Takahiro Kozawa

List of Publications by Year
in descending order

108 papers	3,201 citations	186265 28 h-index	168389 53 g-index
109 all docs	109 docs citations	109 times ranked	375 citing authors

#	Article	IF	Citations
1	Radiation-Induced Acid Generation Reactions in Chemically Amplified Resists for Electron Beam and X-Ray Lithography. Japanese Journal of Applied Physics, 1992, 31, 4301-4306.	1.5	247
2	Radiation Chemistry in Chemically Amplified Resists. Japanese Journal of Applied Physics, 2010, 49, 030001.	1.5	243
3	Proton Dynamics in Chemically Amplified Electron Beam Resists. Japanese Journal of Applied Physics, 2004, 43, L848-L850.	1.5	168
4	Acid distribution in chemically amplified extreme ultraviolet resist. Journal of Vacuum Science & Technology B, 2007, 25, 2481-2485.	1.3	141
5	Resist Materials and Processes for Extreme Ultraviolet Lithography. Japanese Journal of Applied Physics, 2013, 52, 010002.	1.5	132
6	Potential Cause of Inhomogeneous Acid Distribution in Chemically Amplified Resists for Post Optical Lithography. Japanese Journal of Applied Physics, 2005, 44, 5836-5838.	1.5	129
7	Protonation Sites in Chemically Amplified Resists for Electron-Beam Lithography. Japanese Journal of Applied Physics, 2006, 45, L1256-L1258.	1.5	120
8	Study of Acid-Base Equilibrium in Chemically Amplified Resist. Japanese Journal of Applied Physics, 2007, 46, 7285.	1.5	110
9	Dependence of Absorption Coefficient and Acid Generation Efficiency on Acid Generator Concentration in Chemically Amplified Resist for Extreme Ultraviolet Lithography. Japanese Journal of Applied Physics, 2007, 46, L979-L981.	1.5	106
10	Relationship between Chemical Gradient and Line Edge Roughness of Chemically Amplified Extreme Ultraviolet Resist. Applied Physics Express, 2010, 3, 036501.	2.4	100
11	Analysis of acid yield generated in chemically amplified electron beam resist. Journal of Vacuum Science & Technology B, 2006, 24, 3055.	1.3	96
12	Analysis of Stochastic Effect in Line-and-Space Resist Patterns Fabricated by Extreme Ultraviolet Lithography. Applied Physics Express, 2013, 6, 026502.	2.4	78
13	Study on Radiation-Induced Reaction in Microscopic Region for Basic Understanding of Electron Beam Patterning in Lithographic Process (II) â€“Relation between Resist Space Resolution and Space Distribution of Ionic Speciesâ€“. Japanese Journal of Applied Physics, 2002, 41, 4213-4216.	1.5	74
14	Acid Generation Mechanism of Poly(4-hydroxystyrene)-Based Chemically Amplified Resists for Post-Optical Lithography: Acid Yield and Deprotonation Behavior of Poly(4-hydroxystyrene) and Poly(4-methoxystyrene). Japanese Journal of Applied Physics, 2006, 45, 6866-6871.	1.5	71
15	Reconstruction of Latent Images from Dose-Pitch Matrices of Line Width and Edge Roughness of Chemically Amplified Resist for Extreme Ultraviolet Lithography. Japanese Journal of Applied Physics, 2010, 49, 066504.	1.5	70
16	Polymer Screening Method for Chemically Amplified Electron Beam and X-Ray Resists. Japanese Journal of Applied Physics, 2004, 43, 3971-3973.	1.5	63
17	Dependence of Acid Generation Efficiency on Molecular Structures of Acid Generators upon Exposure to Extreme Ultraviolet Radiation. Applied Physics Express, 0, 1, 027004.	2.4	62
18	Resolution degradation caused by multispur effect in chemically amplified extreme ultraviolet resists. Journal of Applied Physics, 2008, 103, 084306.	2.5	62

#	Article	IF	Citations
19	Sensitization Distance and Acid Generation Efficiency in a Model System of Chemically Amplified Electron Beam Resist with Methacrylate Backbone Polymer. Journal of Photopolymer Science and Technology = [Fotoporima Konwakai Shi], 2007, 20, 577-583.	0.3	56
20	Image contrast slope and line edge roughness of chemically amplified resists for postoptical lithography. Journal of Vacuum Science & Technology B, 2007, 25, 2295.	1.3	53
21	Resolution blur of latent acid image and acid generation efficiency of chemically amplified resists for electron beam lithography. Journal of Applied Physics, 2006, 99, 054509.	2.5	50
22	Effect of Acid Generator Decomposition during Exposure on Acid Image Quality of Chemically Amplified Extreme Ultraviolet Resists. Japanese Journal of Applied Physics, 2011, 50, 076505.	1.5	47
23	X-ray Reflectivity Study on Depth Profile of Acid Generator Distribution in Chemically Amplified Resists. Applied Physics Express, 0, 1, 065004.	2.4	46
24	Subpicosecond pulse radiolysis in liquid methyl-substituted benzene derivatives. Radiation Physics and Chemistry, 2007, 76, 818-826.	2.8	45
25	Thermalization Distance of Electrons Generated in Poly(4-hydroxystyrene) Film Containing Acid Generator upon Exposure to Extreme Ultraviolet Radiation. Japanese Journal of Applied Physics, 2011, 50, 030209.	1.5	39
26	Relationship between Defects and Stochastic Effect in Chemically Amplified Resists Used for Extreme Ultraviolet Lithography. Japanese Journal of Applied Physics, 2013, 52, 076502.	1.5	36
27	Pulse Radiolysis Study on Proton and Charge Transfer Reactions in Solid Poly(methyl methacrylate). Japanese Journal of Applied Physics, 2004, 43, 4363-4367.	1.5	34
28	Assessment and Extendibility of Chemically Amplified Resists for Extreme Ultraviolet Lithography: Consideration of Nanolithography beyond 22 nm Half-Pitch. Japanese Journal of Applied Physics, 2011, 50, 076503.	1.5	34
29	Effect of Acid Generator Decomposition during Exposure on Acid Image Quality of Chemically Amplified Extreme Ultraviolet Resists. Japanese Journal of Applied Physics, 2011, 50, 076505.	1.5	31
30	Formation of Intramolecular Poly(4-hydroxystyrene) Dimer Radical Cation. Journal of Physical Chemistry B, 2008, 112, 9275-9280.	2.6	30
31	Effects of Ester Groups on Proton Generation and Diffusion in Polymethacrylate Matrices. Japanese Journal of Applied Physics, 2004, 43, 3981-3983.	1.5	28
32	Difference between Acid Generation Mechanisms in Poly(hydroxystyrene)- and Polyacrylate-Based Chemically Amplified Resists upon Exposure to Extreme Ultraviolet Radiation. Japanese Journal of Applied Physics, 2008, 47, 7125-7127.	1.5	28
33	Correlation between C₃₇ Parameters and Acid Yields in Chemically Amplified Resists upon Exposure to 75 keV Electron Beam. Japanese Journal of Applied Physics, 2009, 48, 06FC05.	1.5	27
34	Normalized Image Log Slope with Secondary Electron Migration Effect in Chemically Amplified Extreme Ultraviolet Resists. Applied Physics Express, 2009, 2, 095004.	2.4	27
35	Dissolution kinetics of poly(4-hydroxystyrene) with different molecular weight distributions in alkaline aqueous solution. Japanese Journal of Applied Physics, 2020, 59, 036505.	1.5	21
36	Dissolution characteristics and reaction kinetics of molecular resists for extreme-ultraviolet lithography. Journal of Vacuum Science & Technology B, 2007, 25, 2486.	1.3	20

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37	Difference of Spur Distribution in Chemically Amplified Resists upon Exposure to Electron Beam and Extreme Ultraviolet Radiation. Japanese Journal of Applied Physics, 2009, 48, 056508.	1.5	19
38	Relationships between quencher diffusion constant and exposure dose dependences of line width, line edge roughness, and stochastic defect generation in extreme ultraviolet lithography. Japanese Journal of Applied Physics, 2015, 54, 016502.	1.5	18
39	Backexposure Effect in Chemically Amplified Resist Process upon Exposure to Extreme Ultraviolet Radiation. Japanese Journal of Applied Physics, 2011, 50, 016504.	1.5	17
40	Relationship between Acid Generator Concentration and Acid Yield in Chemically Amplified Electron Beam Resist. Japanese Journal of Applied Physics, 2006, 45, 5735-5737.	1.5	16
41	Effect of Initial Dispersion of Protected Units on Line Edge Roughness of Chemically Amplified Extreme Ultraviolet Resists. Journal of Photopolymer Science and Technology = [Fotoporima Konwakai Shi], 2013, 26, 643-648.	0.3	16
42	Application of machine learning to stochastic effect analysis of chemically amplified resists used for extreme ultraviolet lithography. Japanese Journal of Applied Physics, 2021, 60, SCCC02.	1.5	16
43	Dependence of Acid Yield on Acid Generator in Chemically Amplified Resist for Post-Optical Lithography. Japanese Journal of Applied Physics, 2005, 44, 5832-5835.	1.5	15
44	Resist thickness dependence of line width roughness of chemically amplified resists used for electron beam lithography. Japanese Journal of Applied Physics, 2020, 59, 086501.	1.5	15
45	Relationship between Sensitivities of Chemically Amplified Resist Based on Adamantane Derivatives upon Exposure to ArF Excimer Laser, Electron Beam, and Extreme Ultraviolet Radiation. Applied Physics Express, 2008, 1, 067001.	2.4	14
46	Theoretical study of fabrication of line-and-space patterns with 7 nm quarter-pitch (7 nm space width) Tj ETQq0 0 0 rgBT /Overlock 10 Tf Relationship between sensitivity and chemical gradient. Japanese Journal of Applied Physics, 2015, 54, 056501.	1.5	13
47	Effects of an organotin compound on radiation-induced reactions of extreme-ultraviolet resists utilizing polarity change and radical crosslinking. Japanese Journal of Applied Physics, 2019, 58, 016504.	1.5	12
48	Swelling and dissolution kinetics of poly(4-hydroxystyrene) in tetrabutylammonium hydroxide (TBAH) aqueous solutions studied by quartz crystal microbalance (QCM) methodâ€"in comparison with tetramethylammonium hydroxide (TMAH) aqueous solutions. Japanese Journal of Applied Physics, 2022, 61, 066506.	1.5	12
49	Effect of Molecular Structure on Depth Profile of Acid Generator Distribution in Chemically Amplified Resist Films. Japanese Journal of Applied Physics, 2009, 48, 06FC03.	1.5	11
50	Feasibility study of sub-10-nm-half-pitch fabrication by chemically amplified resist processes of extreme ultraviolet lithography: II. Stochastic effects. Japanese Journal of Applied Physics, 2015, 54, 036507.	1.5	11
51	Sensitivity enhancement of chemically amplified EUV resists by adding acid-generating promoters. Japanese Journal of Applied Physics, 2017, 56, 06GD01.	1.5	11
52	Dissolution behavior of negative-type photoresists for display manufacture studied by quartz crystal microbalance method. Japanese Journal of Applied Physics, 2018, 57, 046501.	1.5	11
53	Effects of molecular weight and dispersity on performance of main-chain-scission-type resist. Japanese Journal of Applied Physics, 2019, 58, 020909.	1.5	11
54	Effect of Polymer Protection and Film Thickness on Acid Generator Distribution in Chemically Amplified Resists. Journal of Photopolymer Science and Technology = [Fotoporima Konwakai Shi], 2009, 22, 105-109.	0.3	10

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55	Theoretical study of fabrication of line-and-space patterns with 7 nm quarter-pitch using electron beam lithography with chemically amplified resist process: IV. Comparison with experimental results. Japanese Journal of Applied Physics, 2016, 55, 056503.	1.5	10
56	Deprotonation of Poly(4-hydroxystyrene) Intermediates: Pulse Radiolysis Study of Extreme Ultraviolet and Electron Beam Resist. Japanese Journal of Applied Physics, 2013, 52, 06GC04.	1.5	9
57	Relationship between information and energy carried by photons in extreme ultraviolet lithography: Consideration from the viewpoint of sensitivity enhancement. Japanese Journal of Applied Physics, 2015, 54, 086502.	1.5	9
58	Analysis of dissolution kinetics of narrow polydispersity poly(4-hydroxystyrene) in alkaline aqueous solution using machine learning. Japanese Journal of Applied Physics, 2021, 60, 066503.	1.5	9
59	Effect of surface free energy of organic underlayer on the dissolution kinetics of poly(4-hydroxystyrene) film in tetramethylammonium hydroxide aqueous developer. Japanese Journal of Applied Physics, 2022, 61, 056503.	1.5	9
60	Theoretical study of fabrication of line-and-space patterns with 7 nm quarter-pitch using electron beam lithography with chemically amplified resist processes: II. Stochastic effects. Japanese Journal of Applied Physics, 2015, 54, 096501.	1.5	8
61	Electron Beam Irradiation of Lead Halide Perovskite Solar Cells: Dedoping of Organic Hole Transport Materials despite Hardness of the Perovskite Layer. ACS Applied Materials & Interfaces, 2021, 13, 24824-24832.	8.0	8
62	Relationship between surface free energy and development process (swelling and dissolution kinetics) of poly(4-hydroxystyrene) film in water and 2.38 wt% tetramethylammonium hydroxide aqueous solution. Japanese Journal of Applied Physics, 2022, 61, 016502.	1.5	8
63	Dynamics of radical cations of poly(4-hydroxystyrene) in the presence and absence of triphenylsulfonium triflate as determined by pulse radiolysis of its highly concentrated solution. Chemical Physics Letters, 2016, 657, 44-48.	2.6	7
64	Analysis of trade-off relationships between resolution, line edge roughness, and sensitivity in extreme ultraviolet lithography using lasso regression. Japanese Journal of Applied Physics, 2020, 59, 076501.	1.5	7
65	Effect of molecular weight and protection ratio on line edge roughness and stochastic defect generation in chemically amplified resist processes of extreme ultraviolet lithography. Japanese Journal of Applied Physics, 2014, 53, 084002.	1.5	6
66	Theoretical study on trade-off relationships between resolution, line edge roughness, and sensitivity in resist processes for semiconductor manufacturing by extreme ultraviolet lithography. Japanese Journal of Applied Physics, 2019, 58, 096502.	1.5	6
67	Dissolution kinetics of main-chain-scission-type resist in organic developers. Applied Physics Express, 2021, 14, 026501.	2.4	6
68	Pattern collapse mitigation by controlling atmosphere during development process for semiconductor lithography. Japanese Journal of Applied Physics, 2021, 60, SCCA03.	1.5	6
69	Heating effect of the radiation chemistry of polyhydroxystyrene-type chemically amplified resists. Japanese Journal of Applied Physics, 2020, 59, 086506.	1.5	6
70	Effects of film thickness and alkaline concentration on dissolution kinetics of poly(4-hydroxystyrene) in alkaline aqueous solution. Japanese Journal of Applied Physics, 0, , .	1.5	6
71	Pulse radiolysis of carboxylic acids used as ligands of metal oxide nanocluster resists. Japanese Journal of Applied Physics, 2019, 58, 096504.	1.5	5
72	Dependence of relationship between chemical gradient and line width roughness of zirconia nanoparticle resist on pattern duty, acid generator, and developer. Japanese Journal of Applied Physics, 2019, 58, 036501.	1.5	5

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73	Theoretical study of interfacial effects on low-energy electron dynamics in chemically amplified resist processes of photomask fabrication. Japanese Journal of Applied Physics, 0, , .	1.5	5
74	Higher Sensitive Extreme Ultraviolet (EUV) Resist Materials Derived From <i>p-t</i>-Butylcalix[n]arenes (n = 4 and 8). Journal of Photopolymer Science and Technology = [Fotoporima Konwakai Shi], 2020, 33, 45-51.	0.3	5
75	Regression analysis of photodecomposable quencher concentration effects on chemical gradient in chemically amplified extreme ultraviolet resist processes. Japanese Journal of Applied Physics, 2020, 59, 116505.	1.5	5
76	Acid Diffusion Length in Line-and-Space Resist Patterns Fabricated by Extreme Ultraviolet Lithography. Japanese Journal of Applied Physics, 2013, 52, 076501.	1.5	4
77	Dynamics of Radical Ions of Hydroxyhexafluoroisopropyl-Substituted Benzenes. Journal of Physical Chemistry A, 2017, 121, 9458-9465.	2.5	4
78	Theoretical study on trade-off relationships between resolution, line edge roughness, and sensitivity in photomask production by electron beam lithography. Japanese Journal of Applied Physics, 2019, 58, 076501.	1.5	4
79	Pulse radiolysis of methacrylic acid ligand for zirconia nanoparticle resist. Japanese Journal of Applied Physics, 2019, 58, 036503.	1.5	4
80	Relationship between Resolution Blur and Stochastic Defect of Chemically Amplified Resists Used for Extreme Ultraviolet Lithography. Journal of Photopolymer Science and Technology = [Fotoporima Konwakai Shi], 2019, 32, 161-167.	0.3	4
81	Formation of intramolecular dimer radical ions of diphenyl sulfones. Scientific Reports, 2020, 10, 19823.	3.3	4
82	Study on radical dianions of carboxylates used as ligands of metal oxide nanocluster resists. Japanese Journal of Applied Physics, 2021, 60, 076503.	1.5	4
83	Analysis of mitigating factors for line edge roughness generated during electron beam lithography using machine learning. Japanese Journal of Applied Physics, 2021, 60, 076509.	1.5	4
84	Exploration of charge transport materials to improve the radiation tolerance of lead halide perovskite solar cells. Materials Advances, 2022, 3, 4861-4869.	5.4	4
85	Electrostatic effect on the dissolution kinetics of poly(4-hydroxystyrene) in alkaline aqueous solution. Japanese Journal of Applied Physics, 2022, 61, 086509.	1.5	4
86	Theoretical study on effects of photodecomposable quenchers in line-and-space pattern fabrication with 7 nm quarter-pitch using chemically amplified electron beam resist process. Japanese Journal of Applied Physics, 2017, 56, 046502.	1.5	3
87	Theoretical study on protected unit fluctuation of chemically amplified resists used for photomask production by electron beam lithography. Japanese Journal of Applied Physics, 2020, 59, 016503.	1.5	3
88	Estimation of electron affinity of photoacid generators: density functional theory calculations using static and dynamic models. Japanese Journal of Applied Physics, 2021, 60, SCCC03.	1.5	3
89	Relationship between blurring factors and interfacial effects in chemically amplified resist processes in photomask fabrication. Japanese Journal of Applied Physics, 2021, 60, 126504.	1.5	3
90	Dependence of photoresist dissolution dynamics in alkaline developers on alkyl chain length of tetraalkylammonium hydroxide. Japanese Journal of Applied Physics, 0, , .	1.5	3

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91	Study on deprotonation from radiation-induced ionized acrylate polymers including acid-generation promoters for improving chemically amplified resists. Japanese Journal of Applied Physics, 2022, 61, 066505.	1.5	3
92	Estimation of effective reaction radius for catalytic chain reaction of chemically amplified resist by Bayesian optimization. Japanese Journal of Applied Physics, 0, , .	1.5	3
93	Theoretical Study of Exposure Latitude of Chemically Amplified Resists Used for Extreme Ultraviolet Lithography. Japanese Journal of Applied Physics, 2011, 50, 106502.	1.5	2
94	Effect of Ultrahigh-Density Ionization of Resist Films on Sensitivity Using Extreme-Ultraviolet Free-Electron Laser. Applied Physics Express, 2012, 5, 096701.	2.4	2
95	Theoretical study on effects of electron thermal energy on sensitization process of chemically amplified electron beam resistsâ€"contribution to resist heating effect in electron beam mask writing. Japanese Journal of Applied Physics, 2019, 58, 116503.	1.5	2
96	Dynamics of Radical Cation of Poly(styrene acrylate)-Based Chemically Amplified Resist for Extreme Ultraviolet and Electron Beam Lithography. Japanese Journal of Applied Physics, 2011, 50, 06GD03.	1.5	2
97	Strategy for the breakthrough of RLS trade-off relationship in the development of novel resist materials and a developer. , 2019, , .		2
98	Resist Thickness Dependence of Latent Images in Chemically Amplified Resists Used for Electron Beam Lithography. Journal of Photopolymer Science and Technology = [Fotoporima Konwakai Shi], 2021, 34, 17-25.	0.3	2
99	Classification of lines, spaces, and edges of resist patterns in scanning electron microscopy images using unsupervised machine learning. Japanese Journal of Applied Physics, 0, , .	1.5	2
100	Sensitization mechanism of metal oxide nanocluster resists with carboxylic acid ligands. Japanese Journal of Applied Physics, 2022, 61, 086508.	1.5	2
101	Dependence of dose rate on the sensitivity of the resist under ultra-high flux extreme ultraviolet (EUV) pulse irradiation. Applied Physics Express, 2021, 14, 066502.	2.4	1
102	Fundamental study on dissolution kinetics of poly(4-hydroxystyrene) for development of high-resolution resists. , 2019, , .		1
103	Changes in molecular weight distribution caused by main-chain scission of electron beam resists. Japanese Journal of Applied Physics, 2020, 59, 126506.	1.5	1
104	Gel permeation chromatography analysis of remaining components of electron-beam-irradiated ZEP520A resist after development. Japanese Journal of Applied Physics, 2021, 60, 010901.	1.5	1
105	Mechanism of resist heating effect in chemically amplified resist. , 2020, , .		1
106	Formulation of trade-off relationships between resolution, line edge roughness, and sensitivity in sub-10 nm half-pitch region for chemically amplified extreme ultraviolet resists. Japanese Journal of Applied Physics, 2022, 61, 016501.	1.5	1
107	Decarboxylation efficiency of carboxylic acids as ligands of metal oxide nanocluster resists upon Î³-ray irradiation. Japanese Journal of Applied Physics, 0, , .	1.5	1
108	Effect of initial molecular weight distribution on pattern formation of main-chain-scission-type resists. Japanese Journal of Applied Physics, 2021, 60, 056501.	1.5	0