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Final Edition

ICPST-34

Scientific Program

The 34th International Conference of Photopolymer Science and Technology

Materials & Processes for
Advanced Microlithography, Nanotechnology
and Phototechnology

June 26-29, 2017

International Conference Hall
Makuhari Messe, Chiba, Japan
(5 minutes walk from JR Kaihin Makuhari Station)

Sponsored and Organized by
The Society of Photopolymer Science and Technology (SPST)

In Cooperation with
The Technical Association of Photopolymer, Japan
The Japan Society of Applied Physics
The Chemical Society of Japan
The Society of Polymer Science, Japan
Chiba University

International Conference Schedule

June 26 (Monday) Registration 15:00-17:00 (Room D)
June 26 (Monday) Get Together 17:00-19:00 (Room D)

	June 27 Tuesday	June 28 Wednesday	June 29 Thursday
Lobby	Registration 9:00-17:00	Registration 9:00-17:00	Registration 9:00-15:00
Room A	Outstanding Achievement Award Lecture Special Lecture Relating to the Nobel Prize in Chemistry for 2016 Directed Self Assembly (DSA) EUV Lithography General Scopes of Photopolymer Science and Technology p.3	EUV Lithography Directed Self Assembly (DSA) Computational / Analysis Approach For Lithography PST Award Ceremony p.6	Photopolymers in 3-D Printing/Additive Manufacturing Next Generation Lithography, EB Lithography and Nanotechnology 193 nm Lithography Extension p.11
Room B	Nanoimprint Lithography Panel Symposium p.5	Advanced 3D Packaging, Next Generation MEMS Nanobiotechnology p.9	Chemistry for Advanced Photopolymer Science Advanced Materials for Photonics / Electronic Device and Technology p.13
Room C	ポリイミド及び高温耐熱樹脂-機能化と応用 Japanese Symposium: Polyimides and High Temperature Polymers -Functionalization and Practical Applications- p.16	一般講演 Japanese Symposium: General Scopes of Photopolymer Science and Technology レジスト除去技術 Japanese Symposium: Resist Removal Technology p.18	Organic Solar Cells – Materials, Device Physics, and Processes p.15
Room D		プラズマ光化学と高分子表面機能化 Japanese Symposium: Plasma Photochemistry and Functionalization of Polymer Surface p.20	光機能性デバイス材料 Japanese Symposium: Photofunctional Materials for Electronic Devices p.21

June 27, Tuesday

Room A (Room 301)

English Symposia: Materials & Processes for Advanced Microlithography, Nanotechnology and Phototechnology

＊Opening Session＊

Published conference paper

10:00-10:15 Chairperson: Haruyuki Okamura, Osaka Prefecture University

Opening Remarks
Minoru Tsuda, President of the Society of Photopolymer Science & Technology (SPST)

Overview of Scientific Program ICPST-34
Masayuki Endo, Chairperson of the Program Committee ICPST-34

＊Outstanding Achievement Award Lecture＊

10:15-11:00 Chairperson: Seiji Nagahara, Tokyo Electron

Outstanding Achievement Award Lecture
A-1 Directed Self-Assembly of Performance Materials
Paul F. Nealey, University of Chicago

＊Special Lecture Relating to the Nobel Prize in Chemistry for 2016＊

11:00-11:45 Chairperson: Itaru Osaka, Hiroshima University

Special Lecture
A-2 Light-Driven Monodirectional Molecular Rotary Motion
Nagatoshi Koumura, Advanced Industrial Science and Technology (AIST)

11:45-12:00 Break

＊Directed Self Assembly (DSA)＊

12:00-12:20 Chairperson: Paul F. Nealey, University of Chicago

(12:00-12:20) **A-3** Supramolecular Self-Assemlby for High-Resolution Bottom-Up Lithography [Invited]
Ki-ok Kwon, Kangho Park, Woo Bin Jung and ○Hee-Tae Jung, Department of Chemical & Biomolucular Engineering, Korea Advanced Institute of Science & Technology

12:20-13:20 Lunch

＊EUV Lithography＊

13:20-15:30 Chairpersons: Takeo Watanabe, University of Hyogo and Christopher Ober, Cornell University

(13:20-14:05) **Keynote Lecture A-4** EUV Lithography: Challenges to Manufacturing Insertion — **30** (5) 599
Obert R. Wood II, GLOBALFOUNDRIES

(14:05-14:30) **A-5** EUV Resists: A Path into the Future [Invited] (25 min.)
Anna Lio, Intel

(14:30-14:50) **A-6** Photo Material Readiness at the Eve of EUVL HVM
Danilo De Simone, Geert Vandenberghe, IMEC

(14:50-15:10) **A-7** Novel EUV Photoresist for Sub-7nm Node
Junya Suzuki, Tsuyoshi Furukawa, Hiromu Miyata, Motohiro Shiratani, Takehiko Naruoka, Ken Maruyama, Hiroki Nakagawa, Tomoki Nagai, JSR Corporation

(15:10-15:30) **A-8** What We Don’t Know about EUV Exposure Mechanisms — **30** (1) 113
Amrit Narasimhan (1), Steven Grzeskowiak (1) Christian Ackerman (1), Leonidas E. Ocola (2), Greg Denbeaux (1), and ○Robert L. Brainard (1), College of Nanoscale Science and Engineering, State University of New York (1), Argonne National Laboratory (2)

15:30-15:45 Break

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June 27, Tuesday

Room A (Room 301)

English Symposia: Materials & Processes for Advanced Microlithography, Nanotechnology and Phototechnology

15:45-17:30 Chairpersons: Taku Hirayama, Merck Performance Materials Ltd. and Anna Lio, Intel

(15:45-16:05) **A-9** EUV Mechanistic Studies of Antimony Resists **30** (1) 121
Michael Murphy, Amrit Narasimhan, Steven Grzeskowiak, Jacob Sitterly, Philip Schuler, Jeff Richards, Greg Denbeaux, and ○Robert L. Brainard, College of Nanoscale Science and Engineering, State University of New York

(16:05-16:25) **A-10** Study on Resist Performance of Noria Derivatives Modified with Various Protection
Ratios of Acetal Moieties by Means of Extreme Ultraviolet Irradiation
Hiroki Yamamoto (1), Hiroto Kudo (2), and Takahiro Kozawa (1), Osaka University (1), Kansai University (2)

(16:25-16:50) **A-11** Measuring and Modeling Stochastic Limitations in EUV Resists [Invited] (25 min.)
Patrick Naulleau, Lawrence Berkeley National Lab.

(16:50-17:10) **A-12** Sequential Infiltration Synthesis for Line Edge Roughness Mitigation of EUV Resist
Marina Baryshnikova (1,2), Danilo De Simone (1), Krzysztof Kachel (3), Werner Knaepen (3), BT Chan (1), Sara Paolillo (1), Jan Willem Maes (3), David De Roest (3), Paulina Rincon Delgadillo (1), and Geert Vandenberghe (1), IMEC (1), Department of Electrical Engineering (ESAT) (2), ASML (3)

(17:10-17:30) **A-13** Absorption Coefficient Measurement Advanced Method of EUV Resist by Direct-Resist Coating on a Photodiode **30** (1) 87
Shota Niihara, Daiki Mamezaki, Masanori Watanabe, Tetsuo Harada, and Takeo Watanabe, University of Hyogo

＊General Scopes of Photopolymer Science and Technology＊

17:30-17:50 Chairpersons: Taku Hirayama, Merck Performance Materials Ltd. and Anna Lio, Intel

(17:30-17:50) **A-14** Development of Novel Purifiers with Appropriate Functional Groups Based on Solvent Polarities at Bulk Filtration
Tetsu Kohyama, Nihon Entegris

17:50-18:00 Break

18:00-20:00 **Panel Symposium in English: "EUVL Insertion to HVM, and Its Extendibility" at Room B (Room 302)**

June 27, Tuesday

Room B (Room 302)

English Symposia: Materials & Processes for Advanced Microlithography, Nanotechnology and Phototechnology

＊Nanoimprint Lithography＊

13:00-14:40 Chairpersons: Yoshihiko Hirai, Osaka Prefecture University and Jun Taniguch, Tokyo University of Science

(13:00-13:30) **A-15** Improvement in Transfer Performance for Antireflection Structured Films with Antifouling Properties via Partial-Filling Technique [invited] (30 min.) **30** (5) 605
M. Thesen, M. Messerschmidt, J. Klein, M. Vogler, A. Schleunitz, and G. Gruetzner, Micro resist technology Gmbh,

(13:30-14:00) **A-16** Nanoimprint Graphoepitaxy for Molecularly Oriented Nanofabrication [invited] (30 min.) **30** (5) 519
Makoto Okada (1), Yuichi Haruyama (1), Hiroshi Ono (2), and Nobuhiro Kawatsuki (3), Laboratory of Advanced Science and Technology for Industry, University of Hyogo (1), Department of Materials Science and Chemistry, Graduate School of Engineering, University of Hyogo (2), Department of Electrical Engineering, Nagaoka University of Technology (3)

(14:00-14:20) **A-17** Fine patterning of inOrganic Materials by Nanoimprint Lithography **30** (5) 527
Ryota Kojima, SOKEN Chemical & Engineering

(14:20-14:40) **A-18** Improvement in Transfer Performance for Antireflection Structured Films with Antifouling Properties via Partial-Filling Technique **30** (5) 533
Hikari Eto (1), Shin Hiwasa (2), and Jun Taniguchi (1), Department of Applied Electronics, Tokyo University of Science (1), Autex Co., Ltd. (2)

14:40-14:55 Break

14:55-16:45 Chairperson: Jun Mizuno, Waseda University

(14:55-15:15) **A-19** Metallic Antireflection Structures Made from Silver Ink by a Liquid Transfer Imprint Lithography Technique **30** (5) 539
Tomoya Uchida, Jun Taniguchi, and Ichiro Mano, Tokyo University of Science

(15:15-15:35) **A-20** Debonding Analysis during Demolding Process of Nanoimprinting **30** (5) 545
Qing Wang and Jintao Zhang, Institue of NanoEngineering, Shandong University of Science and Technology

(15:35-15:55) **A-21** Stacking of Fine Patterned Films by use of Water Soluble Sacrificial Layer
Hiroaki Kawata, Masaaki Yasuda, and Yoshihiko Hirai, Osaka Prefecture University

(15:55-16:15) **A-22** Characteristics of Residual Layer Thickness on Liquid Transfer Imprint Lithography with Roll Press Method
Jun Taniguchi, Hiroshi Kigami, and Tatsuya Hayashi, Department of Applied Electronics, Tokyo University of Science

16:15-18:00 Break

＊Panel Symposium in English: EUVL Insertion to HVM, and Its Extendibility＊

18:00-20:00 Takeo Watanabe, University of Hyogo, Taku Hirayama, Merck Performance Materials Ltd., Hiroaki Oizumi, Gigaphoton

Panel Symposium: "EUVL Insertion to HVM, and Its Extendibility"
Panelist: Obert R. Wood II (GLOBALFOUNDRIES), Takayuki Uchiyama (Toshiba), Anna Lio (Intel), Kenji Morisaki (ASML), Toru Fujimori (FUJIFILM), Tomoki Nagai (JSR), Hakaru Mizoguchi (Gigaphoton), Tsutomu Shoki (HOYA)

EUV Lithography will be used in mass production from a 7nm CMOS Platform Technology. It will be the first integrated platform technology to use. The EUV Exposure tool, EUV LPP light source, mask, and resist technologies are discussed at this international panel symposium from the view point of EUV lithography insertion to HVM, and its Extendibility. Fruitful discussions are also welcome at this panel symposium.

June 28, Wednesday

Room A (Room 301)

English Symposia: Materials & Processes for Advanced Microlithography, Nanotechnology and Phototechnology

＊EUV Lithography＊

9:00-10:40 Chairpersons: Hiroaki Oizumi, Gigaphoton and Patrick Naulleau, Lawrence Berkeley National Lab.

(9:00-9:20) **A-24** EUV Metal Oxide Photoresists: Common Features between Systems **30** (1) 93
Christopher Ober (1), Kazuki Kasahara, (2), Hong Xu (1), Vasiliki Kosma (1), Jeremy Odent (1), and Emmanuel P. Giannelis (1), Cornell University (1), JSR (2)

(9:20-9:40) **A-25** Photoreactions of Tin Oxo Cages, Model EUV Photoresists **30** (1) 99
Albert M. Brouwer, Yu Zhang, Jarich Haitjema, and Niklas Ottosson, Advanced Research Center for Nanolithography

(9:40-10:00) **A-26** Synthesis and Resist Property of Tellurium-Containing Polymers **30** (1) 103
Mari Fukunaga (1), Hiroto Kudo (1), Hiroki Yamamoto (2), Takahiro Kozawa (2), and Takeo Watanabe (3), Kansai University (1), Osaka University (2), University of Hyogo (3)

(10:00-10:20) **A-27** In-Situ Measurement of Outgassing Generated from EUV Resist Including Metal Oxide Nanoparticles During Electron Irradiation **30** (1) 107
Seiji Takahashi (1), Yoko Matsumoto (1), Mikio Kadoi (1), Yoichi Minami (1), Atsushi Sekiguchi (1), and Takeo Watanabe (2), Litho Tech Japan Corporation (1), University of Hyogo (2)

(10:20-10:40) **A-28** Metal Sensitizer in Chemically Amplified Resist: A Study of EUV Sensitivity Enhancement and Dissolution **30** (5) 591
Jing Jiang, Danilo De Simone, and Geert Vandenberghe, IMEC

10:40-10:55 Break

＊Directed Self Assembly (DSA)＊

10:55-11:40 Chairpersons: Tsukasa Azuma, EIDEC and Seiji Nagahara, Tokyo Electron Ltd.

(10:55-11:40) **Keynote Lecture A-29** Simultaneous Fabrication of Line and Dot Dual Nanopatterns using Miktoarm Block Copolymer with Photocleavable Linker
Jin Kon Kim, Chungryong Choi, Jichoel Park, Jaeyong Lee, Soenghyeon Ahn, and Jongheon, Pohang University of Science and Technology

11:40-12:20 Chairpersons: Tsukasa Azuma, EIDEC and Seiji Nagahara, Tokyo Electron Ltd.

(11:40-12:00) **A-30** In-situ Observation of Micro-Phase Separation Process in Directed-Self Assembly of Block Copolymers [Invited]
Tsukasa Azuma (1), Yuriko Seino (1), Hironobu Sato (1), Yusuke Kasahara (1), Katsuyoshi Kodera (1), Phubes Jiravanichsakul (1), Ken Miyagi (1), Masayuki Shiraishi (1), Ryota Matsuki (1), Terumasa Kosaka (1), Toshiyuki Himi (1), Teruaki Hayakawa (2), Kenji Yoshimoto (3, 4), Takuya Omosu (5, 6), and Mikihito Takenaka (5, 6), Evolving Nano Process Infrastructure Development Center, Inc. (EIDEC) (1), Department of Organic and Polymeric Materials, Tokyo Institute of Technology (2), Center for the Promotion of Interdisciplinary Education and Research, Kyoto University (3), Department of Chemical Engineering, Graduate School of Engineering, Kyoto University (4), Institute for Chemical Research, Kyoto University (5), Structural Materials Science Laboratory, SPring-8 Center, RIKEN Harima Institute Research(6)

(12:00-12:20) **A-31** Recent Achievements in sub-10 nm DSA Lithography for L/S Patterning [Invited] **30** (1) 69
Fumi Ariura (1), Célia Nicolet (1), Xavier Chevalier (1), Christophe Navarro (1), Ian Cayrefourcq (1), Raluca Tiron(2), Laurent Pain (2), Marc Zelsmann (3), and Darron Jurajda (4), Arkema – France (1), CEA Leti - France(2), CNRS LTM – France (3), Brewer Science – USA (4)

12:20-13:10 Lunch

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June 28, Wednesday

Room A (Room 301)

English Symposia: Materials & Processes for Advanced Microlithography, Nanotechnology and Phototechnology

13:10-14:50 Chairpersons: Teruaki Hayakawa, Tokyo Institute of Technology and Takehiro Seshimo, Tokyo Ohka Kougyo

(13:10-13:30) **A-32** Containing Block Copolymers and Strategies for Directing Their Self-Assembly [Invited] **30** (2) 187
Christopher J. Ellison (1) and C. Grant Willson (2), University of Minnesota (1), University of Texas, Austin (2)

(13:30-13:50) **A-33** Perpendicularly-Oriented Block Copolymers Containing Silicon-rich Hyperbranched Polymers for High Resistance to O_2-RIE [Invited] **30** (2) 191
Seina Yamazaki (1), Rin Odashima (1), Takehiro Seshimo (2), and Teruaki Hayakawa (1,3), Department of Materials Science and Engineering, School of Materials and Chemical Technology, Tokyo Institute of Technology (1), Tokyo Ohka Kougyo Co., Ltd. (2), Precursory Research for Embryonic Science and Technology, Japan Science and Technology Agency (3)

(13:50-14:10) **A-34** Influence of Flory-Huggins Interaction Parameters on DSA Pattern Quality [Invited]
Yoon Hyung Hur, Yeon Sik Jung, Korea Advanced Institute of Science and Technology, KAIST

(14:10-14:30) **A-35** Evaluation of Block Copolymer Structure using Soft X-Ray Scattering **30** (1) 77
Yusuke Nakatani (1), Tetsuo Harada (1), Atsushi Takano (2), and Takeo Watanabe (1), University of Hyogo (1), Nagoya University (2)

(14:30-14:50) **A-99** Design and Synthesis of Sub-10 nm DSA Materials **30** (1) 83
Xuemiao Li, Jie Li, Hai Deng, Fudan University

14:50-14:55 Break

＊Computational /Analysis Approach For Lithography＊

14:55-16:35 Chairpersons: Chris A. Mack, Fractilia and Takahiro Kozawa, Osaka University

(14:55-15:35) **Keynote Lecture A-36** Stochastics and the Phenomenon of Line-Edge Roughness
Chris A. Mack, Fractilia

(15:35-15:55) **A-37** Dynamics of DSA Defects [Invited]
Kenji Yoshimoto (1,2), Mikito Takenaka (3,4), Teruaki Hayakawa (5), Tsukasa Azuma (6), Yuriko Seino (6), Hironobu Sato (6), Yusuke Kasahara (6), Katsuyoshi Kodera (6), Phubes Jiravanichsakul (6), Ken Miyagi (6), and Masayuki Shiraishi (6), Center for the Promotion of Interdisciplinary Education and Research, Kyoto University (1), Department of Chemical Engineering, Graduate School of Engineering, Kyoto University (2), Institute for Chemical Research, Kyoto University (3), Structural Materials Science Laboratory, SPring-8 Center, RIKEN Harima Institute Research (4), Department of Organic and Polymeric Materials, Tokyo Institute of Technology (5), Evolving Nano-process Infrastructure Development Center, Inc. (6)

(15:55-16:15) **A-38** Relationship between Sensitization Distance and Photon Shot Noise in Line Edge Roughness Formation of Chemically Amplified Resists used for Extreme Ultraviolet Lithography [Invited] **30** (2) 197
Takahiro Kozawa (1), Julius Joseph Santillan (2), and Toshiro Itani (2), Osaka University (1), Evolving nano process Infrastructure Development Center, Inc. (EIDEC) (2)

(16:15-16:35) **A-39** Inorganic Resist Model for EUV based on Microscopic Parameters [Invited]
Sander Wuister (1), Claire van Lare (1), Ruben Maas (1), and Gijsbert Rispens (2), ASML Research (1), ASML D&E (2)

16:35-16:50 Break

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June 28, Wednesday

Room A (Room 301)

English Symposia: Materials & Processes for Advanced Microlithography, Nanotechnology and Phototechnology

16:50-17:50	Chairpersons: Sander Wuister, ASML Research and Kenji Yoshimoto, Kyoto University	
(16:50-17:10)	**A-40** Multiscale Simulation of Development Process in Electron Beam Lithography [Invited] Masaaki Yasuda, Sho Hitomi, Hiroaki Kawata, and Yoshihiko Hirai, Department of Physics and Electronics, Osaka Prefecture University	**30** (2) 205
(17:10-17:30)	**A-41** Response to the Guide-Patterns from Directed Self-Assembly Bongkeun Kim, Seok-Han Park, and Soo-yong Lee, SAMSUNG ELECTRONICS	
(17:30-17:50)	**A-42** Resist Investigation Method using ab initio MO Calculation on basis of Approximation Molecular Model Shohei Nagata, Shota Niihara, Tetsuo Harada, and Takeo Watanabe, University of Hyogo	**30** (5) 583
17:50-17:55	Break	

＊PST Award Ceremony＊

17:55-18:10	Chairperson: Haruyuki Okamura, Osaka Prefecture University Report on the Selection of the Photopolymer Science and Technology Award 2017 Minoru Tsuda, President of the Society of Photopolymer Science and Technology	
	The Photopolymer Science and Technology Award 171100, The Outstanding Achievement Award 2017 Paul Nealey, University of Chicago	**30** (1) 3
	The Photopolymer Science and Technology Award 172100, The Best Paper Award 2017 Kenji Yoshimoto (1), Akihisa Yoshida (1), Masahiro Ohshima (1), Takashi Taniguchi (1), Katsuyoshi Kodera (2), Yoshihiro Naka (2), Hideki Kanai (2), Sachiko Kobayashi (2), Simon Maeda (2), Phubes Jiravanichsakul (2), Katsutoshi Kobayashi (2), and Hisako Aoyama (2), Kyoto University (1), Toshiba (2)	**30** (1) 7
	The Photopolymer Science and Technology Award 172200, The Best Paper Award 2017 Kyohei Nakano, Yujiao Chen, Kaori Suzuki, and Keisuke Tajima, RIKEN	**30** (1) 13

18:15-20:00 **Conference Banquet at Room E (Room 103, 1F)**

June 28, Wednesday

Room B (Room 302)

English Symposia: Materials & Processes for Advanced Microlithography, Nanotechnology and Phototechnology

＊Advanced 3D Packaging, Next Generation MEMS＊

9:00-10:35 Chairpersons: Sanjay Malik, FUJIFILM Electronic Materials and Takumi Ueno, Shinshu University

(9:00-9:45) **Keynote Lecture A-43** Emerging Trends in Microelectronic Packaging and the Opportunity for Advanced Polymer Materials

Islam Salama, Sid Alur, and Lauren Link, Intel Corporation,

(9:45-10:10) **A-44** Packaging Materials Development for Automotive System [Invited](25 min.) **30** (2) 211

Toshiaki Ishi(1), Nobutake Tsuyuno (1), Tomokazu Tanase (1), Yusuke Yasuda (1), and Yoshitaka Takezawa (2), Center of Technology Innovation-Materials, Research & Development Group, Hitachi Ltd.(1), Hitachi Chemical Co., Ltd. (2)

(10:10-10:35) **A-45** Dielectric Materials Conducive for Panel Level Packaging [Invited](25 min.)

Sanjay Malik, Fujifilm Electronic Materials, U.S.A.

10:35-10:50 Break

10:50-12:30 Chairpersons: Islam Salama, Intel Corporation and Yusuke Tsuda, Kurume National College of Technology

(10:50-11:10) **A-46** Surface Wettability Controllable Polyimides Having Various Functional Groups by UV Light Irradiation [Invited] **30** (2) 217

Yusuke Tsuda, Kurume National College of Technology

(11:10-11:30) **A-47** Study of Low Temperature Curable Polybenzoxazole Precursors Containing Aliphatic Dicarboxylic Acid Structures **30** (2) 225

Kenichi Iwashita, Hitachi Chemical

(11:30-11:50) **A-100** UV Laser Releasable Temporary Bonding Materials for Advanced Packaging Process

Hikaru Mizuno, Yooichiroh Maruyama, Takashi Mori, Hiroyuki Ishii, Kenzo Ohkita, and Koichi Hasegawa, JSR

(11:50-12:10) **A-48** Development of Positive Tone Photo-Definable Material for Redistribution Layer **30** (2) 231

Akitoshi Tanimoto, Yu Aoki, Sangchul Lee, Mika Kimura, and Mamoru Sasaki, Hitachi Chemical

(12:10-12:30) **A-49** Control of Close/Open Pores and Patterning in Porous Polyimide Film Prepared in the High-Pressure CO_2 UV Exposure

Kentaro Taki (1), Tatsuki Isawa (1), and Akira Mizoguchi (2), Kanazawa University (1), Sumitomo Electric Industries (2)

12:30-13:20 Lunch

13:20-14:20 Chairpersons: Sanjay Malik, FUJIFILM Electronic Materials and Kentaro Taki, Kanazawa University

(13:20-13:40) **A-50** Photocuring of Radically Polymerizable Hyperbranched Polymers Having Degradable Linkage [Invited] **30** (2) 241

Eriko Sato, Yoji Yamashita, Takashi Nishiyama, and Hideo Horibe, Department of Applied Chemistry and Bioengineering, Graduate School of Engineering, Osaka City University

(13:40-14:00) **A-51** Near Ultraviolet-Sensitive Polyurethanes Networked with Photolabile Carbamoyloxime Linker Units **30** (2) 247

Kanji Suyama (1) and Hideki Tachi (2), Faculty of Liberal Arts and Sciences, Osaka Prefecture University (1), Textile & Polymer Section, Technology Research Institute of Osaka Prefecture (2)

(14:00-14:20) **A-52** Development of Pressure-Sensitive Adhesives Degradable with Ultrasonic Irradiation **30** (2) 253
Hideki Tachi (1) and Kanji Suyama (2), Textile & Polymer Section, Technology Research Institute of Osaka Prefecture (1), Faculty of Liberal Arts and Sciences, Osaka Prefecture University (2)

14:20-14:30 Break

＊Nanobiotechnology＊

14:30-16:00 Chairpersons: Masao Kamimura, Tokyo University of Science and Takanori Ichiki, The University of Tokyo

(14:30-14:55) **A-53** Alignment of Gold Nanorods in Directionally Solidified Polymer Blends [Invited] (25 min.) **30** (3) 259
Hirotaka Ejima (1), Ayako Sakurai (2), and Naoko Yoshie (2), Department of Materials Engineering, The University of Tokyo(1), Institute of Industrial Science, The University of Tokyo (2)

(14:55-15:20) **A-54** Enzyme-loaded Polyion Complex Vesicles as In Vivo Nanoreactors [Invited] (25 min.)
Yasutaka Anraku (1,2), The University of Tokyo (1), Innovation Center of NanoMedicine (iCONM) (2)

(15:20-15:40) **A-55** Photo-assisted Control of the Initiation of Enzyme Reaction
Shingo Ueno (1), Shusuke Sato (1), and Takanori Ichiki (1,2), Innovation Center of NanoMedicine (iCONM) (1), The University of Tokyo (2)

(15:40-16:00) **A-56** Multiparametric Evaluation of Individual Nanobio-particles on a Microfluidic Chip
Takanori Akagi (1) and Takanori Ichiki (1,2), The University of Tokyo (1), Innovation Center of NanoMedicine (iCONM) (2)

16:00-16:10 Break

16:10-17:45 Chairpersons: Takanori Akagi and Hirotaka Ejima, The University of Tokyo

(16:10-16:35) **A-57** Cell Surface Engineering for Regulating Ischemic Reperfusion Injury in Allogeneic Pig Kidney Transplantation [Invited] (25 min.)
Yuji Teramura (1,2), Dept. of Bioengineering, The University of Tokyo (1), Rudbeck Laboratory, Uppsala University (2)

(16:35-17:00) **A-58** Design of Novel Functions in Thermoresponsive Hydrogel [Invited] (25 min.)
Aya Mizutani Akimoto, The University of Tokyo

(17:00-17:25) **A-59** 2-Nitrobenzenesulfonamide Group that Responds to Intracellular Redox Potential with Enhanced Photostability for a Construction of Polymer-siRNA Conjugate System [Invited] (25 min.)
Hiroyasu Takemoto, Huang Chih Hao, Takahiro Nomoto, Keishiro Tomoda, Makoto Matsui, and Nobuhiro Nishiyama, Institute of Innovative Research, Tokyo Institute of Technology

(17:25-17:45) **A-60** Near-Infrared to Visible Upconversion Emission Induced Photopolymerization: Polystyrene Shell Coated $NaYF_4$ Nanoparticles for Fluorescence Bioimaging and Nanothermometry **30** (3) 265
Masao Kamimura (1,2), Yuto Yano (1), Shuhei Kuraoka (1), Satoru Suyari (1), Takuji Ube (1), Laura Wortmann (1), and Kohei Soga (1,2), Department of Materials Science and Technology, Tokyo University of Science (1), Imaging Frontier Center (IFC), Tokyo University of Science (2)

17:55-18:10 **＊PST Award Ceremony＊ at Room A** (Room 301)
18:15-20:00 **Conference Banquet at Room E (Room 103, 1F)**

June 29, Thursday

Room A (Room 301)

English Symposia: Materials & Processes for Advanced Microlithography, Nanotechnology and Phototechnology

＊Photopolymers in 3-D Printing/Additive Manufacturing＊

9:30-10:30 Chairpersons: Robert Allen, IBM and Hidemitsu Furukawa, Yamagata University

Keynote Lecture A-61 From Molecules to Manufacturing: Expanding the Materials and Technology Capabilities of Vat Photopolymerization (60 min.)
Christopher B. Williams (1,2) and Timothy E. Long (1,3), Macromolecules Innovation Institute (1), Department of Mechanical Engineering (2), Department of Chemistry (3), Virginia Tech

10:30-11:00 Break

11:00-12:30 Robert Allen, IBM and Hidemitsu Furukawa, Yamagata University

(11:00-11:25) **A-63** Functional Materials from Designer Photoresins [Invited] (25 min.)
Carl Thrasher, Johanna Schwartz, Bo Cao, Troy Becker, and Andrew Boydston, University of Washington

(11:25-11:50) **A-64** Applications and Materials in 3D printing [Invited] (25 min.)
Keng Hsu, Arizona State University

(11:50-12:10) **A-65** On-Demand Process based on Laser Direct Writing and the Sensor Applications **30** (3) 341
Akira Watanabe (1) and Jinguang Cai (2), Institute of Multidisciplinary Research for Advanced Materials, Tohoku University (1), Institute of Materials, China Academy of Engineering Physics (2)

(12:10-12:30) **A-66** Application of Artificial Skin of Double Cone Tube made of Acrylic Resin formed by Micro-Stereolithography **30** (3) 345
Katsuaki Yamane and Akira Kawai, Department of Electrical Engineering, Nagaoka University of Technology

12:30-13:20 Lunch

＊Next Generation Lithography, EB Lithography and Nanotechnology＊

13:20-13:40 Chairpersons: Wang Yueh, Intel and Tsukasa Azuma, EIDEC

(13:20-13:40) **A-67** Double-Deprotected Chemically Amplified Photoresists (DD-CAMP): Higher-Order Lithography **30** (3) 351
William Earley (1), Kenji Hosoi (2), Arata Takahashi (2), Takashi Aoki (2), Brian Cardineau (1), Amrit Narasimhan (1), Koichi Miyauchi (2), Deanna Soucie (1), Jay Chun (1), Michael O'Sullivan (1), and Robert Brainard (1), SUNY Polytechnic Institute (1), Central Glass (2)

＊193 nm Lithography Extension＊

13:40-14:55 Chairpersons: Wang Yueh, Intel and Tsukasa Azuma, EIDEC

(13:40-14:05) **A-68** Silicon Infiltration into Functional Polymer for Nano-scale Pattern Development [invited] (25 min.) **30** (3) 361
Kazuki Yamada (1), Masatoshi Yamato (2), Kenichi Oyama (2), Hidetami Yaegashi (2), Takehiro Seshimo (3), Yoshitaka Komuro (3), and Katsumi Ohmori (3), Process Development Center, Tokyo Electron (1), Patterning Solution Project, Tokyo Electron (2), Tokyo Ohka Kogyo (3)

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June 29, Thursday

Room A (Room 301)

English Symposia: Materials & Processes for Advanced Microlithography, Nanotechnology and Phototechnology

(14:05-14:30)	**A-69** Advanced Multi-Layer Process for 193i Extension [invited] (25 min.) Takashi Katagiri, Tatsuya Sakai, Hiroki Nakagawa, Masayoshi Ishikawa, Ichihiro Miura, Goji Wakamatsu, and Tsubasa Abe, JSR	**30** (3) 367
(14:30-14:55)	**A-70** Challenges and Progress in Low Defectivity for Advanced ArF Lithography Processes using Surface Localized Material Technology [invited] (25 min.) Michihiro Shirakawa (1), Toru Fujimori (1), Naohiro Tango (1), Kazuhiro Marumo (1), Kei Yamamoto (1), Hidenori Takahashi (1), Ryo Nishio (2), Akiyoshi Goto (2), and Mitsuhiro Fujita (3), Electronic Materials Research Laboratories (1), Synthetic Organic Chemistry Laboratories (2), Analysis Technology Center (3), FUJIFILM	
14:55-15:05	Break	
15:05-16:15	Chairpersons: Wang Yueh, Intel and Tsukasa Azuma, EIDEC	
(15:05-15:30)	**A-71** Novel Spin on Planarization Technology by Photo Curing SOC (P-SOC) [invited] (25 min.) Takafumi Endo, Rikimaru Sakamoto, Keisuke Hashimoto, Daigo Saito, Hirokazu Nishimaki, Ryo Karasawa, and Hikaru Tokunaga, Semiconductor Materials Research Department, Materials Research Laboratories, Nissan Chemical Industries, Ltd.	**30** (3) 373
(15:30-15:55)	**A-72** Investigation on Spin-on Carbon Hardmask Integration [invited] (25 min.) Sanghak Lim, Yushin Park, Seungwook Shin, Yunjun Kim, Taeho Kim, Huichan Yun, and Jeongyun Yu, SAMSUNG SDI	
(15:55-16:15)	**A-101** Nano-Filtration for Contamination Control and Defectivity Improvements in Advanced Lithography Materials Rao Varanasi, Toru Umeda, Michael Mesawich, and Patrick Connor, Lawrence Johnson, Pall Corp.	
16:15-16:20	**Closing Remarks: Seiji Nagahara, Tokyo Electron**	

June 29, Thursday

Room B (Room 302)

English Symposia: Materials & Processes for Advanced Microlithography, Nanotechnology and Phototechnology

＊Chemistry for Advanced Photopolymer Science＊

9:00-9:45	Chairpersons: Atsushi Goto, Nanyang Technological University and Haruyuki Okamura, Osaka Prefecture University	
(9:00-9:45)	**Keynote Lecture A-73** Photo-induced Controlled Radical Polymerization and Radical Coupling Reaction using Organotellurium Compounds Shigeru Yamago, Kyoto University	
9:45-10:35	Chairpersons: Shigeru Yamago, Kyoto University and Haruyuki Okamura, Osaka Prefecture University	
(9:45-10:10)	**A-74** Photo-Induced Organocatalyzed Living Radical Polymerization and Its Applications [Invited] (25 min.) Atsushi Goto, Nanyang Technological University	**30** (4) 379
(10:10-10:35)	**A-75** Photoinitiated Metal Free Living Radical and Cationic Polymerizations [Invited] (25 min.) Yusuf Yagci, Istanbul Technical University	**30** (4) 385
10:35-10:50	Break	
10:50-11:30	Chairpersons: Yusuf Yagci, Istanbul Technical University and Haruyuki Okamura, Osaka Prefecture University	
(10:50-11:10)	**A-76** High Performance Photoinitiating Systems for Free Radical Polymerization: Application to Holographic Grating Recording Christian Ley (1), Ahmad Ibrahim (1), Christiane Carré (2), and Xavier Allonas (1), University of Haute Alsace (1), CNRS (2)	**30** (4) 393
(11:10-11:30)	**A-77** Dual-Cure Photo/Thermal-Initiating System for Cationic Polymerization of Epoxy M. Lecompère (1,2), X. Allonas (1), D. Maréchal (2), and A. Criqui (2), Laboratory of Macromolecular, Photochemistry and Engineering, University of Haute Alsace (1), Mäder (2)	**30** (4) 399
11:30-12:30	Lunch	
12:30-13:50	Chairpersons: Christian Ley, University of Haute Alsace and Shota Suzuki, Fuji Film	
(12:30-12:50)	**A-78** Photocuring Behaviors of Epoxy Resins using Deep-UV LEDs Haruyuki Okamura (1), Shoich Niizeki (2), Tetsumi Ochi (2), and Akikazu Matsumoto (1), Osaka Prefecture University (1), Nikkiso Giken (2)	**30** (4) 405
(12:50-13:10)	**A-79** Comparison of network structures photopolymerized by UV-LED and High-Pressure mercury lamp Kentaro Taki (1), Takehiro Taguchi (2), Ryota Hayashi (3), and Hiroshi Ito (4), School of Natural System, Kanazawa University (1), Department of Polymer Science and Engineering, Yamagata University (2), Department of Natural System, Kanazawa University (3), Department of Organic Materials Science, Graduate School of Organic Materials Science, Yamagata University (4)	**30** (4) 413
(13:10-13:30)	**A-80** UV-Curable Thiol-Ene Systems Composed of Dendritic Polyenes to Improve Photosensitivity Ken'ichi Aoki (1) and Ryota Imanishi (2), Department of Chemistry, Faculty of Science, Tokyo University of Science (1), Department of Molecular Design and Engineering, Graduate School of Engineering, Nagoya University (2)	**30** (4) 421
(13:30-13:50)	**A-81** Self initiated Photocatalytic Polymerization of Tough and Flexible Polyacrylamide Hydrogel/Polymeric Semiconductor C_3N_4 Composites Suphatchaya Lamkhao and Chamnan Randorn, Chiagmai University	**30** (4) 425
13:50-14:05	Break	

June 29, Thursday

Room B (Room 302)

English Symposia: Materials & Processes for Advanced Microlithography, Nanotechnology and Phototechnology

＊Advanced Materials for Photonic / Electronic Device and Technology＊

14:05-15:05 Chairperson: Shu Seki, Kyoto University

(14:05-14:25) **A-82** Vapochromic Fluorescence Observed for Emitting Amorphous Molecular Materials — **30** (4) 431
Kosuke Ogura and Hideyuki Nakano, Muroran Inst. Tech.

(14:25-14:45) **A-83** Inhomogeneous quantum yield distribution of Photochromic Reaction of Azobenzene in Solid State Poly (methy methacrylate) Matrix
Minori Kimura and Takashi Yamashita, Tokyo University of Technology

(14:45-15:05) **A-84** Green Color Purity Control of Dual-Excitation Upconversion Display by Using Polymer/ NaYF$_4$:Er^{3+} Crystal Transparent Composite — **30** (4) 437
Takumi Chihara (1), Soichiro Fujii (1), Masao Kamimura (1,2), and Kohei Soga (1,2), Department of Materials Science and Technology (1), Imaging Frontier Center (IFC) (2), Tokyo University of Science

15:05-15:50 Chairpersons: Takashi Yamashita, Tokyo University of Technology and Hideyuki Nakano, Muroran Institute of Technology

(15:05-15:25) **A-85** Highly-Photoluminescent Rod-Shaped Liquid Crystals with Excited-State Intramolecular Proton Transfer Capability
Mika Aotani, Tsuneaki Sakurai, and Shu Seki, Kyoto University

(15:25-15:50) **A-86** Design of Versatile Porous Structures: Diamond Porous Organic Salts (d-POS) [Invited] (25 min.)
Norimitsu Tohnai, Tetsuya Miyano, Atsushi Yamamoto, and Ichiro Hisaki, Department of Material and Science, Graduate School of Engineering, Osaka University

16:15-16:20 **Closing Remarks: Seiji Nagahara, Tokyo Electron at Room A (Room 301)**

June 29, Thursday

Room C (Room 303)

English Symposia: Materials & Processes for Advanced Microlithography, Nanotechnology and Phototechnology

＊Organic Solar Cells － Materials, Device Physics, and Processes＊

9:00-10:10	Chairpersons: Itaru Osaka, Hiroshima University and Kazuhiro Marumoto, University of Tsukuba	
(9:00-9:45)	**Keynote Lecture A-87** Interfaces and Nanostructures Toward High Performance Polymer Solar Cell Keisuke Tajima, RIKEN Center for Emergent Matter Science	
(9:45-10:10)	**A-88** The LUMO Levels of Donor Polymers in Organic Solar Cells [Invited] (25 min.) Hiroyuki Yoshida, Chiba University	
10:10-10:20	Break	
10:20-11:15	Chairpersons: Itaru Osaka, Hiroshima University and Kazuhiro Marumoto, University of Tsukuba	
(10:20-10:50)	**A-89** Parameters Controlling Photo-Induced Interfacial Charge Transfer Dynamics in Perovskite Solar Cells [Invited] (30 min.) Maning Liu (1), Samuel Chan (1), and ○Yasuhiro Tachibana (1,2), School of Engineering, RMIT University (1), Office for University-Industry Collaboration, Osaka University (2)	**30** (5) 577
(10:50-11:15)	**A-90** Time Resolved EPR Study on Photoinduced Charge-Separations in Thin Films of Thiophene-Thiazolothiazole Copolymers [Invited] (25 min.) Yasuhiro Kobori (1,2), Yuta Yamamoto (1), Takumi Ako (1), Takashi Tachikawa (1,2), and Itaru Osaka (3), Department of Chemistry, Graduate School of Science (1), Laser Molecular Photoscience Laboratory, Molecular Photoscience Research Center (2), Kobe University, Department of Applied Chemistry, Graduate School of Engineering, Hiroshima University (3)	**30** (5) 551
11:15-12:30	Lunch	
12:30-14:10	Chairpersons: Hideo Ohkita, Kyoto University and Hiroyuki Yoshida, Chiba University	
(12:30-13:00)	**A-91** Fullerene-free Polymer Solar Cells with Over 12% Efficiencies [Invited] (30 min.) Jianhui Hou, Chinese Academy of Sciences (CAS)	
(13:00-13:25)	**A-92** Influence of Terminal Imide Units on Properties and Photovoltaic Characteristics for Benzothiadiazole-based Nonfullerene Acceptors [Invited] (25 min.) Yutaka Ie, Osaka University	**30** (5) 557
(13:25-13:50)	**A-93** Non-Polycyclic π-Conjugated Molecules for Attaining Singlet Exciton Fission Character in Organic Photovoltaics [Invited] (25 min.) So Kawata, Ayaka Saito, Hiroko Minaki, ○Yong-Jin Pu, Yamagata University	
(13:50-14:10)	**A-94** Synthesis of Heterole-fused Benzothiadiazoles as Key Unit for Functional π-Conjugated Compound Tomoya Nakamura, Shuhei Okazaki, Noriko Arakawa, Motoi Satou, Masaru Endo, Yasuhisa Ishikura,Yasujiro Murata, Atsushi Wakamiya, Institute for Chemical Research, Kyoto University	**30** (5) 561
14:10-14:25	Break	
14:25-16:05	Chairpersons: Yong-Jin Pu, Yamagata University and Yutaka Ie, Osaka University	
(14:25-14:55)	**A-95** Efficiency and Photostability Improvements of Organic Solar Cells [Invited] (30 min.) Bong Soo Kim, Ewha Womans University	

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June 29, Thursday

Room C (Room 303)

English Symposia: Materials & Processes for Advanced Microlithography, Nanotechnology and Phototechnology

(14:55-15:20) **A-96** Toward ultra-flexible and highly stable organic solar cells: Materials and Technologies [Invited] (25 min.)
Kenjiro Fukuda (1,2,3), Hiroaki Jinno (2,4), Xiaomin Xu (2), Sungjun Park (2), Takao Someya (1,2,4), Thin-Film Device Laboratory, RIKEN (1), Emergent Soft System Research Team, Center for Emergent Matter Science, RIKEN (2), JST PRESTO (3), Electrical and Electronic Engineering and Information Systems, The University of Tokyo (4)

(15:20-15:45) **A-97** Investigation of the Degradation Mechanism of Pentacene/C_{60} Heterojunction Solar Cells and the Improvement of Lifetimes by Inserting Buffer Layers [Invited] (25 min.)
Kazuhiro Marumoto (1,2,3), Takuya Fujimori (1), Yusuke Yamaki (1), Division of Materials Science, University of Tsukuba(1), Tsukuba Research Center for Interdisciplinary Materials Science (TIMS), University of Tsukuba(2), Japan Science and Technology Agency (JST) (3)

(15:45-16:05) **A-98** Effect of Molecular and Thin Film Structures on Thermal Stability of Polymer Solar Cells
Masahiko Saito, Itaru Osaka, Department of Applied Chemistry, Hiroshima University

16:15-16:20 **Closing Remarks: Seiji Nagahara, Tokyo Electron at Room A (Room 301)**

June 27, Tuesday

Room C (Room 303)

Japanese Symposium: Polyimides and High Temperature Polymers -Functionalization and Practical Applications-
日本語シンポジウム：ポリイミド及び高温耐熱樹脂−機能化と応用

9:30-10:45	座長：岩手大学　大石好行、東京工業大学　柿本雅明	
(9:30-9:55)	**B1-01** 多脂環構造ポリイミドの透明性向上技術 東京工芸大学(1)，JXエネルギー(2)　○松本利彦(1)，小澤将希(1)，水田智大(1)，小松伸一(2)	**30** (2) 133
(9:55-10:20)	**B1-02** Promotion of Thermal Imidization of Semi-Aliphatic Polyimide Precursors by Incorporation of Polyethylene Glycol and Their Modified Solid Structures 東京工業大学(1)，豊橋技術科学大学(2) ○内田翔也(1)，石毛亮平(1)，竹市力(2)，安藤慎治(1)	**30** (2) 139
(10:20-10:45)	**B1-03** エチニル基を有する硬化性ポリイミドの合成と性質 茨城大学　○森川敦司，菅谷紀宏	**30** (2) 147
10:45-11:00	休憩	
11:00-11:50	座長：茨城大学　森川敦司、久留米高等専門学校　津田祐輔	
(11:00-11:25)	**B1-04** Wetting Transition on Microstructured Polyimide Surface Yuxuan Han (1,2), Yingwei Liu (2), and Fumio Uchikoba(1), Department of Precision Machinery Engineering, Nihon University (1), Department of Mechanical Design, Xi’an University of Technology (2)	
(11:25-11:50)	**B1-05** How Temperture Affect Wettability on Microstructured Polyimide Surface Yingwei Liu (1), Yuxuan Han(1,2), Zhengwei Yang(1), and Yasushiro Nishioka(2), Department of Mechanical Design, Xi’an University of Technology (1), Department of Precision Machinery Engineering, Nihon University (2)	
11:50-13:00	昼食休憩	
13:00-14:00	座長：東レ　富川真佐夫	
	基調講演 B1-06　半導体パッケージ基板用絶縁材料 味の素　中村茂雄	
14:00-15:15	座長：東京工芸大学　松本利彦、横浜国立大学　大山俊幸	
(14:00-14:25)	**B1-07** Polyimides and High Temperature Polymers -Functionalization and Practical Applications- Mika Kimura, Yu Aoki, Sangchul Lee, Akitoshi Tanimoto, and Mamoru Sasaki, Hitachi Chemical Co., Ltd.	**30** (2) 153
(14:25-14:50)	**B1-08** 高屈折率熱可塑性ポリシアヌレートの合成と光学特性 岩手大学、史松炎，芝崎祐二，○大石好行	
(14:50-15:15)	**B1-09** Negative-tone Photodefinable Underfill having High Resolution and Appropriate Thermal Fluidity 日立化成 (1)，大阪大学 (2)　　満倉一行(1)，峯岸知典(1)，藤本公三(2)	**30** (2) 157
15:15-15:30	休憩	
15:30-16:20	座長：東京工業大学　安藤慎治，日立化成　峯岸知典	
(15:30-15:55)	**B1-10** 紫外線照射により表面濡れ性制御が可能な長鎖アルキル基含有ポリイミド 久留米高等専門学校　○津田祐輔、川端将真	**30** (2) 163

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(15:55-16:20)	**B1-11** Surface Fabrication of Block Copolymer-Templated Polyimide Films by Reactive Ion Etching 東京工業大学(1)，JST さきがけ(2)　○駒村貴裕(1)，早川晃鏡(1,2)	**30** (2) 173
16:20-17:10	座長：東京工業大学　早川晃鏡、日立化成　佐々木守	
(16:20-16:45)	**B1-12** ポリアリレートーシリコーン共重合体への反応現像画像形成の適用による微細パターン形成 横浜国立大学　○大山俊幸，三好麻理子，所雄一郎	**30** (2) 177
(16:45-17:10)	**B1-13** 銅マイグレーション耐性を向上させた感光性ポリイミドシートの開発 東レ　○富川真佐夫，松村和行，荘司優，龍田佳子，奥田良治	**30** (2) 181

Room C (Room 303)

Japanese Symposium: General Scopes of Photopolymer Science and Technology
日本語シンポジウム：一般講演

13:00-14:40　座長：千葉大学　高原茂，東京理科大学　有光晃二

(13:00-13:20)　**B4-01** Relation between Reactivity of Iodonium Salts in NIR Photoinitiating Systems Comprising Anions with Different Coodination Behavior
サンアプロ(1)，Niederrhein University(2)　白石篤志(1)，Dennis Oprych(2)，Christian Schmitz(2)，木村秀基(1)，Bernd Strehmel(2)

(13:20-13:40)　**B4-02** 光塩基発生剤を用いた新規なエポキシ樹脂系レジストの感光特性　**30** (3) 271
(1)日本化薬株式会社，(2)東京理科大学　寺田究(1,2)，古谷昌大(2)，有光晃二(2)

(13:40-14:00)　**B4-03** Heterocoerdianthrone Derivative as Dispersant for Single-Walled Carbon Nanotubes and Formation of Thin Film
千葉大学　Yuting. Ke，高原 茂

(14:00-14:20)　**B4-04** 高分子固体中におけるベンゾフェノン燐光寿命の不均一分布とポリマーマトリックス依存性
東京工科大学　岩崎瑛佑，川島宏介，小林亜由美，山下俊

(14:20-14:40)　**B4-05** ナノインプリント用ガス透過性をもつテンプレート材料の特性評価　**30** (3) 275
(1)富山県立大学，(2)三光合成，(3)リソテックジャパン　杉野直人(1)，竹井敏(1)，中島信也(1)，花畑誠(1)，亀田隆夫(2)，関口淳(3)

14:40-15:00　休憩

Japanese Symposium: Resist Removal Technology
日本語シンポジウム：レジスト除去技術

15:00-16:00　座長：金沢大学　石島達夫，香川高等専門学校　山本雅史

(15:00-15:20)　**B4-06**　化学増幅ポジ型レジストにおける低分子化合物添加による溶解促進効果　**30** (3) 281
大阪市立大学大学院工学研究科　高森司真，西山聖，佐藤絵理子，堀邊英夫

(15:20-15:50)　**B4-07**　オゾンマイクロバブルによる水溶液中での親水性高分子の分解　**30** (3) 285
大阪市立大学大学院工学研究科　西山聖，松浦昂平，佐藤絵理子，米谷紀嗣，堀邊英夫

(15:50-16:00)　**B4-08**　レーザー照射を用いたレジスト剥離現象の解析（招待講演）　**30** (3) 291
大阪工業大学工学部 (1)，大阪工業大学ロボティクス＆デザイン工学部 (2)，大阪大学サイエンス・テクノロジー・アントレプレナーシップ・ラボラトリー(3)，大阪市立大学大学院工学研究科(4)　神村共住 (1)，布晃輔 (1)，山城鷹之 (1)，梅田悠史(1)，辻本慎吾(1)，倉前宏行(2)，中村亮介(3)，西山聖(4)，堀邊英夫(4)

16:00-16:10　休憩

16:10-16:50　座長：大阪市立大学大学院　堀邊英夫，大阪工業大学　神村共住

(16:10-16:30)　**B4-09**　水蒸気雰囲気下のマイクロ波励起プラズマによるレジスト除去メカニズムの検討（招待講演）
金沢大学理工研究域サステナブルエネルギー研究センター(1)，金沢大学自然科学研究科(2)，大阪市立大学大学院工学研究科(3)　石島達夫(1)，鈴木宏明(2)，田中康規(2)，上杉喜彦(2)，西山聖(3)，堀邊英夫(3)

(16:30-16:50)　**B4-10**　水素ラジカルを用いたレジスト除去における除去速度の圧力依存性　**30** (3) 297
香川高等専門学校(1)，静岡大学(2)，北陸先端科学技術大学院大学(3)，大阪市立大学大学院(4)　山本雅史(1)，城井智弘(1)，長岡史郎(1)，鹿間共一(1)，梅本宏信(2)，大平圭介(3)，高木誠司(4)，西山聖(4)，堀邊英夫(4)

June 28, Wednesday

Room D (Room 303)

Japanese Symposium: Plasma Photochemistry and Functionalization of Polymer Surface

日本語シンポジウム プラズマ光化学と高分子表面機能化

10:00-12:00	座長：埼玉工大　矢嶋龍彦，岡山理大　中谷達行	
(10:00-10:30)	**B2-01** 生体適合性メタクリル酸系高分子のプラズマ誘起反応におけるエステル基の効果 岐阜薬大(1)，松山大薬(2)，中部学院大(3)，　笹井泰志(1)，中牟田晧平(1)，土井直樹(1)，山内行玄(2)，葛谷昌之(3)，近藤伸一(1)	
(10:30-11:00)	**B2-02** プラズマ照射が誘起する人工細胞膜の変形の可視化と分子透過過程との相関の検討 愛媛大(1)，パール工業(2)，（株）Y's(3)　○本村英樹(1)，永岩秀憲(1)，山本健太(1)，木戸 祐吾(1,2)，佐藤晋(1,3)，神野雅文(1)	
(11:00-11:30)	**B2-03** シリコーンポリマー溶液のエレクトロスプレー堆積に及ぼす放電の影響 東京大工研マテリアル工専攻(1)，ナノ医療イノベーションセンター(2)　○橋本光平(1)，竹原宏明(1)，一木隆範(1,2)	
(11:30-12:00)	**B2-04** 低温プラズマ技法によるNSAIDs(非ステロイド性抗炎症薬)の高分子プロドラッグの調製とその物理化学特性 松山大薬(1)，岐阜薬大(2)，中部学院大(3)　山内行玄(1)，土井直樹(2)，笹井泰志(2)，近藤伸一(2)，葛谷昌之(3)	**30** (3) 303
12:00-13:30	昼食休憩	
13:30-15:00	座長：東京大　一木隆範，愛媛大　本村英樹	
(13:30-14:00)	**B2-05** 基板バイアス大気圧プラズマジェットを用いたフッ素含有ポリマーの表面修飾 静岡大電工研(1)，静岡大総科技(2)，インドネシア大工(3)，　永津雅章(1,2)，金原 正寛(2)，Tomy Abuzairi(3)	**30** (3) 307
(14:00-14:30)	**B2-06** プラズマを利用したPdナノ粒子担持高分子フィルムの調製とその触媒活性評価 岐阜薬大(1)，松山大薬(2)，中部学院大(3)　近藤伸一(1)，笹井泰志(1)，土井直樹(1)，山内行玄(2)，葛谷昌之(3)	**30** (3) 313
(14:30-15:00)	**B2-07** アガロース膜を通過したプラズマ生成イオンの大気圧質量分析 名城大(1)，サウスオーストラリア大(2)，ランカスター大(3) ○呉 準席(1)，Sung-Ha Hong(2)，Endre J.Szili(2)，太田貴之(1)，平松美根男(1)，Robert D.Short(2,3)，伊藤昌文(1)	**30** (3) 317
15:00-15:15	休憩	
5:15-16:45	座長：静岡大院工　永津雅章，岐阜薬大　近藤伸一	
(15:15-15:45)	**B2-08** ポリテトラフルオロエチレンを超親水化するアルゴン―アンモニア水プラズマに関する分光学的研究 埼玉工大院，グエン・ダン・ハイ，○矢嶋龍彦	**30** (3) 325
(15:45-16:15)	**B2-09** ステント用DLC被覆マグネシウム合金の生理食塩水中における電気化学的分極挙動 岡山理大(1)，日本医療機器技研(2)　○中谷達行(1)，福本順也(1)，和田 晃(2)，山下修藏(2)	**30** (3) 331
(16:15-16:45)	**B2-10** プラズマ重合SiO:CH微粒子堆積における基板材料の影響 千葉工大(1)，千葉工大院(2)，関東学院大(3)　○井上泰志 (1)，相原 巧(2)，高井 治(3)	**30** (3) 337

June 29, Thursday

Room D (Room 304)

Japanese Symposium: Photofunctional Materials for Electronic Devices

日本語シンポジウム：光機能性デバイス材料

9:10-10:30　座長：秋田大学　山口留美子，高分子学会フェロー　長谷川悦雄

(9:10-9:30)　**B3-15**　DNA錯体をゲート誘電体として用いたBioTFTメモリーの温度特性　**30** (4) 513
北京印刷学院(1), 千葉大学(2), 産総研(3), 清華大学(4)　梁　麗娟(1), Lian Fang Li(1), 三ツ村 泰(2), 中村一希(2), 植村　聖 (3), 鎌田俊英(3), Yen Wei(4), ○小林範久(1,2)

(9:30-9:50)　**B3-01**　側鎖にアゾベンゼンを有するポリイミドの紫外線照射による表面濡れ性の可逆的制御　**30** (4) 445
久留米高専　津田祐輔，坂田大地

(9:50-10:10)　**B3-02**　側鎖に桂皮酸エステルを有する高分子フィルムの光配向に対する照射波長の影響　**30** (4) 451
兵庫県立大学　生駒裕美，近藤瑞穂，川月喜弘

(10:10-10:30)　**B3-03**　スリットコーターを用い異なる塗布速度条件下で形成した液晶配向に関する研究　**30** (4) 457
長岡技術科学大学(1)，モンテレイ大学(2)　木村 宗弘(1)，高木 達哉(1)，Gerhard Didier de la Mora Hernández(2)

10:30-10:40　休憩

10:40-11:40　座長：高分子学会フェロー　長谷川悦雄，JST　木原尚子

(10:40-11:00)　**B3-04** p型およびn型液晶を用いたハイブリッド配向リバースモード素子の電気光学特性　**30** (4) 463
秋田大学　山口 留美子，井上 洸一，及川 侑紀，高須 智也

(11:00-11:20)　**B3-05**　ニッケル錯体を用いた液晶の光応答挙動
埼玉工業大学工学部(1)，大学院工学研究科(2)　木下基(1,2)，古川元行(2)

(11:20-11:40)　**B3-06**　回転ドラム式エレクトロスピニング法で延伸紡糸した高分子-圧電不織布の特性
産業技術総合研究所　フレキシブルエレクトロニクス研究センター(1), 豊橋技術科学大学大学院工学研究科電気・電子情報工学系(2), 北陸先端科学技術大学院大学先端科学技術研究科マテリアルサイエンス系　応用物理学領域(3)　延島 大樹(1)，石井 佑弥(2)，酒井 平祐(3)，吉田 学(1)，植村 聖(1)

11:40-13:00　昼食休憩

13:00-13:45　座長：高分子学会フェロー　長谷川悦雄，JST　木原尚子

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(13:45-14:05)　**B3-08**　対称的なアクセプター・ドナー・アクセプター型構造をもつ高効率熱活性化型遅延蛍光材料の開発　**30** (4) 475
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14:05-14:15　休憩

14:15-15:15　座長：愛知工業大学　森竜雄，高分子学会フェロー　長谷川悦雄

(14:15-14:35)　**B3-09**　表面修飾酸化亜鉛ナノ粒子の塗布型有機EL電子注入層への応用　**30** (4) 483
山形大学　大久哲，引地達也，夫勇進，加藤哲也，髙橋達弥，千葉貴之，城戸淳二

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June 29, Thursday

Room D (Room 304)

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(14:55-15:15) **B3-11** デュレン部位をスペーサーに有するビスターピリジンを用いた新規メタロ超分子ポリマーの合成とエレクトロクロミック特性
物質・材料研究機構　二宮美雄, 樋口昌芳

15:15-16:15 座長：JST　木原尚子，高分子学会フェロー　長谷川悦雄

(15:15-15:35) **B3-12** Electrochromic Behavior of Donor-Acceptor Polymers Containing Diketopyrrolopyrrole Unit **30** (4) 495
東京工業大学　WeiLi, 道信剛志

(15:35-15:55) **B3-13** 未修飾フラーレンC60を利用した高分子太陽電池への可溶性フラーレンの添加による特性改善 **30** (4) 501
愛知工業大学工学部 (1), 愛知工業大学大学院工学研究科 (2)
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(15:55-16:15) **B3-14** 種々のCa/Ta比におけるEr-Ybドープタンタル酸カルシウムのアップコンバージョン特性の調査 **30** (4) 507
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16:15-16:20 **Closing Remarks at Room A (Room 301)**

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Registration fee of whole conference including banquet is ￥35,000 yen until May 31, 2017 and ￥50,000 yen after June 1, 2017.

All the participants including speakers are requested to register in [Conference → Registration] at SPST Homepage before May 31, 2017.

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Banquet

Banquet will be open at 18:15 on June 28, 2017.

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English is used for presentations in English Symposia and Panel Symposium, “EUVL Insertion to HVM, and Its Extendibility”. Japanese and English are used for presentations in Japanese Symposia.

Each presentation will not be longer than 20 minutes including discussion except for the notified lectures.

A liquid-crystal display (LCD) projector operating with Windows 7-10 compatible PC (PowerPoint) is available at every room. All the speakers are requested to bring their files in a USB memory to the audio visual assistant of their presentation rooms in advance. The files stored in different media can be transferred to a USB memory. Speakers may connect their own PC (including Macintosh) to projectors when they request.

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懇親会

6 月 28 日（水）18 時 15 分より　当日参加費 6,000 円

講演言語　国際シンポジウム、国際セッション（一般講演）、著者および講演題目が共に英語で記載されている講演は英語で行い、それ以外の講演は日本語で行います。

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フォトテクノロジー
－材料とプロセスの最前線－

平成２９年６月２６日（月）～２９日（木）
幕張メッセ国際会議場
（JR 海浜幕張駅下車徒歩５分）

主催：　フォトポリマー学会（SPST）
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日本化学会　高分子学会　千葉大学