize for best poster presentation
- LRI/Olympus prize for most innovative work
- The Zeiss prize for best imaging

16:00 Adjourn (poster lounge open and available until 19:00 for final discussions and for removal of posters and exhibits)

## **Posters**

- IMPROVED TUNGSTEN NANOFABRICATION FOR HARD X-RAY ZONE PLATES, Parfeniukas et al.
- METAL-ASSISTED CHEMICAL ETCHING OF SILICON FOR HARD X-RAY ZONE PLATE FABRICATION, Giakoumidis et al.
- 3. LOW-POWER MEMS TUNABLE PHOTONIC RING RESONATORS, Errando-Herranz et al.
- FABRICATION OF HIGH ASPECT RATIO THROUGH SILICON VIAS (TSVS) USING WIRE BONDING, Schröder et al.
- THROUGH-GLASS-VIA ENABLING LOW LOSS HIGH-LINEARITY RF COMPONENTS, Liljeholm et al.
- THE MODEL FOR CAPACITIVE CHARGING OF CONDUCTING POLYMERS, Volkov et al.
- SMART DESIGN FOR MEMS PIEZOELECTRIC HARVESTER, Vyas et al.
- 8. SUPERCAPACITOR BASED ON CARBON NANO-STRUCTURES AS ELECTRODE MATERIALS, Saleem et al.

- CELLULOSE DERIVED NANOMATERIALS AND THEIR APPLICATION IN SUPERCAPACITORS, Kuzmenko et al.
- PD DECORATION OF ON-CHIP GROWN ZNO NANORODS FOR ETHANOL DETECTION, Jiao et al.
- 11. DESIGN AND INTEGRATION OF A MID-IR ABSORBER INTO A MEMBRANE BASED THERMOPILE DETECTORS. Ashraf et al.
- 12. SIGNAL PROCESSING WITH APPLICATION TO A MEMS-GYROSCOPE BASED COMPUTER HEAD MOUSE, Du et al.
- 13. DIAMOND WAVEGUIDES FOR MID-IR SENSING, Malmström et al.
- 14. FABRICATION OF SUSPENDED ALL-METAL SENSOR ELEMENTS IN CERAMIC LAMINATES, Sturesson et al.
- 15. PIEZO SENSORS FROM NANOCELLULOSE, Rajala et al.
- 16. DEVELOPMENT OF DRY STATE ON-CHIP MICROACTUATORS BASED ON POLYPYRROLE, Zhong et al.
- 17. HYBRID MATERIAL SOFT MICROACTUATORS, Zondaka et al.
- 18. EASY PATTERNING AND FABRICATION OF CONDUCTING POLYMER MICROACTUATORS, Tyagi et al.
- 19. SUPERHYDROPHOBIC PDMS FOR CAPILLARY SELF-ALIGNMENT, Chang et al.
- 20. SYNTHESIS AND SUBSEQUENT INVESTIGATION OF THERMORESPONSIVE COLLOIDAL MOLECULES USING DROPLET-BASED MICROFLUIDICS, Peng et al.
- 21. CROSS-LINKED GELATIN/AGAROSE CONJUGATE AS A THERMOSTABLE AND BIOCOMPATIBLE MICROFLUIDIC MATERIAL, Jocic et al.
- 22. CONSTRUCTION OF ORGANIZED MACROSCOPIC PROTEIN MATERIALS THROUGH SELF- ASSEMBLY OF AMYLOID FIBRILS, Solin et al.
- 23. SPATIAL AND CHEMICAL PATTERNING OF HYALURONIC ACID USING UV LITHOGRAPHY. Siggren et al.
- 24. FABRICATION OF A SILICON-GLASS MICROFLUIDIC DEVICE FOR GENERATION OF SUB 100-MICROMETER-SIZED DROPLETS, Ohlin et al.
- **25.** NUMERICAL MODELING AND EXPERIMENTAL VALIDATION FOR THE DETECTION OF OPTIMAL FOCUSING FREQUENCIES IN ACOUSTOPHORESIS, Garofalo et al.
- 26. LONG-TERM STORAGE OF PICOLITRE LIQUID VOLUMES IN POLYMER MICROFLUIDIC DEVICES, Guo et al.
- A MICROSTRUCTURED OPTICAL FIBER FOR OPTOFLUIDICS, Etcheverry et al.
- 28. HIGH PRESSURE GLASS DEVICES FOR CO2 and H20, Andersson et al.
- 29. AUTOMATED CONTACT ANGLE MEASUREMENTS ON FIBERS USING A MICROROBOTIC PLATFORM AND COMPUTER VISION, Hirvonen et al.
- **30.** TWO-DIMENSIONAL POLARIZATION MICROSCOPY OF POLYMER CHAIN ORGANIZATION IN CONJUGATED POLYMERS FOR ORGANIC ELECTRONICS, Täuber et al.
- 31. AGGREGATION OF MONO-STAINED PROTEINS VISUALIZED EX VIVO BY 2D POLARIZATION MICROSCOPY, Täuber et al.

- 32. SYNTHESIS AND CHARACTERIZATION OF THE LAWNMOWER: AN ARTIFICIAL PROTEIN-BASED, BURNED-BRIDGES MOLECULAR MOTOR, Verardo et al.
- 33. FLUORESCENT HETEROSTRUCTURE NANOWIRES FOR BIOLOGICAL APPLICATIONS, Adolfsson et al.
- 34. OSTE+ FOR NEURAL PROBES, Ejserholm et al.
- PARTICLE SEPARATION AND DIFFUSION BASED LIMITATION, De Andres Gonzalez et al.
- **36.** SIZE-INDEPENDENT DENSITY FRACTIONATION WITH DETERMINISTIC LATERAL DISPLACEMENT. Holm et al.
- 37. HYDRODYNAMIC MICROFLUIDIC TRAPS FOR STUDYING MALARIA INFECTIONS IN RED BLOOD CELLS, Ström et al.
- **38.** PARTICLE SEPARATION BY A COMBINATION OF MICROFLUIDICS AND ELECTROKINETICS, Ho et al.
- 39. MICROFLUIDIC SEPARATION OF DNA. Kühnlein et al.
- 40. SURFACE BASED PARTICLE SORTING. Tran et al.
- 41. PARTICLE SORTING IN DLD ARRAYS USING ASYMMETRIC POST SHAPES, Punyani et al.
- **42.** IMPEDANCE MEASUREMENTS AND ACOUSTIC TRAPPING IN A MICROFLUIDIC CHANNEL, Johannesson et al.
- **43.** ACOUSTIC SEPARATION OF MIXED PARTICLE SUSPENSIONS USING AN IMPROVED MICROFLUIDIC-BASED MULTIPLE OUTLET CHIP, Urbansky et al.
- 44. ACOUSTIC CAPTURE OF MICROVESICLES FROM PLASMA, Evander et al.
- 45. ACOUWASH AND ACOUTRAP AUTOMATED PLATFORMS FOR ACOUSTIC SEPARATION AND TRAPPING, Ohlsson et al.
- **46.** THOUSANDFOLD ENRICHMENT OF CELLS USING AN ACOUSTOFLUIDIC DEVICE, Jakobsson et al.
- **47.** INTEGRATION OF ACOUSTO- AND DIELECTROPHORESIS FOR TUMOR CELL SEPARATION AND CONCENTRATION FOLLOWED BY SINGLE CELL TRAPPING, Antfolk et al.
- 48. CELL SEPARATION BASED ON ACOUSTIC PROPERTIES, Augustsson et al.
- 49. A 3D MICROFLUIDIC LIQUID CAGE COLLECTOR FOR AIRBORNE PARTICLES, Ladhani et al.
- SYSTEM FOR SINGLE CELL ISOLATION FROM MICROWELLS, Verron et al.
- 51. MICROFLUIDIC SAMPLE CONCENTRATOR, Cruz et al.
- **52.** ELASTO-INERTIAL MICROFLUIDICS FOR BACTERIA SEPARATION FOR SEPSIS DIAGNOSTICS, Faridi et al.
- 53. LDH BASED NEONATAL DIAGNOSTICS ON A LOW-COST SLIPDISC BASED SAMPLE PREPARATION PLATFORM, Banerjee et al.
- **54.** ACOUSTOPHORESIS: USING SOUND TO SEPARATE PARTICLES, Forsal et al.

























