

# NNT '06 Conference Program Schedule

## November 15-17, 2006

### San Francisco, California

#### Wednesday, November 15, 2006

##### **Commercial Session**

4:00 - 7:00 pm

##### **Reception**

6:00 - 7:00 pm

#### Thursday, November 16, 2006

##### **Morning Coffee**

7:30 - 8:00 am

##### **Welcome**

8:00 - 8:15 am

Conference Chair: Christie Marrian, Spansion

Program Chair: Stephen Chou, Princeton University

##### **Session A - Plenary (8:15 - 10:20 am)**

- |              |            |  |
|--------------|------------|--|
| 8:15 - 8:40  | <b>A-1</b> | <b>Nanoimprint Applications on Patterned Media (Invited)</b><br>Tsai-Wei Wu, et al.<br><i>San Jose Research Center, Hitachi Global Storage Technologies, USA</i> |
| 8:40 - 9:05  | <b>A-2</b> | <b>Imprint Lithography for Dual Damascene (Invited)</b><br>Grant Willson, et al.<br><i>University of Texas at Austin, USA</i>                                    |
| 9:05 - 9:30  | <b>A-3</b> | <b>Nanoimprint Activity in Europe Toward CMOS Requirements (Invited)</b><br>Serge Tedesco<br><i>CEA-LETI, France</i>   |
| 9:30 - 9:55  | <b>A-4</b> | <b>Cost Analysis of Nanoimprint Lithography (Invited)</b><br>Lloyd Litt<br><i>SEMATECH, USA</i>  |
| 9:55 - 10:20 | <b>A-5</b> | <b>Massively Parallel Dip-Pen Nanolithography (Invited)</b><br>Chad Mirkin<br><i>Northwestern University, USA</i>  |

##### **Break**

10:20 am - 10:50 am

## Session B - Nanoimprint Tools (10:50 am - 12:10 pm)

- 10:50 - 11:10      **B-1**      **Position Measurement Method for Alignment in UV Imprint using a High Index Mold and "Electronic" Moiré Technique**  
N. Suehira, A. Terasaki, J. Seki, S. Okushima, H. Ono and H. Ina\*  
*Leading-Edge Technology Development Headquarters Canon Inc. and \*Nanotechnology & Advanced System Research Laboratories Canon Inc., Japan*
- 11:10 - 11:30      **B-2**      **Nano-Scale Mechanics of Drop-On-Demand UV Imprinting**  
S.V. Sreenivasan, Phil Schumaker, Ian McMackin and Jin Choi  
*Molecular Imprints Inc., USA*
- 11:30 - 11:50      **B-3**      **Field Stitching using Step and Stamp Imprint Lithography (SSIL)**  
Tomi Haatainen, Päivi Majander, Tapio Mäkelä, Jouni Ahopelto and Gilbert Lecarpentier\*  
*VTT, Finland and \*SUSS Microtec S.A.S., France*
- 11:50 - 12:10      **B-4**      **Active Magnetic Bearing Technology Suitable for Nanoimprint Lithography Applications**  
J. P. M. Vermeulen, A. T. A. Peijnenburg, M. L. Norg, T. W. Musall and J. van Eijk\*  
*Philips Applied Technologies and \*Delft University of Technology, Netherlands*

## Lunch Break

12:10 - 1:40 pm

## Session C - Nanoimprint Masks and Processes (1:40 - 3:40 pm)

- 1:40 - 2:00      **C-1**      **Step and Flash Imprint Lithography Templates for the 32 nm Node and Beyond**  
Douglas J. Resnick, Gerard Schmid, Ecron Thompson, Nick Stacey, Deirdre L. Olynick\* and Erik Anderson\*  
*Molecular Imprints Inc. and \*Lawrence Berkeley National Laboratory, USA*
- 2:00 - 2:20      **C-2**      **The Build-Up and Relaxation of Internal Stresses During Cool-Down in a Single Nano-Imprint Lithography Cell**  
David A. Mendels  
*National Physical Laboratory, UK*
- 2:20 - 2:40      **C-3**      **Template-Resist Surface Adhesion Studies in UV-Nanoimprint Lithography**  
Frances A. Houle, Ratnam Sooriyakumaran, Dolores Miller, Hoa Truong, Robert Allen, Hiroshi Ito, Eric Guyer\* and Reinhold Dauskardt\*  
*IBM Almaden Research Center and \*Stanford University, USA*

- |             |            |   |
|-------------|------------|---|
| 2:40 - 3:00 | <b>C-4</b> | <p><b>3D Pattern Definition via UV-Nanoimprint Lithography</b><br/>         Andreas Fuchs, Markus Bender, Ulrich Plachetka, H. Kurz, Guido Piaszenski*, Ulrich Barth*, Axel Rudzinski*, Andreas Rampe* and Ralf Jede*<br/> <i>Advanced Microelectronic Center Aachen (AMICA) and *AMO GmbH, Germany</i></p> |
| 3:00 - 3:20 | <b>C-5</b> | <p><b>Imprinting of 3D Hierarchical Structures on Polymeric Films</b><br/>         Hong Yee Low, Fengxiang Zhang and Jennifer Chan<br/> <i>Institute of Materials Research and Engineering, Singapore</i></p>   |
| 3:20 - 3:40 | <b>C-6</b> | <p><b>Nano Imprint Lithography and Fast Fourier Transform for Guiding and Quantifying Neurons and their Extensions</b><br/>         Patrick Carlberg, Fredrick Johanssen, Martin Kanje and Lars Montelius<br/> <i>Lund University, Sweden</i></p>   |

### **Poster Session**

3:40 - 5:40 pm

### **Banquet: Exploratorium**

Board Buses

5:45 pm

## **Friday, November 17, 2006**

### **Morning Coffee**

7:30 - 8:00 am

### **Session D - Nanoimprint Applications in Biotechnology (8:00 - 9:50 am)**

- |             |            |  |
|-------------|------------|--|
| 8:00 - 8:25 | <b>D-1</b> | <p><b>Nanobio Devices Fabricated by Nanoimprint (Invited)</b><br/>         Bob Austin<br/> <i>Princeton University, USA</i></p>  |
| 8:25 - 8:50 | <b>D-2</b> | <p><b>Nanoimprint for Biotech and Other Applications (Invited)</b><br/>         Akihiro Miyauchi<br/> <i>Hitachi, Japan</i></p>  |
| 8:50 - 9:10 | <b>D-3</b> | <p><b>Fabrication of Plastic Microfluidic Channels using Roll to Roll Hot Embossing</b><br/>         Tapio Mäkelä* **, Tomi Haatainen*, Paivi Majander* and Jouni Ahopelto*<br/> <i>*VTT and **Åbo Akademi University, Finland</i></p> |
| 9:10 - 9:30 | <b>D-4</b> | <p><b>Self-Sealed Sub-10-nm Nanofluidic Channel Arrays Patterned by Nanoimprint Lithography</b><br/>         Qiangfei Xia, Keith J. Morton and Stephen Y. Chou<br/> <i>Princeton University, USA</i></p>                               |

9:30 - 9:50            **D-5**            **Development of Three-Dimensional 'Swiss Roll' Structures for Tissue Engineering Applications**  
Kris Seunarine, Osian D. Meredith, Nikolaj Gadegaard, Chris D. Wilkinson and Mathis O. Riehle  
*University of Glasgow, UK*

## **Break**

9:50 - 10:20 am

## **Session E - Nanoimprint Processes (10:20 am - 12:00 pm)**

10:20 - 10:40            **E-1**            **Effect of Resist Residual Layer Thickness on Air Dissolution in Liquid Resists**  
Xiaogan Liang, Hua Tan\*, Zengli Fu and Stephen Y. Chou  
*Princeton University and \*Nanonex Co., USA*

10:40 - 11:00            **E-2**            **Impact of Pattern Topography on Bubble Defects in UV-Nanoimprint and Suppression of Bubble Defects**  
Hiroshi Hiroshima  
*Advanced Manufacturing Research Institute and AIST, Japan*

11:00 - 11:20            **E-3**            **Polymer Flow in Molecular-Scale Gaps for High Resolution Nanoimprint Lithography**  
Harry D. Rowland, William P. King, Graham L. Cross, Barry S. O'Connell and John B. Pethica  
*Georgia Institute of Technology, USA and Trinity College Dublin, Ireland*

11:20 - 11:40            **E-4**            **The Impact of the Cycle Time on the Pattern Filling and Uniformity in Thermal Nanoimprint Lithography**  
Cecile Gourgon, Nicolas Chaix, Stefan Landis\*, Marc Zelsmann, Jumana Boussey and Corinne Perret  
*LTM-CNRS and \*CEA-LETI, France*

11:40 - 12:00            **E-5**            **Surface Profiles Occurring After Evaporation in Microfluidic Patterning Technique**  
Pierpaolo Greco, Massimo Facchini, Massimiliano Cavallini and Fabio Biscarini  
*CNR-ISMN, Italy*

## **Lunch Break**

12:00 - 1:30 pm

## Session F - Nanoimprint Applications in Optics (1:30 pm - 3:10 pm)

- 1:30 - 1:50      **F-1**      **Large Area Ultraviolet Nanoimprint Lithography Applicable to Flat Pannel Display**  
Eung-Sug Lee  
*Nano-Mechanical Systems Research Center and Korea Institute of Machinery and Materials, Korea*
- 1:50 - 2:10      **F-2**      **Application of Nanoimprint Lithography on Optical Meta-Materials**  
Wei Wu\* \*\*, Evgenia Kim\*\*, Ekaterina Ponzivskaya\*, Yongmin Liu\*\*, Zhaoning Yu\*, Alex Bratkovsky\*, Nick Fang+, Xiang Zhang\*\*, Shih-Yuan Wang\*+ and R. Stanley Williams\*  
*\*Hewlett-Packard, \*\*University of California at Berkeley and +University of Illinois at Urbana-Champaign, USA*
- 2:10 - 2:30      **F-3**      **Reproduction of Optical Elements by Nano Casting Method**  
Kenji Sogo, Masaki Nakajima, Yusuke Miyamura\*, Yoko Ishikawa\*, Akira Saito\* and Yoshihiko Hirai  
*Osaka Prefecture University and \*Osaka University, Japan*
- 2:30 - 2:50      **F-4**      **Nanoimprint Fabrication of Long-Range Surface Plasmon Polariton Devices**  
Rasmus H. Pedersen, Alexandra Boltasseva\*, Kasper B. Jørgensen\*\*, Anders Røgeberg, Kristjan Leosson+, John E. Østergaard\*\* and Anders Kristensen  
*MIC Technical University of Denmark, \*COM.DTU Technical University of Demark and \*\*University of Southern Denmark, Denmark and +University of Iceland, Iceland*
- 2:50 - 3:10      **F-5**      **Light Extraction Enhancement of Nanoimprinted Photonic Crystals via Coupled Surface Plasmons**  
Vincent Reboud, Nikolaos Kehagias, Marc Zelsmann\* and Clivia Sotomayor Torres  
*Tyndall National Institute, Ireland and \*LTM-CNRS, France*

## Break: Coffee, Tea and Ice Cream

3:10 - 3:40 pm

## Session G - Other Novel Applications (3:40 - 5:20 pm)

- 3:40 - 4:00      **G-1**      **Large Area, Dense Si Nanowire Array Chemical Sensors**  
Alec Talin\*, Luke Hunter\*, Francois Leonard\* and Bhavin Rokad\* \*\*  
*\*Sandia National Laboratories and \*\*Cornell University, USA*

- 4:00 - 4:20      **G-2**      **Low Temperature Patterning of SiO<sub>2</sub>-Based Glass by Combining Room Temperature Nanoimprint Lithography and Both-Faces UV Irradiation**  
 Motoki Okinaka\*, Kei-Ichi Yanagisawa\*, Kazuhito Tsukagoshi\* and Yoshinobu Aoyagi\* \*\*  
*\*RIKEN and \*\*Tokyo Institute of Technology, Japan*
- 4:20 - 4:40      **G-3**      **Flexible Carbon Nanotube Devices Using Nanomaterial Transfer Imprint Lithography**  
 Ashante' C. Allen, William P. King and Samuel Graham  
*Georgia Institute of Technology, USA*
- 4:40 - 5:00      **G-4**      **Nano Imprinting of Conductive Tracks using Sintering of Metal Nano Powders**  
 Shinill Kang, Seokmin Kim, Hyungdae Bae, Hongmin Kim, Jeong-Gil Kim\*, Sukwon Lee\*, Hyuk Kim\* and Yangho Bae\*  
*Yonsei University and \*Samsung Electronics, Korea*
- 5:00 - 5:20      **G-5**      **An Electrical Defectivity Characterization of Wafers Imprinted with Step and Flash Imprint Lithography**  
 Bill Dauksher, K. J. Norquist, E. S. Ainley, N. V. Le, K. A. Gehoski and N. Joshi\*  
*Motorola Laboratories and Florida International University, USA*

## **Session P. Posters (3:40 - 5:40 pm) Thursday, November 16, 2006**

### **Nanoimprint Tools**

- P-1**      **Ultrasonic Nanoimprint Lithography of Polycarbonate at Low Temperature**  
 Harutaka Mekaru, Toshihiko Noguchi, Hiroyuki Goto and Masaharu Takahashi  
*AIST, Japan*
- P-2**      **Ultra-Compact Low Pressure Nanoimprint System With Automated Demolding**  
 Rasmus H. Pedersen, Ole Hansen and Anders Kristensen  
*Technical University of Denmark, Demark*
- P-3**      **High Accuracy Alignment in Nanoimprint Lithography using a Moiré Method**  
 Michael Mühlberger, Iris Bergmair, Wolfgang Schwinger, Manfred Gmainer, Rainer Schöftner, Thomas Glinsner\*, Christine Hasenfuß\*\*, Kurt Hingerl\*\*, Holger Schmidt+ and Ernst-Bernhard Kley+  
*Profactor GmbH, \*EV Group and \*\*CD Laboratory of Surface Optics, Austria and +Friedrich-Schiller-Universität, Germany*
- P-4**      **Quantitative Aligning Measurement for Nanoimprint Lithography using Concentric Moiré Technique**  
 Geehong Kim and Jaejong Lee  
*Korea Institute of Machinery and Materials, Korea*

- P-5 Alignment Strategy for Nanoimprint using Vacuum Holders**  
Helmut Schiff, Sandro Bellini\*, Jens Gobrecht, Frank Reuther\*\* and Konrad Vogelsang  
*Paul Scherrer Institut and \*University of Applied Sciences Nordwestschweiz, Switzerland and \*\*Jenoptik Laser Optik Systeme GmbH, Germany*

## **Nanoimprint Masks**

- P-6 Preparation of Highly-Ordered Self-Assembled Monolayers (SAMs); Characterization and Mold Releasing Properties**  
Kazuhisa Kumazawa, Norifumi Nakamoto, Yoshitaka Fujita, Toshiaki Takahashi, Daisuke Asanuma, Mikiya Shimada, Tomoya Hidaka, Hiroshi Suzuki and Haruo Saso  
*Nippon Soda Co. Ltd., Japan*
- P-7 Optimization of an Anti-Sticking Layer on UV-NIL Templates by the Scanning Probe Microscopy**  
Masaaki Kurihara, Takeya Shimomura, Kouji Yoshida, Hiroshi Mohri, Naoya Hayashi, Miki Akiyama\*, Takehiro Kobayashi\* and Masamichi Fujihira\*  
*Dai Nippon Printing and \*Tokyo Institute of Technology, Japan*
- P-8 S-FIL Template Fabrication for Full Wafer Imprint Lithography**  
Mike Miller, Gerard Schmid, Gary Doyle, Ecron Thompson and Douglas J. Resnick  
*Molecular Imprints Inc., USA*
- P-9 UV-Nanoimprint Mold Repair by Focused-Ion-Beam Deposition**  
Makoto Okada\* \*\*, Ken-Ichiro Nakamatsu\* \*\*+, and Shinji Matsui\* \*\*  
*\*University of Hyogo, \*\*CREST-JST and +JSPS, Japan*
- P-10 New Approach to Working Stamps with Silicon Surface**  
Mike Kubenz, Marion Fink, Rainald Mientus, Freimut Reuther, Christine Schuster, Maron Vogler and Gabi Grützer  
*micro resist technology GmbH and OUT e.V. Germany*
- P-11 Replication of UV-NIL Stamp with F-DLC Coating by Water-Soluble Polymer Template**  
Ki-Don Kim, Jun-Ho Jeong, Altun Ali, Dae-Geun Choi, Dong-Il Lee and Eung-Sug Lee  
*Korea Institute of Machinery and Materials, Korea*
- P-12 Self-Assembled Template for High Throughput Nanoimprint Lithography**  
Chris M. Earhart, Wei Hu, Robert J. Wilson and S. X. Wang  
*Stanford University, USA*

- P-13**      **Simple Setup for Automated Demolding in Nanoimprint**  
 Helmut Schiff, Sandro Bellini\*, Jens Gobrecht, Aritz Retolaza\*\*, Santos Merino\*\* and Konrad Vogelsang  
*Paul Scherrer Institut and \*University of Applied Sciences Nordwestschweiz, Switzerland and \*\*Fundación Tekniker, Spain*
- P-14**      **3-Dimensional Structures for UV-NIL Template Fabrication with Grayscale E-Beam Lithography**  
 Guido Piaszenski, Ulrich Barth, Axel Rudzinski, Andreas Rampe, Andreas Fuchs\*, Markus Bender\* and Ulrich Plachetka\*  
*Raith GmbH and \*AMO GmbH, Germany*
- P-15**      **The Fabrication of 3D Molds for UV Curable Nanoimprint by using the Variable Dose Controlled Exposure of Electron Beam**  
 Khairudin Mohamed, Maan M. Alkaisi and Richard J. Blaikie  
*University of Canterbury, UK*
- P-16**      **Large Area Stainless Steel Molds for Micro and Nano Imprinting**  
 Hyun-Woo Lim, Min-Soo Cho, Kyu-Chae Kim, Seok-Young Soe\* and Jin-Goo Park  
*Hanyang University and \*Standard Diagnostics Inc., Korea*
- P-17**      **Fabrication of Templates in the Shape Suitable for Nanoimprint Lithography and Accurate Measurement of the Shape**  
 Yuuki Aritsuka, Kimio Ito, Kouji Yoshida, Masaaki Kurihara, Hisatake Sano, Morihisa Hoga and Naoya Hayashi  
*Dai Nippon Printing Co. Ltd., Japan*
- P-18**      **3D Structural Templates for UV-NIL Fabricated with Dot Modulated Direct-Writing Lithography**  
 Makoto Abe, Masaaki Kurihara, Kouji Yoshida, Takeya Shimomura, Daisuke Totsukawa, Nobuhito Toyama, Ryuji Horiguchi, Kimio Ito, Morihisa Hoga, Hiroshi Mohri and Naoya Hayashi  
*Dai Nippon Printing Co. Ltd., Japan*
- P-19**      **Fast Antisticking Coating at Room Temperature: Process and Characterization**  
 Irene Fernandez-Cuesta, Xavier Borrísé, Francesc Pérez-Murano  
*IBM-CNM-CSIC, Spain*
- P-20**      **Integrated Tool for Mold Cleaning and Surface Release Treatment for Nanoimprint Lithography**  
 Wei Zhang, Hua Tan, Lin Hu, Linshu Kong, He Gao, Colby Steere, Vic Liu and Stephen Y. Chou\*  
*Nanonex Corporation and \*Princeton University, USA*
- P-21**      **Analysis of the Separation of 3D-Undercut Structures**  
 Saskia Möllenbeck, Nicolas Bogdanski, Matthias Wissen, Hella-Christin Scheer, Joachim Zajadacz\* and Klaus Zimmer\*  
*University of Wuppertal and \*IOM, Germany*



**P-22**      **Modeling of the Demolding Process for Thermal Imprint Lithography**  
Zhichao Song, JaeJong Lee\* and Sunggook Park  
*Louisiana State University, USA and \*Korea Institute of Machinery and  
Materials, Korea*

**P-23**      **Surface Properties of Fluorinated Diamond-Like Carbon as an Anti-  
Sticking Layer of Nanoimprint Mold**  
Noriko Yamada, Ken-ichirou Nakamatsu, Kazuhiro Kanda, Yuichi  
Haruyama and Shinji Matsui  
*University of Hyogo, Japan*

## **Nanoimprint Resists**

**P-24**      **Low Viscosity and Fast Curing Polymer System for UV-Based  
Nanoimprint Lithography**  
Marko Vogler, M. Bender\*, A. Fuchs\*, S. Wiedenbergh, F. Reuther, G.  
Grützner and H. Kurz\*  
*micro resist technology GmbH and \*AMO GmbH, Germany*

**P-25**      **Optical Surface Diffraction for Thin Film Rheology Characterisation  
Optimisation of Hot Embossing Process**  
Maud Foresti, Etienne Barthel, Thomas Berg\*, Valerie Goletto, Stephane  
Roux, Ingve Simonsen\* and Elin Søndergård  
*Saint-Gobain Recherche, France and \*Norwegian University of Science  
and Technology, Norway*

**P-26**      **Ultra-High Resolution Versatile Broad Spectrum Photo-Curable,  
Thermoplastic and Thermoset Nanoimprint Resists and Materials**  
He Gao, Hua Tan, Wei Zhang, Linshu Kong and Larry Koecher  
*Nanonex Corporation, USA*

**P-27**      **O<sub>2</sub> Plasma Irradiation Effect on HSQ Nanopatterns Fabricated by  
Room-Temperature Nanoimprint Lithography**  
Ken-Ichiro Nakamatsu\* \*\*, Masanori Kawamori\* and Shinji Matsui\*  
*\*University of Hyogo and \*\*JSPS, Japan*

**P-28**      **Fluorinated Materials for NIL and its Application**  
Kentaro Tsunozaki, Yasuhide Kawaguchi and Yasuhiro Sanada  
*Asahi Glass Co. LTD., Japan*

**P-29**      **UV-Curable Silicon Containing Vinyl Ether Resist for Combination of  
Nanoimprint and Photolithography**  
Haixiong Ge, Zhiwei Li, Changsheng Yuan and Yanfeng Chen  
*Nanjing University, China*

**P-30**      **Resins with Enhanced Anti-Sticking Property using Fluorine Doping  
for UV-Nanoimprint**  
Dae-Geun Choi, Joo Yeon Kim, Jun-Ho Jeong, Eung-Sug Lee, Ki-Don  
Kim and Jun-Hyuk Choi  
*Korea Institute of Machinery and Materials, Korea*

- P-31 Polymer Properties Derived from Imprint Results with a 'Fingerprint' Stamp**  
Hella-Christin Scheer, Nicolas Bogdanski, Saskia Möllenbeck and Matthias Wissen  
*University of Wuppertal, Germany*

## **Nanoimprint Processes**

- P-32 Soft Replication of Biological Cells using a Bioimprint Technique**  
James J. Muys, Maan M. Alkaisi and John J. Evans\*  
*University of Canterbury, UK and \*University of Otago, New Zealand*
- P-33 Reduction of Line Edge Roughness (LER) of Platinum Wires Imprinted at the Nanoscale**  
William M. Tong, GunYoung Jung, Wei Wu, Zhiyong Li, Zhaoning Yu, S. Y. Wang, Ronald Kelley, Fred Roeser, David Basile and R. Stanley Williams  
*Hewlett-Packard, USA*
- P-34 Patterning the Self-Assembled Monolayer using the Zero-Residual Layer Nano Imprint Lithography and Selective Deposition of Silver Nano Particles**  
Ki-Yeon Yang, Jong-Woo Kim, Kyeong-Jae Byeon, Sung-Hoon Hong and Heon Lee  
*Korea University, Korea*
- P-35 A Solid Phase Electrochemical Nanoimprint Process**  
Keng Hsu, Nicholas Fang and Placid M. Ferreira  
*University of Illinois at Urbana-Champaign, USA*
- P-36 Nanostructure Frequency Doubling and Tripling in Nanoimprint Due to Fracture Induced Self-Assembly (FISA)**  
Ying Wang and Stephen Y. Chou  
*Princeton University, USA*
- P-37 Impact of Conformal Soft Layers on Full 200mm Wafer Imprinting Uniformity**  
Tanguy Leveder, Stefan Landis, Laurent Davoust\*, Nicolas Chaix\*\*  
*CEA-DRT-LETI, \*LEGI/ENSHMH and \*\*CNRS-LTM, France*
- P-38 Nanoimprint of Metallic Glasses**  
Yasunori Saotome, Yasuyuki Fukuda, Hisamichi Kimura and Akihisa Inoue  
*Gunma University, Japan*
- P-39 Capillary Bridges Growth Investigation in NIL Process**  
Stefan Landis, Nicolas Chaix\*, Damien Hermelin, Tanguy Leveder and Cecile Gourgon\*  
*CEA and CNRS/LTM, France*

- P-40**      **Direct Nanoimprint into Metals using Diamond-Like-Carbon Templates**  
 Li Tao, Seetharaman Ramachandran, Gil S. Lee, Lawrence J. Overzet, Mathew J. Goeckner and Walter Hu  
*University of Texas at Dallas, USA*
- P-41**      **Fabrication of Micro-Nano Mixed Structures**  
 Yoshihiko Hirai, Naoya Niimi, Masayuki Nishihara, Keisuke Okuda and Hiroaki Kawata  
*Osaka Prefecture University, Japan*
- P-42**      **Effect of Pattern Size on the Lift-off-Fidelity after T-NIL Without Residual Layer Removal**  
 Nicolas Bogdanski, Matthias Wissen, Saskia Möllenbeck and Hella-Christin Scheer  
*University of Wuppertal, Germany*
- P-43**      **Fabrication of High Aspect Ratio Template for Step and Flash Imprint**  
 Chen Nian-Huei, C-L Liao\*, J-H Chen\*, S-Z Chen\* and F-S Huang\*  
*National Chi Nan University and \*National Tsing Hua University, Taiwan*
- P-44**      **Non-Sacrificial Soft UV-Patterning onto CNT-Dispersed Conductive Resists**  
 Junhyuk Choi, Sung-Un Jeong, Ki-Don Kim, Dae-Geun Choi, Jeongdai Jo, Jun-Ho Jeong and Eung-Sug Lee  
*Korea Institute of Machinery and Materials, Korea*
- P-45**      **Lithographically Controlled Wetting: An Unconventional Bottom-Up Approach to Nanofabrication of Functional Materials**  
 Massimiliano Cavallini, Massimo Facchini, Eva Bystrenova, Paolo Greco, Cristiano Albonetti and Fabio Biscarini  
*CNR-ISMN, Bologna*  
WITHDRAWN

## **Nanoimprint Resist Flow and Demolding**

- P-46**      **Deformation Analysis on Convex and Concave Rotational Lens Structures in Thermal Imprint**  
 Masayoshi Nishihata, Hella Scheer\* and Yoshihiko Hirai  
*Osaka Prefecture University, Japan and \*University of Wuppertal, Germany*
- P-47**      **Direct Observation of Nanoimprint-Forced Polymer Movement by Cross-Sectional TEM Images**  
 Natsumi Aoi, Ken-Ichiro Nakamatsu\*, Kaori Kamata, Tomokazu Iyoda, Shinji Matsui\* and Masaru Nakagawa  
*Tokyo Institute Chemical Resources Laboratory and \*University of Hyogo, Japan*

- P-48      Nanocontact Printing with Ink Aminosilane**  
 Kai-Yuen Lam, Leio L. W. Chen\*, N. H. Chen\*, Henry J. H. Chen\*\* and  
 Fon-Shan Huang\*  
*I-Shou University, \*National Tsing Hua University and \*\*Chi Nan  
 University, Taiwan*
- P-49      Time Evolution Analysis of the Resist Profile in Thermal Nanoimprint**  
 Masayoshi Nishihata, Yuki Onishi\*, Takuya Iwasaki\*, Keisuke Okuda,  
 Yasuroh Iriye\* and Yoshihiko Hirai  
*Osaka Prefecture University and \*Mizuho Information and Research  
 Institute, Japan*
- P-50      Molecular Dynamics Study on Resist Deformation and De-Molding  
 Process in Nanoimprint Lithography**  
 Kazuhiro Tada, Masaaki Yasuda and Yoshihiko Hirai  
*Osaka Prefecture University, Japan*
- P-51      Pore Filling Dynamics for Nano Imprint Lithography**  
 Siddharth Chauhan, Kane Jen, Frank Palmieri, Chris Taylor and C. Grant  
 Willson  
*University of Texas at Austin, USA*

## **Nanoimprint Applications**

- P-52      Fabrication of Metal Nanowires at 17nm Half-Pitch by Nanoimprint  
 Lithography**  
 Gun Young Jung, Ezekiel Johnston-Halperin\*, Wei Wu\*\*, Zhiyong Li\*\*,  
 William M. Tong\*\*, Zhaoning Yu\*\*, James R. Heath\*, Richard S.  
 Williams\*\* and Shih-Yuan Wang\*\*  
*GIST, Korea and \*California Institute of Technology and \*\*Hewlett-  
 Packard Laboratories, USA*
- P-53      Fabrication of Sensitivity Enhancement Structure for Cancer  
 Diagnosis**  
 Naoyuki Niimi, Keisuke Okuda\*, Hiroaki Kawata\*, Toshio Yao\*, Yasuhiro  
 Tsukamoto\*, Minoru Seki\* and Yoshihiko Hirai\*  
*JST Innovation Plaza Osaka and \*Osaka Prefecture University, Japan*
- P-54      Diffractive Optical Element for Sensor Applications, Fabricated by  
 Reverse Contact UV Nanoimprint Lithography**  
 Nikolas Kehagias, Guillaume Chansin, Vincent Reboud, Tim Kehoe, Marc  
 Zelsman\*, C. Schuster\*\*, M. Kubenz\*\*, M. Fink\*\*, F. Reuther\*\*, G.  
 Gruetzner\*\* and C. M. Sotomayor Torres  
*Tyndall National Institute and \*LTM-CNRS, France and \*\*micro resist  
 technology GmbH, Germany*

- P-55 Nanoimprint Lithography for High Throughput Cell Culture Substrates having both Nanoscale and Microscale Topography**  
 Marcus T. Eliason, Joseph Charest, Blake A. Simmons\*, Andrés J. García and William P. King  
*Georgia Institute of Technology and \*Sandia National Laboratories, USA*
- P-56 An Electrically Tunable Interdigitated Cantilever Array Fabricated by Nanoimprint Lithography**  
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