

**Thursday, October 22, 2015**

12:00 Registration (Fairway Deck)

15:00 **Equipment Exhibit** (Fairway Deck)18:00 **Welcome Reception** (Silverado Ballroom)**Friday, October 23, 2015**

7:15 Breakfast (Fairway Deck)

**Session 1: Keynote Talks** (Silverado Ballroom)*Session Chairs: Stephen Y. Chou (Princeton University) and Douglas Resnick (Canon Nanotechnologies, Inc.)*

8:00 Opening Remarks

8:20 Keynote 1 Nanoimprint System Development and Status for High Volume Semiconductor Manufacturing Takehiko Iwanaga Canon

8:55 Keynote 2 Imprinting with Novel Materials and Methods for Device Fabrication James Watkins University of Massachusetts

9:30 Keynote 3 More (than Moore) applications based on nanoimprint lithography Helmut Schiff Paul Scherrer Institut

10:05 Break (Fairway Deck)

**Session 2: Invited Special Session** (Silverado Ballroom)*Session Chairs: Douglas Resnick (Canon Nanotechnologies, Inc.) and Qiangfei Xia (University of Massachusetts)*

10:35 2.1 Where Now in Nanoimprint Lithography (NIL)? Fabian Pease Stanford University

10:55 2.2 Early Days in Nanoimprint Stephen Y. Chou Princeton University

11:15 2.3 The Role of Precision Systems in Nanoimprint Lithography S. V. Sreenivasan University of Texas at Austin

11:35 2.4 A reflection of the outcome of the European Pioneering NIL Programs - from laboratory to business development Lars Montelius Lund University; International Iberian Nanotechnology Laboratory (INL)

11:55 2.5 History and Activities of Nanoimprint in Japan Shinji Matsui University of Hyogo

12:15 Nanoimprint Pioneer Awards

12:40 Lunch (The Arbor)

**Session 3: Modeling, Templates and Materials** (Silverado Ballroom)*Session Chairs: Yoshihiko Hirai (Osaka Prefecture University) and Marc Verschuuren (Philips Corporate Technologies)*

13:40 3.1 Invited Enabling layout and process optimization with fast, full-field simulation of droplet-dispensed UV-NIL Hayden Taylor University of California, Berkeley

14:00 3.2 Platforms for polymeric 3D mold manufacture – origination, tooling and replication Arne Schleunitz micro resist technology GmbH

14:15 3.3 Computational Study on Line Edge Roughness in Nanoimprint Lithography Yoshihiko Hirai Osaka Prefecture University

14:30 3.4 A new photo-curable PDMS with excellent replication fidelity for high volume manufacturing soft UV-NIL Arne Schleunitz micro resist technology GmbH

14:45	3.5	How to correlate the bulk viscosity of nanoimprint materials with the nanometer scale behavior of thin supported films?	Hubert Teyssedre	LETI
15:00	3.6	Effect of Elastic Modulus of UV Cured Resist on De-molding Force	Masamitsu Shirai	Osaka Prefecture University
15:15	Break (Fairway Deck)			
15:45	<b>Poster Session (Fairway Deck)</b>			
<b>Applications</b>				
P-A.1	Multiplex Chemotyping Microarrays(MCM)		Sun Choi	Korea Institute of Science and Technology
P-A.2	Thin film metallization of PDMS with improved adhesion properties for micro electrode arrays		Marina Scharin	University of Erlangen-Nuremberg
P-A.3	Fabrication of Glass MicroFluidic Chips by Glass Molding with Vitreous Carbon Mold		Jonghyun Ju	Chung-Ang University
P-A.4	Self-aligned Integration of Nanopillars inside Nanofluidic Channel for Enhanced Fluorescence Sensing by Double Nanoimprint Lithography		Ruoming Peng	Princeton University
P-A.5	Fabrication of bi-layer wire-grid polarizer by glass imprinting and metal layer deposition		Hyungjun Jang	Chung-Ang University
P-A.7	Full color reflective display based on high contrast gratings		He Liu	University of Southern California
P-A.8	Fabrication and Demonstration of a Reflective Nanoplasmonic Quarter-wave Plate		Yuxuan Wang	Princeton University
P-A.9	Transfer printed core-shell plasmonic metal nanostructures using high-resolution semiflexible templates for photocatalytic conversion of carbon dioxide to carbon fuels		Robin D. Nagel	Technical University Munich
P-A.10	Fabrication of Polymer Foils by Extrusion Coating presenting Micro- and Nanostructures for Concentration of Solar Energy		Maria Matschuk	Inmold A/S
P-A.11	Fabrication of palladium nanoribbon array for fast and ultrahigh hydrogen gas sensing		Yusin Pak	Gwangju Institute of Science and Technology
P-A.12	Nanoscale and flexible memristor fabrication by nanoimprint lithography		Steven J Barcelo	HP
<b>Modeling, Templates and Materials</b>				
P-M.1	A flexible hybrid stamp for T-NIL based on OrmoStamp		Marc Papenheim	University of Wuppertal
P-M.2	Reducing the risk for delamination with flexible hybrid stamps		Marc Papenheim	University of Wuppertal

P-M.3	Defined area polymer working stamp manufacture for S&R UV-NIL by direct laser writing	Maximilian Rumler	Fraunhofer Institute
P-M.4	Fabrication of Arrays of Smooth Sidewall, Si Nano Pillars and Nano Needles by Wet Etching	Kaito Yamada	Keio University
P-M.5	Mesa working stamps fabricated from borderless mesa masters for step&repeat UV-NIL stamp replication	Michael M Mühlberger	Profactor GmbH
P-M.6	Towards working stamps for soft nanoimprint lithography with PDMS and OrmoStamp	Arne Schleunitz	micro resist technology GmbH
P-M.7	Negative tone high resolution line and space pattern mold fabrication by electron beam lithography using NEB-22	Makoto Okada	Univ. of Hyogo
P-M.8	Patterning DLC:Ag nanocomposites by thermal nanoimprint lithography	Helmut Schiff	Paul Scherrer Institut
P-M.9	Comparison of surface relief Bragg gratings fabricated by UV-SCIL and volume index Bragg gratings based on hybrid polymers	Michael Förthner	University Erlangen-Nuremberg
P-M.10	ZEP 520A as combined electron beam grayscale and selective thermal reflow resist	Robert Kirchner	Paul Scherrer Institut
P-M.11	Computational study of demolding process on the side wall characteristics of the mold in nanoimprint lithography	Yoshihiko Hirai	Osaka Prefecture University
P-M.12	Study on template release force in peeling release method	Yoshihiko Hirai	Osaka Prefecture University
P-M.13	Demolding Analysis of Polymer Resist in Hot Embossing via Finite Element Method	Qing Wang	Shandong University of Science and Technology

#### **R2R Imprint Lithography**

P-R.1	High throughput fabrication of nano and micro structured polymer foils by roll-to-roll-extrusion coating	Swathi Murthy	InMold A/S
P-R.2	Development of Functional Films by Roll to Roll Process with Large Film molds	Misato Yamanaka	SOKEN Chemical
P-R.3	Rolling nanoimprint process development for fabricating linear scale with periodic metal diffraction grating	Fuh-Yu Chang	National Taiwan University of Science and Technology
P-R.4	Seamless nanostructured sleeves for industrial applications	Jörg Mick	temicon GmbH

#### **Nanoimprint Processes**

P-N.1	Complex 3D structures via hybrid processing of SU-8	Christian Steinberg	University of Wuppertal
-------	---	---------------------	-------------------------

P-N.2	The influence of stamp properties during imprinting on 3D printed curved surfaces	Michael M Mühlberger	Profactor GmbH
P-N.3	Material flow tracking during UV-NIL step&repeat stamp replication	Michael M Mühlberger	Profactor GmbH
P-N.4	Stamp degradation and lifetime for UV-Curing Sol-Gel resist based SCIL	Michael J Haslinger	Profactor GmbH
P-N.6	Toward 3D shape manufacturing with Predictive Thermal Reflow of Imprinted Resist	Stefan Landis	LETI
P-N.7 Invited	Transition from pressure to capillary-driven flow in thermal nanoimprint: simulated and experimental complex shapes fabrication	Hubert Teyssedre	LETI
P-N.8	Optical scatterometry on nanoimprint-lithography structures	Jan Engelmann	EV Group
P-N.9	Investigation of stamp materials for the UV-NIL replication of T-shaped nanostructures	Michael M Mühlberger	Profactor GmbH
P-N.10	Large area nanoimprint for diffractive x-ray optics applications	Dmitriy Voronov	aBeam Technologies Inc
P-N.11	Towards the imprinting of continuous gratings by step & repeat Pulsed-NIL Technology	Massimo Tormen	ThunderNIL
P-N.12	Does pulsed NIL affect thermoplastic polymer properties in the same way as standard NIL?	Massimo Tormen	Paul Scherrer Institut
P-N.13	Releasing and Patterning of Single Crystalline Silicon Membranes for 3D Circuits Using Nanoimprint Lithography	Can Li	University of Massachusetts
P-N.14	Double nanoimprint-graphoepitaxy for localized liquid crystalline molecular orientation in imprinted pattern	Makoto Okada	Univ. of Hyogo
P-N.15	Fabrication of sub-100 nm size steep resist patterns by UV nanoimprinting and oxygen reactive ion etching	Takuya Uehara	Tohoku University
P-N.16	Fabrication of chirped gratings using a strained hybrid nanoimprint mold	Wen-Di Li	Univ. of Hong Kong
P-N.17	Direct Imprint Patterning of 2-D and 3-D Nanoparticle/Polymer Hybrid and Crystalline Metal Oxide Structures for Optical, Electronic, and Energy Devices	James Watkins	University of Massachusetts
P-N.18	Stepwise Current Electrical Sintering of Silver Nanoparticle Ink	Jun Young Hwang	Korea Institute of Industrial Technology
P-N.19	UV-NIL based Nanostructuring of high refractive index materials for grating waveguide structures	Gerald G Lopez	Singh Center for Nanotechnology

P-N.20	Effect of nozzle dimension and ink property on the printing characteristic in drop-on-demand EHD-jet printing	Jun Young Hwang	Korea Institute of Industrial Technology
P-N.21	Fabrication and Application of Nano-mushrooms in large-size	Rong-Hong Hong	National Taiwan University
P-N.22	Tuning Period of Nanogratings by Mechanical Stretching	Haixiong Ge	Nanjing University
P-N.23	UV Nanoimprint Lithography by using Water Soluble Sacrificial Mold	Hiroaki Kawata	Osaka Prefecture University

**Banquet at Markham Vineyards**

17:30 Buses depart to Markham Vineyards

18:00 Banquet Starts

21:00 Buses depart to Silverado Resort

**Saturday, October 24, 2015**

7:15 Breakfast (Fairway Deck)

**Session 5: Applications** (Silverado Ballroom)

*Session Chairs: Haixiong Ge (Nanjing University) and Wei Wu (University of Southern California)*

8:15	5.1 Invited	Significant Light Extraction Enhancement of Organic Light-Emitting Diodes Using Embedded High-index Deep-Groove Dielectric Nanomesh Fabricated by Large-area Nanoimprint	Ji Qi	Princeton University
8:35	5.2	Nanoimprint for the Fabrication of Bit Patterned Media at 1.5 Tdots/in <sup>2</sup> and Beyond	Zhaoning Yu	Seagate
8:50	5.3	Printed Active Photonic Crystals in High Refractive Index Functional Materials for Visible Light Applications	Carlos A Pina-Hernandez	abeam Technologies
9:05	5.4	Novel Imprint Transfer One Step Patterning 5.46" Silver Nanowire On-Cell Touch Sensor	Yi-Jiun Wu	AU Optronics
9:20	5.5	Fast Flexible Thin-Film Transistors with Deep Submicron Channel Enabled by Nanoimprint Lithography	Jung-Hun Seo	University of Wisconsin-Madison
9:35	5.6	Effects of Molecular Weight on Chain Alignment and Performance of Nanoimprinted Polymeric Solar Cells	Walter Hu	University of Texas, Dallas

9:50 Break (Fairway Deck)

**Session 6: R2R Imprint Lithography** (Silverado Ballroom)

*Session Chairs: L. Jay Guo (University of Michigan) and James Watkins (University of Massachusetts)*

10:25	6.1 Invited	Development of Nanoimprinting related technologies at the University of Michigan	L. Jay Guo	University of Michigan
-------	-------------	--	------------	------------------------

10:45	6.2	Multi-functional Silicone Moulds for Reactive Release Agent Transfer in UV Roll-to-Roll Nanoimprinting	Jarrett J Dumond	Singapore University of Technology
11:00	6.3	Experiments towards Establishing of Design Rules for R2R-UV-NIL with Polymer Working Shims	Dieter Nees	Joanneum Research, Austria
11:15	6.4	Development of under 100 nm resolution mold and silver ink patterning process	Naoto Ito	Asahi Kasei
11:30	6.5	Roll-to-Roll UV Nanoimprint Processes and Applications	Shrawan Singhal	University of Texas
11:45	6.6	Fabrication of a large-area hierarchical superhydrophobic metal surface with anti-icing properties	Shinill Kang	Yonsei University
12:00	Lunch (The Arbor) <b>Session 7: Nanoimprint Processes</b> (Silverado Ballroom) <i>Session Chairs: Shinji Matsui (University of Hyogo) and Helmut Schift (Paul Scherrer Institut)</i>			
13:15	7.1 Invited	High volume soft-stamp NIL, tooling and process design	Marc Verschuuren	Philips Corporate Technologies
13:35	7.2	Fabrication of micro/nano-porous AAO molds using a modified process of UV-lithography, anodizing and wet-etching	Dae-Yeong Jeong	Korea Electrotechnology Research Institute
13:50	7.3	Procedure for high temperature nano-imprint of organic semiconducting polymer	Si Wang	University of Wuppertal
14:05	7.4	Nanotemplate Selective Area Growth of InGaN/GaN Nanocolumns using Nanoimprint-Patterned 2-inch AlN/Si Substrates	Katsumi Kishino	Sophia University
14:20	7.5	Variable three-dimensional plasmonic structures fabricated by hyperbaric nanoimprint lithography	Stefano Cabrini	The Molecular Foundry, Lawrence Berkeley National Laboratory
14:35	7.6	Robust Thiol-ene Cross-linked Ethylene-Propylene Terpolymer for Fabricating UV-curing Nanoimprint Soft mold	Xin Hu	Changshu Institute of Technology
14:50	7.7	Probing Sub-5 nm Gap Plasmon Using Collapsible Nano-fingers	Boxiang Song	University of Southern California
15:05	Break (Fairway Deck) <b>Session 8: Biotechnology Applications</b> (Silverado Ballroom) <i>Session Chairs: Walter Hu (University of Texas, Dallas) and Hella-Christin Scheer (University of Wuppertal)</i>			
15:35	8.1 Invited	Nanoimprint-Assisted Shear Exfoliation (NASE) Technology for Producing MoS <sub>2</sub> Transistor Biosensors	Xiaogan Liang	University of Michigan

15:55	8.2	Nanoelectrode Arrays Fabricated by Nanoimprint Lithography for Charge Transport Study of <i>Geobacter pili</i>	Shuang Pi	University of Massachusetts
16:10	8.3	Transdermal Drug-Delivery Device Manufacturing in High Volume using NIL Technology	Rizgar Jiawook	Obducat Technologies AB
16:25	8.4	Hot punching as a technique to fabricate and fill microcontainers for oral drug delivery	Ritika Singh Petersen	Technical University of Denmark
16:40	8.5	Replication of multi-scale label-free protein microarray with nanograting structures for parallel analysis	Shinill Kang	Yonsei University
16:55	8.6	Characterization and application of nano- and microstructured silicon-polymer-based surfaces for manipulation of cells	Marina Scharin	University of Erlangen-Nuremberg
17:10	Closing Remarks			