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 A-1 Nanoimprint Applications on Patterned Media (Invited)
Tsai-Wei Wu, et al.
San Jose Research Center, Hitachi Global Storage Technologies, USA

8:40 - 9:05 A-2 Imprint Lithography for Dual Damascene (Invited)
Grant Willson, et al.
University of Texas at Austin, USA

9:05 - 9:30 A-3 Nanoimprint Activity in Europe Toward CMOS Requirements
(Invited)
Serge Tedesco
CEA-LETI, France

9:30 - 9:55 A-4 Cost Analysis of Nanoimprint Lithography (Invited)
Lloyd Litt
SEMATECH, USA

9:55 - 10:20 A-5 Massively Parallel Dip-Pen Nanolithography (Invited)
Chad Mirkin
Northwestern University, USA

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 Ahopello and Gilber 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 *Lawerence 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  C-4  3D Pattern Definition via UV-Nanoimprint Lithography
Andreas Fuchs, Markus Bender, Ulrich Plachetka, H. Kurz, Guido
Piaszenski*, Ulrich Barth*, Axel Rudzinski*, Andreas Rampe* and Ralf
Jede*
*Advanced Microelectronic Center Aachen (AMICA) and **AMO GmbH,
Germany

3:00 - 3:20  C-5  Imprinting of 3D Hierarchical Structures on Polymeric Films
Hong Yee Low, Fengxiang Zhang and Jennifer Chan
Institute of Materials Research and Engineering, Singapore

3:20 - 3:40  C-6  Nano Imprint Lithography and Fast Fourier Transform for Guiding
and Quantifying Neurons and their Extensions
Patrick Carlberg, Fredrick Johanssen, Martin Kanje and Lars Montelius
Lund University, Sweden

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  D-1  Nanobio Devices Fabricated by Nanoimprint (Invited)
Bob Austin
Princeton University, USA

8:25 - 8:50  D-2  Nanoimprint for Biotech and Other Applications (Invited)
Akihiro Miyauchi
Hitachi, Japan

8:50 - 9:10  D-3  Fabrication of Plastic Microfluidic Channels using Roll to Roll Hot
Embossing
Tapio Mäkelä*, Tomi Haatainen*, Paivi Majander* and Jouni Ahopelto*
*VTT and **Åbo Akademi University, Finland

9:10 - 9:30  D-4  Self-Sealed Sub-10-nm Nanofluidic Channel Arrays Patterned by
Nanoimprint Lithography
Qiangfei Xia, Keith J. Morton and Stephen Y. Chou
Princeton University, USA
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
Xiaogang 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 Manfacuring 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

Cecile Gourgon, Nicolas Chaix, Stefan Landis*, Marc Zelmann, 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)

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
</table>
| 1:30 - 1:50 | F-1     | Large Area Ultraviolet Nanoimprint Lithography Applicable to Flat Pannel Display | Eung-Sug Lee<br>
Nano-Mechanical Systems Research Center and Korea Institute of Machinery and Materials, Korea |
*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<br>
Osaka Prefecture University and *Osaka University, Japan |
MIC Technical University of Denmark, *COM.DTU Technical University of Denmark 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 Zelismann* and Clivia Sotomayor Torres<br>
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)

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
</table>
| 3:40 - 4:00 | G-1     | Large Area, Dense Si Nanowire Array Chemical Sensors                | Alec Talin*, Luke Hunter*, Francois Leonard* and Bhavin Rokad* **<br>
*Sandia National Laboratories and **Cornell University, USA |
4:00 - 4:20  G-2  Low Temperature Patterning of SiO2-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, Denmark

P-3  High Accuracy Alignment in Nanoimprint Lithography using a Moiré Method
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
Nanoimprint Masks

P-5 Alignment Strategy for Nanoimprint using Vacuum Holders
Helmut Schift, 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

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-II 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 Schift, 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, Nobuhiro 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 Borrisé, 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. Wiedenberg, 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 O2 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 Kawaguch 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
<table>
<thead>
<tr>
<th>P-31</th>
<th>Polymer Properties Derived from Imprint Results with a 'Fingerprint' Stamp</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hella-Christin Scheer, Nicolas Bogdanski, Saskia Möllenbeck and Matthias Wissen</td>
</tr>
<tr>
<td></td>
<td>University of Wuppertal, Germany</td>
</tr>
</tbody>
</table>

**Nanoimprint Processes**

<table>
<thead>
<tr>
<th>P-32</th>
<th>Soft Replication of Biological Cells using a Bioimprint Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>James J. Muys, Maan M. Alkaisi and John J. Evans*</td>
</tr>
<tr>
<td></td>
<td>University of Canterbury, UK and *University of Otago, New Zealand</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-33</th>
<th>Reduction of Line Edge Roughness (LER) of Platinum Wires Imprinted at the Nanoscale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>William M. Tong, GunYoung Jung, Wei Wu, Zhiyong Li, Zhaoning Yu, S. Y. Wang, Ronald Kelley, Fred Roeser, David Basile and R. Stanley Williams</td>
</tr>
<tr>
<td></td>
<td>Hewlett-Packard, USA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-34</th>
<th>Patterning the Self-Assembled Monolayer using the Zero-Residual Layer Nano Imprint Lithography and Selective Deposition of Silver Nano Particles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ki-Yeon Yang, Jong-Woo Kim, Kyeong-Jae Byeon, Sung-Hoon Hong and Heon Lee</td>
</tr>
<tr>
<td></td>
<td>Korea University, Korea</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-35</th>
<th>A Solid Phase Electrochemical Nanoimprint Process</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Keng Hsu, Nicholas Fang and Placid M. Ferreira</td>
</tr>
<tr>
<td></td>
<td>University of Illinois at Urbana-Champaign, USA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-36</th>
<th>Nanostructure Frequency Doubling and Tripling in Nanoimprint Due to Fracture Induced Self-Assembly (FISA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ying Wang and Stephen Y. Chou</td>
</tr>
<tr>
<td></td>
<td>Princeton University, USA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-37</th>
<th>Impact of Conformal Soft Layers on Full 200mm Wafer Imprinting Uniformity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tanguy Leveder, Stefan Landis, Laurent Davoust*, Nicolas Chaix**</td>
</tr>
<tr>
<td></td>
<td>CEA-DRT-LETI, *LEGI/ENSHMH and **CNRS-LTM, France</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-38</th>
<th>Nanoimprint of Metallic Glasses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yasunori Saotome, Yasuyuki Fukuda, Hisamichi Kimura and Akihisa Inoue</td>
</tr>
<tr>
<td></td>
<td>Gunma University, Japan</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-39</th>
<th>Capillary Bridges Growth Investigation in NIL Process</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stefan Landis, Nicolas Chaix*, Damien Hermelin, Tanguy Leveder and Cecile Gourgon*</td>
</tr>
<tr>
<td></td>
<td>CEA and CNRS/LTM, France</td>
</tr>
<tr>
<td>P-40</td>
<td>Direct Nanoimprint into Metals using Diamond-Like-Carbon Templates</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Li Tao, Seetharaman Ramachandran, Gil S. Lee, Lawrence J. Overzet, Mathew J. Goeckner and Walter Hu</td>
<td></td>
</tr>
<tr>
<td>University of Texas at Dallas, USA</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-41</th>
<th>Fabrication of Micro-Nano Mixed Structures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yoshihiko Hirai, Naoya Niimi, Masayuki Nishihara, Keisuke Okuda and Hiroaki Kawata</td>
<td></td>
</tr>
<tr>
<td>Osaka Prefecture University, Japan</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-42</th>
<th>Effect of Pattern Size on the Lift-off-Fidelity after T-NIL Without Residual Layer Removal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nicolas Bogdanski, Matthias Wissen, Saskia Möllenbeck and Hella-Christin Scheer</td>
<td></td>
</tr>
<tr>
<td>University of Wuppertal, Germany</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-43</th>
<th>Fabrication of High Aspect Ratio Template for Step and Flash Imprint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chen Nian-Huei, C-L Liao*, J-H Chen*, S-Z Chen* and F-S Huang*</td>
<td></td>
</tr>
<tr>
<td>National Chi Nan University and *National Tsing Hua University, Taiwan</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-44</th>
<th>Non-Sacrificial Soft UV-Patterning onto CNT-Dispersed Conductive Resists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junhyuk Choi, Sung-Un Jeong, Ki-Don Kim, Dae-Geun Choi, Jeongdai Jo, Jun-Ho Jeong and Eung-Sug Lee</td>
<td></td>
</tr>
<tr>
<td>Korea Institute of Machinery and Materials, Korea</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-45</th>
<th>Lithographically Controlled Wetting: An Unconventional Bottom-Up Approach to Nanofabrication of Functional Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Massimiliano Cavallini, Massimo Facchini, Eva Bystrenova, Paolo Greco, Cristiano Albonetti and Fabio Biscarini</td>
<td></td>
</tr>
<tr>
<td>CNR-ISMN, Bolonga</td>
<td></td>
</tr>
<tr>
<td>WITHDRAWN</td>
<td></td>
</tr>
</tbody>
</table>

Nanoscale Resist Flow and Demolding

<table>
<thead>
<tr>
<th>P-46</th>
<th>Deformation Analysis on Convex and Concave Rotational Lens Structures in Thermal Imprint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masayoshi Nishihata, Hella Scheer* and Yoshihiko Hirai</td>
<td></td>
</tr>
<tr>
<td>Osaka Prefecture University, Japan and *University of Wuppertal, Germany</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-47</th>
<th>Direct Observation of Nanoimprint-Forced Polymer Movement by Cross-Sectional TEM Images</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natsumi Aoai, Ken-Ichiro Nakamatsu*, Kaori Kamata, Tomokazu Iyoda, Shinji Matsui* and Masaru Nakagawa</td>
<td></td>
</tr>
<tr>
<td>Tokyo Institute Chemical Resources Laboratory and *University of Hyogo, Japan</td>
<td></td>
</tr>
</tbody>
</table>
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
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
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
Lund University, Sweden and *Peking University, China

P-58 A Continuous UV Roll Nanoimprinting Lithography Process for Large Area Applications
Suho Ahn, Jiseok Lim, Joowon Cha and Shinill Kang
Yonsei University, Korea

P-57 Nanoimprinting Lithography with a Novel Liquid Crystal Alignment Material
Jin Seog Gwag*, Makoto Yoneya* ** and Hiroshi Yokoyama* **
*Japan Science and Technology Agency ERA and **Nanotechnology Research Institute, Japan

P-59 Nanoimprint Lithography for Nanomechanics, Electronics and Life Science Applications
Lars Montelius et al.
Lund University, Sweden

P-60 Magnetic Nonspherical Polymeric Particles Fabricated Using Soft Lithography
Kevin P. Herlihy, Stephanie E. Gratton, Benjamin W. Maynor and Joseph M. DeSimone
University of North Carolina at Chapel Hill, USA

P-61 Fabrication of Au Nano-Wire on Flexible Polyimide Substrate by Reversal Imprint and Lift-Off Process
Henry J. H. Chen, Li-Chun Chen*, Chenhsin Lien*, Shou-Ren Chen** and Yu-Lun Ho**
National Chi Nan University, *National Tsing Hua University and **Industrial Technology Research Institute, Taiwan

P-62 Low Temperature, Low Pressure Soft-Nanoimprinting Lithography for Micropatterning of Chitosan
Inkyu Park, Jim Cheng and Albert P. Pisano
University of California at Berkeley, USA

P-63 Fabrication of Sub-50nm Au Lines using Thermal Curing Nanoimprint Lithography
Sung-Hoon Hong, Kiyeon Yang, Kyeong-Jae Byeon and Heon Lee
Korea University, Korea
P-64 Ag Quantum Dot Arrays Patterned by Nanoimprint for SERS Sensing Application
Hewlett-Packard, *Sandia National Laboratories and **University of New Mexico, USA
WITHDRAWN

P-65 Gold Nanowire Molecular-Sensors Fabricated by Nanoimprint Lithography
Nianhua Li, Michael Austin and Stephen Y. Chou
Princeton University, USA

P-66 Thermally Curable Prepolymer Based Imprinting Process using Sub-Micron Sized Replicated Nickel Stamp
Kyeong-jae Byeon, K-Yeon Yang, Sung-Hoon Hong and Heon Lee
Korea University, Korea

P-67 Reorganization and Self-Assembly of a Diblock Copolymer Film Affected by Limited Spaces of an Imprint Mold
Natsumi Aoai, Ken-ichiro Nakamatsu*, Kaori Kamata, Tomokazu Iyoda, Shinji Matsui*, Masaru Nakagawa
Tokyo Institute Chemical Resources Laboratory and *University of Hyogo, Japan

P-68 Integrated Micro-Nano Scale OTFT Electrodes Fabricated by By-Layered Thermal-NIL
Junhyuk Choi, Sung-Un Jeong, Ki-Don Kim, Dae-Geun Choi, Jeongdai Jo, Jun-Ho Jeong, Eung-Sug Lee and Sung-Hyun Kim*
Korea Institute of Machinery and Materials, Electronics and *Telecommunications Research, Korea

P-69 Instant Multi-Frequency Response from an Array of Nanomechanical Cantilevers
Sara Ghatnekar Nilsson and Lars Montelius
Lund University, Sweden

P-70 Fabrication Process of 3D-Photonic Crystals via UV-Nanoimprint Lithography
Thomas Giinsner*, Paul Lindner*, M. Mühlberger**, I. Bergmair***, R. Schöftner** and K. Hingerl+
*EV Group, **Profactor GmbH and +CD Laboratory of Surface Optics, Austria

P-71 Production Method for Increasing the Light Output of Light-Emitting Diodes
Babak Heidari and Marc Beck
Obducat AB, Sweden
P-72  Alignment of Liquid Crystals by Micro-Scale Topographic Patterns Prepared by Nanoimprint Lithography
Youngwoo Yi, Michi Nakata, Alexander R. Martin and Noel A. Clark
University of Colorado, USA

P-73  Functionalisation of Surfaces with Biomolecules Patterned by Microcontact Printing
Ana M. Ruiz, Laura Ceriotti, Frederic Bretagnol, Andrea Valsesia, Marina Hasiwa, Jessica Ponti, Giacomo Ceccone, Douglas Gilliland, Hubert Rauscher, Pascal Colpo and François Rossi
Joint Research Centre, Italy

P-74  Bakable Lamellar Grating Fabrication by Room-Temperature Nanoimprint using Hydrogen Silsesquioxane (HSQ)
Chiaki Minari*, Ken-Ichiro Nakamatsu* **, Reo Kometani* **, Kazuhiro Kanda*, Yuichi Haruyama* and Shinji Matsui*
*University of Hyogo and **JSPS, Japan

P-75  UV NIL Step & Repeat Technology Assessment
P. Voisin* ***, M. Zelssmann*, S. Garidel+, C. Gourgon*, J. Boussey* and T. Glinsner++
*LTM-CNRS **ST Microelectronics and +CEA-LETI, France and ++EVGroup, Austria