

JAPANESE JOURNAL OF APPLIED PHYSICS

Volume 49, Number 6, June 2010 [Issue 2 of 2]

Special Issue: Microprocesses and Nanotechnology

Review paper

06GA01 [Review Paper] Modeling Optical Lithography Physics (7 pages)

Andrew R. Neureuther, Juliet Rubinstein, Eric Chin, Lynn Wang, Marshal Miller, Chris Clifford, Kenji Yamazoe

Computational lithography

06GB01 Fundamental Study of the Mask Topography Effect on the Advanced Phase-Shifting Masks for Next-Generation Lithography (5 pages)

Takashi Yuito, Akio Misaka, Masaru Sasago

06GB02 Full-Chip Layout Optimization for Process Margin Enhancement Using Model-Based Hotspot Fixing System (6 pages)

Sachiko Kobayashi, Suigen Kyoh, Toshiya Kotani, Yoko Takekawa, Soichi Inoue, Koji Nakamae

Graphene growth & characterization

06GC01 Fabrication of Large-Area Graphene Using Liquid Gallium and Its Electrical Properties (5 pages)

Jun-ichi Fujita, Yosuke Miyazawa, Ryuichi Ueki, Mio Sasaki, Takeshi Saito

06GC02 Patterning of Two-Dimensional Graphene Oxide on Silicon Substrates (3 pages)

Ryousuke Ishikawa, Masashi Bando, Yoshitaka Morimoto, Sang Yoon Park, Adarsh Sandhu

DUV, VUV, EUV lithography and metrology

06GD01 Resolution Enhancement for Beyond-22-nm Node Using Extreme Ultraviolet Exposure Tool (4 pages)

Kazuo Tawarayama, Hajime Aoyama, Kentaro Matsunaga, Shunko Magoshi, Yukiyasu Arisawa, Taiga Uno

06GD02 Actinic Phase Defect Detection for Extreme Ultraviolet Lithography Mask with Absorber Patterns (6 pages)

Tsuneo Terasawa, Takeshi Yamane, Toshihiko Tanaka, Osamu Suga, Toshihisa Tomie

06GD03 Systematic Measurement Uncertainty of Critical Dimension Scanning Electron Microscope (5 pages)

Hideaki Abe, Motoki Kadokami, Akira Hamaguchi, Takahiro Ikeda, Yuichiro Yamazaki

06GD04 Disturbance Effects in Extreme Ultraviolet Interferometric Lithography Affecting Interference Fringes (5 pages)

Mohamed Saib, Christophe Constancias, Philippe Michallon, Bernard Dalzotto, Maxime Besacier

06GD05 Resist Residue in Ion Implantation Level Lithography (5 pages)

Tomoko Ojima, Masafumi Asano, Masanori Takahashi, Yuriko Seino, Shoji Mimotogi

06GD06 Development of Extreme Ultraviolet Interference Lithography System (5 pages)

Yasuyuki Fukushima, Naoki Sakagami, Teruhiko Kimura, Yoshito Kamaji, Takafumi Iguchi, Yuya Yamaguchi, Masaki Tada, Tetsuo Harada, Takeo Watanabe, Hiroo Kinoshita

06GD07 Imaging Performance Improvement of an Extreme Ultraviolet Microscope (4 pages)

Kei Takase, Yoshito Kamaji, Naoki Sakagami, Takafumi Iguchi, Masaki Tada, Yuya Yamaguchi, Yasuyuki Fukushima, Tetsuo Harada, Takeo Watanabe, Hiroo Kinoshita

06GD08 Fresnel Zone Plate Manufacturability Analysis for Direct-Write Lithography by Simulating Focusing and Patterning Performance versus Fabrication Errors (6 pages)

Kuen-Yu Tsai, Sheng-Yung Chen, Ting-Han Pei, Jia-Han Li

06GD09 A Study of Flare Variation in Extreme Ultraviolet Lithography for Sub-22 nm Line and Space Pattern (6 pages)

Junghwan Lee, Kangyoo Song, Changreol Kim, Yongdae Kim, Ohyun Kim

06GD10 Skewness and Kurtosis Risks of Quality Control in Overlay Inspection (5 pages)

Takashi Sato, Takahiro Ikeda, Kentaro Kasa, Masafumi Asano, Yasuharu Sato

Electron- and ion-beam lithography

06GE01 Projection Charged Particle Nanolithography and Nanopatterning (5 pages)

Hans Loeschner, Christof Klein, Elmar Platzgummer

(Continued on third cover)

- 06GE02 **Electron Beam Recorder for Patterned Media Mastering** (9 pages)
Hiroaki Kitahara, Yuhei Uno, Hiroaki Suzuki, Takashi Kobayashi, Hiroshi Tanaka, Yoshiaki Kojima, Masaki Kobayashi, Masahiro Katsumura, Yasumitsu Wada, Tetsuya Iida
- 06GE03 **Non-Core–Shell Nanostructure Deposition on Focused-Ion-Beam Chemical Vapor Deposition** (5 pages)
Reo Kometani, Shin’ichi Warisawa, Sunao Ishihara
- 06GE04 **Robust Control Design for Vibration Isolation of an Electron Beam Projection Lithography System** (7 pages)
Fu-Cheng Wang, Min-Feng Hong, Jia-Yush Yen
- 06GE05 **Manufacturability Analysis of a Micro-Electro-Mechanical Systems-Based Electron-Optical System Design for Direct-Write Lithography** (7 pages)
Sheng-Yung Chen, Shin-Chuan Chen, Hsing-Hong Chen, Kuen-Yu Tsai, Hsin-Hung Pan
- 06GE06 **Design and Fabrication of Multi-Aperture Plate for Multi-Ion Beam Patterning System** (4 pages)
Yeonsoon Choi, Tae-Gon Kim, Jin Han, Byung-Kwon Min, Young-Joo Kim, Sang Jo Lee
- 06GE07 **Ion Track Nanolithography Using Thick Cross-Linked Poly(methyl methacrylate) 950 Photoresist** (2 pages)
Elena Koukharenko, Jekaterina Kuleshova, Marcel Fowler, Stephen L. Kok, Michael J. Tudor, Stephen P. Beeby, Iris Nandakumar, Neil M. White
- 06GE08 **Analysis of Resist Surface Deformation during Electron Beam Irradiation** (5 pages)
Masatoshi Kotera, Yasuhito Akiba

Resist materials and processing

- 06GF01 **Fluorinated-Polymer Based High Sensitivity Extreme Ultraviolet Resists** (4 pages)
Julius Joseph Santillan, Tsuneo Yamashita, Masamichi Morita, Yoshito Tanaka, Toshiro Itani
- 06GF02 **Relationship between Normalized Image Log Slope and Chemical Gradient in Chemically Amplified Extreme Ultraviolet Resists** (5 pages)
Takahiro Kozawa, Seiichi Tagawa
- 06GF03 **Fundamental Studies on the Acid Generator to Improve the Resolution, Line Width Roughness, and Sensitivity Tradeoff under Ionizing Radiation** (5 pages)
Yoshiyuki Utsumi, Makiko Irie, Yoshitaka Komuro, Kensuke Matsuzawa, Hideo Hada, Takashi Haga, Satoshi Ogawa
- 06GF04 **Development of New Positive-Tone Molecular Resists Based on Fullerene Derivatives for Extreme Ultraviolet Lithography** (6 pages)
Hiroaki Oizumi, Katsutomo Tanaka, Kiminori Kawakami, Toshiro Itani
- 06GF05 **Decomposition and Roughness Analysis of Chemically Amplified Molecular Resist for Reducing Line Width Roughness** (5 pages)
Daiju Shiono, Hideo Hada, Kazufumi Sato, Yasuyuki Fukushima, Takeo Watanabe, Hiroo Kinoshita
- 06GF06 **Negative-type extreme ultraviolet Resist Materials based on Water-Wheel-like Cyclic Oligomer (Noria)** (6 pages)
Hiroyuki Seki, Yuki Kato, Hiroto Kudo, Hiroaki Oizumi, Toshiro Itani, Tadatomi Nishikubo

Nanodevices

- 06GG01 **Ambipolar Behavior in Epitaxial Graphene-Based Field-Effect Transistors on Si Substrate** (5 pages)
Roman Olac-vaw, Hyun-Chul Kang, Hiromi Karasawa, Yu Miyamoto, Hiroyuki Handa, Hirokazu Fukidome, Tetsuya Suemitsu, Maki Suemitsu, Taiichi Otsuji
- 06GG02 **Logic Gates Based on Carbon Nanotube Field-Effect Transistors with SiN_x Passivation Films** (4 pages)
Takaomi Kishimoto, Yasuhide Ohno, Kenzo Maehashi, Koichi Inoue, Kazuhiko Matsumoto
- 06GG03 **Voltage Transfer Characteristics in GaAs-Based Three-Branch Nanowire Junctions Controlled by Schottky Wrap Gates** (5 pages)
Daisuke Nakata, Hiromu Shibata, Yuta Shiratori, Seiya Kasai
- 06GG04 **Preparation of Multilayer TiO₂ Thin Films for Dye-Sensitized Solar Cells** (6 pages)
Ho Chang, Yu-Ling Chen

(Continued on preceding page)

(Continued)

- 06GG05 **Ultraviolet Electroluminescence Emission from n-Type ZnO/p-Type Si Crossed Nanowire Light-Emitting Diodes** (3 pages)
Kwangeun Kim, Jeongmin Kang, Myeongwon Lee, Changjoon Yoon, Kyoungah Cho, Sangsig Kim
- 06GG06 **Low-Loss Photonic Crystal Defect Waveguides and Taper Designs in InP/InGaAsP for Transverse Magnetic Polarized Light** (3 pages)
Ping Ma, Peter Kaspar, Heinz Jäckel
- 06GG07 **Effect of Silver Thickness on the Formation of Surface Plasmon Polaritons in Silver-Coated Silicon Nitride Photonic Crystal Slabs** (4 pages)
Jia-Hong Shyu, Neil Ou, Jui-Hsing Chien, Huang-Ming Lee, Chao-Yi Tai, Jong-Ching Wu
- 06GG08 **A Novel Photo-Thermoelectric Generator Integrating Dye-sensitized Solar Cells with Thermoelectric Modules** (4 pages)
Ho Chang, Mu-Jung Kao, Kouhsiu David Huang, Sih-Li Chen, Zhi-Rong Yu
- 06GG09 **Poly(3-hexylthiophene)/Fullerene Organic Thin-Film Transistors: Investigation of Photoresponse and Memory Effects** (4 pages)
Khairul Anuar Mohamad, Keisuke Goto, Katsuhiro Uesugi, Hisashi Fukuda
- 06GG10 **Study of Backscattering Phenomenon from Drain Region of Silicon Decanano Diode Using Nonequilibrium Green's Function Approach** (4 pages)
Toshiyuki Tsutsumi, Kazutaka Tomizawa
- 06GG11 **Computer Design of Source/Drain Extension Region Profile and Spacer Length in Tri-Gate Body-Tied Fin Field-Effect Transistors with High-k Gate Dielectrics** (4 pages)
Jae-Joon Song, Dae-hyun Moon, Ohyun Kim
- 06GG12 **Microwave Characterization of a Field Effect Transistor with Dielectrophoretically-Aligned Single Silicon Nanowire** (4 pages)
Myung-Gil Kang, Jae-Hyun Ahn, Jongwoon Lee, Dong-Hoon Hwang, Hee-Tae Kim, Jae-Seong Rieh, Dongmok Whang, Maeng-Ho Son, Doyeol Ahn, Yun-Seop Yu, Sung-Woo Hwang
- 06GG13 **Single-Hole Charging and Discharging Phenomena in Carbon Nanotube Field-Effect-Transistor-Based Nonvolatile Memory** (4 pages)
Takahiro Ohori, Satoshi Nagaso, Yasuhide Ohno, Kenzo Maehashi, Koichi Inoue, Kazuhiko Matsumoto
- 06GG14 **Electrical Characteristics of TiSi₂ Nanocrystal Nonvolatile Memory with Barrier-Engineered Tunnel Layer** (4 pages)
Seung Jong Han, Dong Uk Lee, Ki Bong Seo, Seon Pil Kim, Eun Kyu Kim, Jun-Seok Oh, Won-Ju Cho
- 06GG15 **Low-Temperature Polycrystalline Silicon Thin Film Transistor Nonvolatile Memory Using Ni Nanocrystals as Charge-Trapping Centers Fabricated by Hydrogen Plasma Process** (4 pages)
Terry Tai-Jui Wang, Pei-Ling Gao, William Cheng-Yu Ma, Cheng-Tzu Kuo
- 06GG16 **Advances in Selective Wet Etching for Nanoscale NiPt Salicide Fabrication** (5 pages)
Ming Mao Chu, Jung-Hua Chou

Nanofabrication

- 06GH01 **First-Principles Simulation on Thickness Dependence of Piezoresistance Effect in Silicon Nanosheets** (6 pages)
Koichi Nakamura, Toshiyuki Toriyama, Susumu Sugiyama
- 06GH02 **Ionic Liquid Thin Film Fabrication Using Nano-Inkjet Printing Method** (3 pages)
Kiyohiro Kaisei, Kei Kobayashi, Kazumi Matsushige, Hirofumi Yamada
- 06GH03 **Suppression of Fermi Level Pinning and Flat Band Voltage Shift by Inserting Diamond-Like Carbon at a High-k/SiO₂ Interface in a Gate Stack Structure** (4 pages)
Yuta Iwashita, Tetsuya Adachi, Kenji Itaka, Atsushi Ogura, Toyohiro Chikyow
- 06GH04 **Synthesis and Magnetic Property of Multiferroic BiMnO₃ Nanoparticles in the Pores of Mesoporous Silica** (4 pages)
Takayuki Tajiri, Manabu Harazono, Hiroyuki Deguchi, Masaki Mito, Atsushi Kohno, Shigemi Kohiki
- 06GH05 **Reactive Ion Etching of Si Using Ar/F₂ Plasma** (3 pages)
Akihiro Matsutani, Hideo Ohtsuki, Fumio Koyama

(Continued on preceding page)

(Continued)

- 06GH06 **Structural Changes in Diamond-Like Carbon Films Fabricated by Ga Focused-Ion-Beam-Assisted Deposition Caused by Annealing** (5 pages)
Kazuhiro Kanda, Makoto Okada, Yuji Kang, Masahito Niibe, Akira Wada, Haruhiko Ito, Tsuneo Suzuki, Shinji Matsui
- 06GH07 **Mechanical Characteristics of Nanosprings Fabricated by Focused-Ion-Beam Chemical Vapor Deposition Using Ferrocene Source Gas** (4 pages)
Yasuki Nakai, Yuji Kang, Makoto Okada, Yuichi Haruyama, Kazuhiro Kanda, Tetsuya Ichihashi, Shinji Matsui
- 06GH08 **Deposition Yield and Physical Properties of Carbon Films Deposited by Focused-Ion-Beam Chemical Vapor Deposition** (4 pages)
Takashi Kaito, Hiroshi Oba, Yasuhiro Sugiyama, Anto Yasaka, Jun-ichi Fujita, Tsuneo Suzuki, Kazuhiro Kanda, Shinji Matsui
- 06GH09 **Surface Smoothing of Polycrystalline Substrates with Gas Cluster Ion Beams** (3 pages)
Takafumi Mashita, Noriaki Toyoda, Isao Yamada
- 06GH10 **Effect of Post Annealing of ZnO Buffer Layer on the Properties of Hydrothermally Grown ZnO Nanorods** (4 pages)
Ah Ra Kim, Ju-Young Lee, Bo Ra Jang, Hong Seung Kim, Hyun Kook Park, Young Ji Cho, Nak Won Jang
- 06GH11 **Fabrication of Flexible Thin Film with Pattern Structure and Macroporous Array Consisting of Nanoparticles by Electrophoretic Deposition** (4 pages)
Yi-Wen Chung, Huang-Sheng Fang, Jian-Hong Lee, Chih-Jen Tsai
- 06GH12 **Photoisomerization of Sterically Hindered Azobenzenes in Self-Assembled Monolayers on Gold Surfaces** (3 pages)
Daisuke Ishikawa, Takumu Honda, Eisuke Ito, Mina Han, Masahiko Hara
- 06GH13 **Refilling and Planarization of Patterned Surface with Amorphous Carbon Films by Using Gas Cluster Ion Beam Assisted Deposition** (4 pages)
Noriaki Toyoda, Tomokazu Hirota, Takafumi Mashita, Isao Yamada
- 06GH14 **Shape-Dependent Magnetic Moment and Formation Energy of Fe Heterostructures on Cu(111): An Ab initio Study** (4 pages)
Heechae Choi, Yong-Chae Chung
- 06GH15 **Surface Morphology of Diamond-Like Carbon Film and Si Wafer Milled with 30 keV Gallium Focused Ion Beam** (4 pages)
Takashi Kaito, Masatoshi Yasutake, Anto Yasaka, Iwao Miyamoto
- 06GH16 **Transmission Electron Beam Drilling for Nanoscale Fabrication** (4 pages)
Tsan-Chu Lin, Rui-Zhi Su, Yu-cheng Lai, Dau-Chung Wang, Cen-Shawn Wu
- 06GH17 **Electrostatic Deposition of Aerosol Particles Generated from an Aqueous Nanopowder Suspension on a Chemically Treated Substrate** (6 pages)
M. Nazli Naim, Noor Fitrah Abu Bakar, Motoyuki Iijima, Hidehiro Kamiya, I. Wuled Lenggoro
- 06GH18 **Nanoscale Wet Etching of Physical-Vapor-Deposited Titanium Nitride and Its Application to Sub-30-nm-Gate-Length Fin-Type Double-Gate Metal–Oxide–Semiconductor Field-Effect Transistor Fabrication** (5 pages)
Yongxun Liu, Takahiro Kamei, Kazuhiko Endo, Shinichi Ouchi, Junichi Tsukada, Hiromi Yamauchi, Tetsuro Hayashida, Yuki Ishikawa, Takashi Matsukawa, Kunihiro Sakamoto, Atsushi Ogura, Meishoku Masahara

Nanomaterials

- 06GJ01 **Growth and Characterization of Telecommunication-Wavelength Quantum Dots Using Bi as a Surfactant** (6 pages)
Hiroshi Okamoto, Takehiko Tawara, Hideki Gotoh, Hidehiko Kamada, Tetsuomi Sogawa
- 06GJ02 **Magnetic Anisotropy of Ni-Doped ZnO Nanocrystalline Thin Films** (4 pages)
Munisamy Subramanian, Fan-Yong Ran, Masaki Tanemura, Takehiko Hihara, Tetsuo Soga, Takashi Jimbo
- 06GJ03 **Raman Scattering of Single-Walled Carbon Nanotubes in Early Growth Stages Using Laser-Irradiated Chemical Vapor Deposition** (4 pages)
Tomoki Tsuji, Koichi Inoue, Yasuhide Ohno, Kenzo Maehashi, Kazuhiko Matsumoto
- 06GJ04 **Preparation of Perylenediimide Nanoparticle Colloids by Laser Ablation in Water and Their Optical Properties** (5 pages)
Ryohei Yasukuni, Takayuki Hironaka, Tsuyoshi Asahi

(Continued on preceding page)

(Continued)

- 06GJ05 **Refractive Index Regulation of Gold Nanocrystal Superlattices by Varying the Nanocrystal Size** (3 pages)
Seiichi Sato, Takeyasu Ito, Keisaku Kimura
- 06GJ06 **Growth Mechanisms and Characteristics of ZnO Nanostructures Doped with In and Ga** (6 pages)
Su-Hua Yang, Sheng-Yu Hong, Cheng-Hsun Tsai
- 06GJ07 **Atomic and Electronic Structure Investigation and Luminescence Property of Eu²⁺-Doped β -SiAlON Green Phosphor: Ab initio Calculations** (4 pages)
Dong Su Yoo, Jeong Ho Ryu, Hong-Lae Park, Sung-Ho Lee, Yong-Chae Chung
- 06GJ08 **Preparation of ZnSe Nanocrystals Using Water-in-Oil Microemulsions** (4 pages)
Hyun Soo Kim, Jong Sung Kim, Sang Joon Park
- 06GJ09 **Anisotropic Exciton Rabi Oscillation in Single Telecommunication-Band Quantum Dot** (4 pages)
Toshiyuki Miyazawa, Toshihiro Nakaoka, Katsuyuki Watanabe, Naoto Kumagai, Naoki Yokoyama, Yasuhiko Arakawa
- 06GJ10 **Mechanism of Enhanced Dispersion of Single-Walled Carbon Nanotubes with Proteins by Alcohols and Chaotropes** (3 pages)
Atsushi Hirano, Yutaka Maeda, Takeshi Akasaka, Kentaro Shiraki
- 06GJ11 **Electron Spin Resonance Spectroscopic Study of Size-Controlled Ink Particles Isolated from *Sepia officinalis*** (4 pages)
Toshihiko Matsuura, Shingo Watanabe, Sei-ichi Akutagawa, Yuhei Shimoyama, Takanori Kobayashi, Yoshihiro Taya, Takashi Ueno
- 06GJ12 **Density Functional Theory Method for Study of the Mechanism of C-H Bond Formation on Finite-Sized Graphene Surface** (4 pages)
Hirotu Tachikawa, Tetsuji Iyama
- 06GJ13 **Structures and Electronic States of Water Molecules on Graphene Surface: A Density Functional Theory Study** (3 pages)
Shigeaki Abe, Yoshinori Nagoya, Fumio Watari, Hirotu Tachikawa
- 06GJ14 **Atomic-Scale Investigation of the Ti/Al(001) Interface: A Molecular Dynamics Simulation** (3 pages)
Geunsup Yoon, Soon-Gun Lee, Byung-Hyun Kim, Yong-Chae Chung

Nano tools

- 06GK01 **Aligned Single-Walled Carbon Nanotube Arrays on Patterned SiO₂/Si Substrates** (4 pages)
Kenzo Maehashi, Shin Iwasaki, Yasuhide Ohno, Takaomi Kishimoto, Koichi Inoue, Kazuhiko Matsumoto
- 06GK02 **Temperature Dependence of Cantilevered Carbon Nanotube Oscillation** (4 pages)
Shun Fukami, Takayuki Arie, Seiji Akita
- 06GK03 **Metrology of Wide Field of View Nano-Thickness Foils' Homogeneity by Conventional and Phase Contrast Soft X-ray Imaging** (5 pages)
Anatoly Faenov, Tatiana Pikuz, Yuji Fukuda, Masaki Kando, Hideyuki Kotaki, Takayuki Homma, Keigo Kawase, Igor Skobelev, Sergei Gasilov, Tetsuya Kawachi, Hiroyuki Daido, Toshiki Tajima, Yoshiaki Kato, Sergei Bulanov
- 06GK04 **Fabrication of Nanochannels with High Aspect Ratios on a Silicon Substrate by Local Focused Ion Beam Implantation and Deep Reactive Ion Etching** (3 pages)
Jin Han, Tae-Gon Kim, Byung-Kwon Min, Sang Jo Lee
- 06GK05 **Uncertainty Analysis on Precision Measurement for Polystyrene Nanospheres Using Dynamic Light Scattering** (5 pages)
Shan-Peng Pan, Han-Fu Weng, Chih-Min Lin, Tzong-Shi Liu
- 06GK06 **Precision Measurement of Sub-50 nm Linewidth by Stitching Double-Tilt Images** (6 pages)
Shan-Peng Pan, Huay-Chung Liou, Chao-Chang A. Chen, Jr-Rung Chen, Tzong-Shi Liu
- 06GK07 **Non-amplified Quantitative Detection of Nucleic Acid Sequences Using a Gold Nanoparticle Probe Set and Field-Emission Scanning Electron Microscopy** (6 pages)
Hyonchol Kim, Atsushi Kira, Kenji Yasuda

Nanoimprint, nanoprint and rising lithography

- 06GL01 **UV Nanoimprint in Pentafluoropropane at a Minimal Imprint Pressure** (5 pages)
Hiroshi Hiroshima, Hidemasa Atobe, Qing Wang, Sung-Won Youn

(Continued on preceding page)

(Continued)

- 06GL02 **Characterization of Antisticking Layers for UV Nanoimprint Lithography Molds with Scanning Probe Microscopy** (5 pages)
Masaaki Kurihara, Sho Hatakeyama, Noriko Yamada, Takeya Shimomura, Takaharu Nagai, Kouji Yoshida, Tatsuya Tomita, Morihisa Hoga, Naoya Hayashi, Hiroyuki Ohtani, Masamichi Fujihira
- 06GL03 **Growth Behavior of an Adsorbed Monolayer from a Benzophenone-Containing Trimethoxysilane Derivative on a Fused Silica Surface for Nanoimprint Molds by Chemical Vapor Surface Modification** (5 pages)
Shoichi Kubo, Masaru Nakagawa
- 06GL04 **Effects of Environmental Gas in UV Nanoimprint on the Characteristics of UV-Curable Resin** (4 pages)
Qing Wang, Hiroshi Hiroshima
- 06GL05 **Resist Properties of Thin Poly(methyl methacrylate) and Polystyrene Films Patterned by Thermal Nanoimprint Lithography for Au Electrodeposition** (5 pages)
Koichi Nagase, Shoichi Kubo, Masaru Nakagawa
- 06GL06 **Size Dependence of Quick Cavity Filling Behavior in Ultraviolet Nanoimprint Lithography Using Pentafluoropropane Gas** (5 pages)
Sung-Won Youn, Hiroshi Hiroshima, Masaharu Takahashi, Ryutaro Maeda
- 06GL07 **Fluorescent UV-Curable Resists for UV Nanoimprint Lithography** (6 pages)
Kei Kobayashi, Nobuji Sakai, Shinji Matsui, Masaru Nakagawa
- 06GL08 **Direct Patterning on Sol-Gel Low-k Porous Silica by Thermal Nanoimprinting** (3 pages)
Makoto Okada, Takahiro Nakayama, Yuji Kang, Yuichi Haruyama, Kazuhiro Kanda, Shinji Matsui
- 06GL09 **Ultrasonic Nanoimprinting in Organic Spin-on-Glass-Coated Si Substrates** (7 pages)
Harutaka Mekaru, Masaharu Takahashi
- 06GL10 **Evaluation of Viscosity Characteristics of Spin-Coated UV Nanoimprint Resin** (4 pages)
Hidemasa Atobe, Hiroshi Hiroshima, Qing Wang
- 06GL11 **Numerical Simulation of Glass Imprinting for Molding Temperature Prediction** (4 pages)
Manabu Yasui, Masahiro Arai, Hiroaki Ito, Tomohiro Ino, Masaharu Takahashi, Satoru Kaneko, Yasuo Hirabayashi, Ryutaro Maeda
- 06GL12 **Enhanced Durability of Antisticking Layers by Recoating a Silica Surface with Fluorinated Alkylsilane Derivatives by Chemical Vapor Surface Modification** (6 pages)
Akihiro Kohno, Nobuji Sakai, Shinji Matsui, Masaru Nakagawa
- 06GL13 **Room-Temperature Nanoimprinting Using Liquid-Phase Hydrogen Silsesquioxane with Hard Poly(dimethylsiloxane) Mold** (5 pages)
Yuji Kang, Makoto Okada, Chiaki Minari, Kazuhiro Kanda, Yuichi Haruyama, Shinji Matsui
- 06GL14 **In situ Visualization of Imprinting Process for Patterning Microstructures on Glass Substrate** (5 pages)
Lien-Kai Chen, Yu-Min Hung, Cheng-Kuo Sung
- 06GL15 **Effects of Mold Side Wall Profile on Demolding Characteristics** (5 pages)
Hiroaki Kawata, Kensuke Kubo, Yuuta Watanabe, Junji Sakamoto, Masaaki Yasuda, Yoshihiko Hirai

Bio MEMS, lab on a chip

- 06GM01 **Fabrication of a Hydrophilic Poly(dimethylsiloxane) Microporous Structure and Its Application to Portable Microfluidic Pump** (4 pages)
Wonseok Yang, Young Gyu Nam, Bong-Kee Lee, Kyungsup Han, Tai Hun Kwon, Dong Sung Kim
- 06GM02 **Immobilization of Gold Nanoparticles on Aluminum Oxide Nanoporous Structure for Highly Sensitive Plasmonic Sensing** (6 pages)
Ha Minh Hiep, Hiroyuki Yoshikawa, Shunichi Taniyama, Le Quynh Hoa, Kenji Kondoh, Masato Saito, Eiichi Tamiya
- 06GM03 **Cell-Driven Three-Dimensional Manipulation of Microparts for a Microassembly** (4 pages)
Takayuki Hoshino, Ayako Higashi, Tomohiro Konno, Kazuhiko Ishihara, Keisuke Morishima
- 06GM04 **Comprehensive Study of Microgel Electrode for On-Chip Electrophoretic Cell Sorting** (4 pages)
Akihiro Hattori, Kenji Yasuda
- 06GM05 **Development of a High-Speed Real-Time Polymerase Chain Reaction System Using a Circulating Water-Based Rapid Heat-Exchange** (5 pages)
Hideyuki Terazono, Hiroyuki Takei, Akihiro Hattori, Kenji Yasuda

(Continued on preceding page)

(Continued)

Microsystem technology and MEMS

- 06GN01 **Fabrication of a Wheatstone-Bridge Integrated SU-8 Cantilever (4 pages)**
Jun-Hyung Ahn, Chang-Sin Park, Dong-Weon Lee
- 06GN02 **Fabrication Technology of Microelectromechanical Systems Probe Chip Compatible with Standard Complementary Metal-Oxide-Semiconductor Process (4 pages)**
Jung-Tang Huang, Kuo-Yu Lee, Hou-Jun Hsu, Rung-Gen Wu, Ming-Zhe Lin, Ting-Chiang Tsai, Ching-Kong Chen
- 06GN03 **Two-Step Deformation Mechanism of Self-Forming Three-Dimensional Carbon Micro Structures (6 pages)**
Keisuke Usuda, Takayuki Hoshino, Keisuke Morishima
- 06GN04 **Fabrication of 150-nm-Wide Transducer Gaps for Disk-Type Resonators by Single Dry Etching Process (5 pages)**
Sunao Murakami, Mitsuo Konno, Tsuyoshi Ikebara, Ryutaro Maeda, Takashi Mihara
- 06GN05 **Characterization of Four-Points-Pinned Ring-Shaped Silicon Microelectromechanical Systems Resonator (8 pages)**
Tomohiro Oka, Hiroshi Tanigawa, Kenichiro Suzuki
- 06GN06 **Development of Roll Micromold System via Deep X-ray Lithography and Metal Electroforming Processes (6 pages)**
Bong-Kee Lee, Tai Hun Kwon
- 06GN07 **High Coplanarity and Fine Pitch Copper Pillar Bumps Fabrication Method (3 pages)**
Jung-Tang Huang, Hou-Jun Hsu, Kuo-Yu Lee, Ting-Chiang Tsai, Ching-Kong Chen
- 06GN08 **Direct Writing of Resist Patterns Using a Wire Nozzle Newly Developed for an Air-Pressure Dispenser (6 pages)**
Shinichiro Ohtsuka, Toshiyuki Horiuchi
- 06GN09 **Wiring Implanted by Laser-Assisted Powder Jet Using Copper Microparticles (4 pages)**
Katsuhiko Suzuki, Manabu Miura, Asahi Konno, Kaichi Miura, Tetsuo Yuzawa, Masanao Watanabe, Tsunemoto Kuriyagawa
- 06GN10 **Development of a Polymer Coating-Based Microlens Array on Isotropically Wet-Etched Quartz Substrates for Maskless Lithography Application (6 pages)**
Minwoo Nam, Haekwan Oh, Hyunwoo Seo, Yotak Song, Sangsik Yang, Keekeun Lee
- 06GN11 **Durability Enhancement of a Microelectromechanical System-Based Liquid Droplet Lens (5 pages)**
June Kyoo Lee, Kyung-Woo Park, Hak-Rin Kim, Seong Ho Kong
- 06GN12 **Effects of Excimer Irradiation Treatment on Thermocompression Au–Au Bonding (4 pages)**
Naoko Unami, Katsuyuki Sakuma, Jun Mizuno, Shuichi Shoji
- 06GN13 **Evaluation of Resonance Characteristics Change of Silicon Resonators Due to Surface Treatment (4 pages)**
Hiroki Shimizu, Jean-Jacques Delaunay, Reo Kometani, Shin'ichi Warisawa, Sunao Ishihara
- 06GN14 **Effects of Aspect Ratio of Photoresist Patterns on Adhesive Strength between Microsized SU-8 Columns and Silicon Substrate under Bend Loading Condition (5 pages)**
Chiemi Ishiyama, Akinobu Shibata, Masato Sone, Yakichi Higo
- 06GN15 **Performance Analysis of a Convection-Based Tilt Sensor (6 pages)**
Ju Chan Choi, Seong Ho Kong
- 06GN16 **Development of Surface Acoustic Wave-Based Microgyroscope Utilizing Progressive Wave (6 pages)**
Haekwan Oh, Sangsik Yang, Keekeun Lee
- 06GN17 **Micromachined Silicon Disk Resonator Transduced by Piezoelectric Lead Zirconate Titanate Thin Films (4 pages)**
Jian Lu, Tadatomo Suga, Yi Zhang, Toshihiro Itoh, Ryutaro Maeda, Takashi Mihara
- 06GN18 **2.5 GHz Low-Insertion-Loss Hybrid Phase Shifters Using Micro-Electro-Mechanical-Systems Switches (5 pages)**
Hirotada Ado, Takashi Furutsuka, Kenichiro Suzuki
- 06GN19 **Micro-Electro-Mechanical System/Field-Effect-Transistor Hybrid Switch for Energy Scavenging System (3 pages)**
Hoseong Kim, Sungmuk Kang, Kyungjin Park, Jaewoo Park, Yu-Rae Kim, Chang-Wook Baek