John S Villarrubia

List of Publications by Year
in descending order

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73 papers	3,001 citations	18 h-index	43 g-index
73 all docs	73 docs citations	73 times ranked	2143 citing authors

430874
254184

#	Article	IF	Citations
1	Algorithms for scanned probe microscope image simulation, surface reconstruction, and tip estimation. Journal of Research of the National Institute of Standards and Technology, 1997, 102, 425.	1.2	568
2	Nanoindentation of polymers: an overview. Macromolecular Symposia, 2001, 167, 15-44.	0.7	413
3	Morphological estimation of tip geometry for scanned probe microscopy. Surface Science, 1994, 321, 287-300.	1.9	272
4	Nitric oxide adsorption, decomposition, and desorption on Rh(100). Journal of Chemical Physics, 1987, 87, 750-764.	3.0	146
5	Formation of Si(111)-(1Ã—1)Cl. Physical Review B, 1990, 41, 9865-9870.	3.2	137
6	Experimental test of blind tip reconstruction for scanning probe microscopy. Ultramicroscopy, 2000, 85, 141-153.	1.9	130
7	Scanning-tunneling-microscopy study of the Si(111)-7Ã—7 rest-atom layer following adatom removal by reaction with Cl. Physical Review Letters, 1989, 63, 306-309.	7.8	118
8	Identification of the Products from the Reaction of Chlorine with the Silicon(111)-(7x7) Surface. Science, 1990, 248, 838-840.	12.6	97
9	Scanned probe microscope tip characterization without calibrated tip characterizers. Journal of Vacuum Science & Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena, 1996, 14, 1518.	1.6	94
10	Scanning electron microscope measurement of width and shape of 10 nm patterned lines using a JMONSEL-modeled library. Ultramicroscopy, 2015, 154, 15-28.	1.9	83
11	The populations of bridge and top site CO on Rh(100) vs coverage, temperature, and during reaction with O. Journal of Chemical Physics, 1987, 87, 6710-6721.	3.0	78
12	Scanning electron microscope dimensional metrology using a model-based library. Surface and Interface Analysis, 2005, 37, 951-958.	1.8	69
13	Determination of optimal parameters for CD-SEM measurement of line-edge roughness. , 2004, 5375, 515.		62
14	Blind estimation of general tip shape in AFM imaging. Ultramicroscopy, 2008, 109, 44-53.	1.9	47
15	Unbiased estimation of linewidth roughness. , 2005, 5752, 480.		44
16	Observation of significant nitrogenâ€"oxygen bond weakening in nitric oxide on Rh(100). Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 1986, 4, 1487-1490.	2.1	43
17	Multidetector electron energyâ€loss spectrometer for timeâ€resolved surface studies. Review of Scientific Instruments, 1988, 59, 22-44.	1.3	43
18	Scanning electron microscope analog of scatterometry. , 2002, 4689, 304.		35

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19	CO adsorption site occupations on Fe(111) vs coverage and temperature: The kinetics of adsorption and reaction. Journal of Chemical Physics, 1989, 90, 2050-2062.	3.0	33
20	Simulation study of repeatability and bias in the CD-SEM. , 2003, , .		31
21	Monte Carlo modeling of secondary electron imaging in three dimensions. , 2007, , .		31
22	Dimensional metrology of resist lines using a SEM model-based library approach. , 2004, 5375, 199.		29
23	General three-dimensional image simulation and surface reconstruction in scanning probe microscopy using a dexel representation. Ultramicroscopy, 2007, 108, 29-42.	1.9	26
24	Sensitivity of scanning electron microscope width measurements to model assumptions. Journal of Micro/ Nanolithography, MEMS, and MOEMS, 2009, 8, 033003.	0.9	24
25	Intercomparison of SEM, AFM, and electrical linewidths. , 1999, , .		22
26	Edge determination for polycrystalline silicon lines on gate oxide. , 2001, , .		19
27	Electron Inelastic Mean Free Paths for LiF, CaF₂, Al₂O₃, and Liquid Water from 433 keV down to the Energy Gap. ACS Omega, 2020, 5, 4139-4147.	3.5	18
28	Influence of focus variation on linewidth measurements. , 2005, , .		15
29	Simulation study of repeatability and bias in the critical dimension scanning electron microscope. Journal of Micro/ Nanolithography, MEMS, and MOEMS, 2005, 4, 033002.	0.9	15
30	New insights into subsurface imaging of carbon nanotubes in polymer composites via scanning electron microscopy. Nanotechnology, 2015, 26, 085703.	2.6	15
31	Three-Dimensional (3D) Nanometrology Based on Scanning Electron Microscope (SEM) Stereophotogrammetry. Microscopy and Microanalysis, 2017, 23, 967-977.	0.4	13
32	Increasing the value of atomic force microscopy process metrology using a high-accuracy scanner, tip characterization, and morphological image analysis. Journal of Vacuum Science & Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena, 1996, 14, 1540.	1.6	12
33	Toward nanometer accuracy measurements. , 1999, 3677, 1017.		12
34	Sensitivity of SEM width measurements to model assumptions. , 2009, , .		12
35	10nm three-dimensional CD-SEM metrology. Proceedings of SPIE, 2014, , .	0.8	12
36	Advanced metrology needs for nanoelectronics lithography. Comptes Rendus Physique, 2006, 7, 931-941.	0.9	11

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37	Image simulation and surface reconstruction of undercut features in atomic force microscopy. , 2007, , .		11
38	Comparison of Electron Imaging Modes for Dimensional Measurements in the Scanning Electron Microscope. Microscopy and Microanalysis, 2016, 22, 768-777.	0.4	11
39	Issues in Line Edge and Linewidth Roughness Metrology. AIP Conference Proceedings, 2005, , .	0.4	9
40	Can we get 3D-CD metrology right?. , 2012, , .		9
41	The effect of tip size on the measured Ra of surface roughness specimens with rectangular profiles. Precision Engineering, 2014, 38, 217-220.	3.4	9
42	Optimizing hybrid metrology: rigorous implementation of Bayesian and combined regression. Journal of Micro/ Nanolithography, MEMS, and MOEMS, 2015, 14, 044001.	0.9	9
43	On Low-Energy Tail Distortions in the Detector Response Function of X-Ray Microcalorimeter Spectrometers. Journal of Low Temperature Physics, 2020, 199, 1046-1054.	1.4	9
44	<title>Electrical test structures replicated in silicon-on-insulator material</title>. , 1996, , .		8
45	Strategy for faster blind reconstruction of tip geometry for scanned probe microscopy. , 1998, 3332, 10.		8
46	<title>Linewidth measurement intercomparison on a BESOI sample</title>. , 2000, 3998, 84.		8
47	CD-SEM measurement line edge roughness test patterns for 193 nm lithography. , 2003, 5041, 127.		7
48	Scanning electron microscopy imaging of ultra-high aspect ratio hole features. , 2012, , .		7
49	Summary Abstract: The kinetics of CO dissociation on Fe(111). Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 1987, 5, 538-539.	2.1	6
50	3D Monte Carlo modeling of the SEM: Are there applications to photomask metrology?. , 2014, , .		6
51	Progress on accurate metrology of pitch, height, roughness, and width artifacts using an atomic force microscope. , 1995, , .		5
52	Advanced electron microscopy needs for nanotechnology and nanomanufacturing. Journal of Vacuum Science & Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena, 2005, 23, 3015.	1.6	5
53	Virtual rough samples to test 3D nanometer-scale scanning electron microscopy stereo photogrammetry. Proceedings of SPIE, 2016, 9778, .	0.8	5
54	<title>Grating pitch measurements with the molecular measuring machine</title>. , 1999, 3806, 46.		4

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55	Proximity-associated errors in contour metrology. , 2010, , .		4
56	Optimizing hybrid metrology: rigorous implementation of Bayesian and combined regression. Proceedings of SPIE, 2015, , .	0.8	4
57	Research Update: Electron beam-based metrology after CMOS. APL Materials, 2018, 6, .	5.1	4
58	Conventional vs. model-based measurement of patterned line widths from scanning electron microscopy profiles. Ultramicroscopy, 2019, 206, 112819.	1.9	4
59	Tip Characterization for Dimensional Nanometrology. Nanoscience and Technology, 2004, , 147-168.	1.5	4
60	New way of handling dimensional measurement results for integrated circuit technology. , 2003, 5038, 508.		3
61	Probing Electrified Liquidâ€"Solid Interfaces with Scanning Electron Microscopy. ACS Applied Materials & Interfaces, 2020, 12, 56650-56657.	8.0	3
62	Line edge roughness characterization of sub-50nm structures using CD-SAXS: round-robin benchmark results. , 2007, , .		2
63	Developing a method to determine linewidth based on counting the atom spacings across a line. , 1998, 3332, 441.		1
64	Tip characterization for scanning probe microscope width metrology. , 1998, , .		1
65	Line Edge Roughness and Cross Sectional Characterization of Sub-50 nm Structures Using Critical Dimension Small Angle X-ray Scattering. AIP Conference Proceedings, 2007, , .	0.4	1
66	Linewidth roughness and cross-sectional measurements of sub-50 nm structures with CD-SAXS and CD-SEM. Proceedings of SPIE, 2008, , .	0.8	1
67	Accurate and traceable dimensional metrology with a reference CD-SEM. , 2008, , .		1
68	Comparison of Secondary, Backscattered and Low Loss Electron Imaging for Dimensional Measurements in the Scanning Electron Microscope. Microscopy and Microanalysis, 2015, 21, 1105-1106.	0.4	1
69	Comparison of Secondary, Backscattered and Low Loss Electron Imaging for Dimensional Measurements in the Scanning Electron Microscope - Part 2. Microscopy and Microanalysis, 2016, 22, 608-609.	0.4	1
70	An a Posteriori Error Estimate for Scanning Electron Microscope Simulation with Adaptive Mesh Refinement. Journal of Scientific Computing, 2019, 80, 1700-1715.	2.3	1
71	Summary Abstract: Kinetics of the adsorption and reaction of H2 and O2 on nickel(110). Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 1984, 2, 1019-1020.	2.1	0
72	Linewidth Roughness and Cross-sectional Measurements of Sub-50 nm Structures Using CD-SAXS and CD-SEM. IEEE International Symposium on Semiconductor Manufacturing Conference, Proceedings, 2008, , .	0.0	0

#	Article	IF	Citations
73	An accurate Monte Carlo sampler for electron elastic scattering angular distributions between 50 eV and 300 keV. Microscopy and Microanalysis, 2021, 27, 1322-1323.	0.4	0