

# John S Villarrubia

## List of Publications by Year in descending order

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73  
papers

3,001  
citations

430874

18  
h-index

254184

43  
g-index

73  
all docs

73  
docs citations

73  
times ranked

2143  
citing authors

#	ARTICLE	IF	CITATIONS
1	An accurate Monte Carlo sampler for electron elastic scattering angular distributions between 50 eV and 300 keV. <i>Microscopy and Microanalysis</i> , 2021, 27, 1322-1323.	0.4	0
2	On Low-Energy Tail Distortions in the Detector Response Function of X-Ray Microcalorimeter Spectrometers. <i>Journal of Low Temperature Physics</i> , 2020, 199, 1046-1054.	1.4	9
3	Probing Electrified Liquid-Solid Interfaces with Scanning Electron Microscopy. <i>ACS Applied Materials &amp; Interfaces</i> , 2020, 12, 56650-56657.	8.0	3
4	Electron Inelastic Mean Free Paths for LiF, CaF <sub>2</sub> , Al <sub>2</sub> O <sub>3</sub> , and Liquid Water from 433 keV down to the Energy Gap. <i>ACS Omega</i> , 2020, 5, 4139-4147.	3.5	18
5	An a Posteriori Error Estimate for Scanning Electron Microscope Simulation with Adaptive Mesh Refinement. <i>Journal of Scientific Computing</i> , 2019, 80, 1700-1715.	2.3	1
6	Conventional vs. model-based measurement of patterned line widths from scanning electron microscopy profiles. <i>Ultramicroscopy</i> , 2019, 206, 112819.	1.9	4
7	Research Update: Electron beam-based metrology after CMOS. <i>APL Materials</i> , 2018, 6, .	5.1	4
8	Three-Dimensional (3D) Nanometrology Based on Scanning Electron Microscope (SEM) Stereophotogrammetry. <i>Microscopy and Microanalysis</i> , 2017, 23, 967-977.	0.4	13
9	Comparison of Secondary, Backscattered and Low Loss Electron Imaging for Dimensional Measurements in the Scanning Electron Microscope - Part 2. <i>Microscopy and Microanalysis</i> , 2016, 22, 608-609.	0.4	1
10	Comparison of Electron Imaging Modes for Dimensional Measurements in the Scanning Electron Microscope. <i>Microscopy and Microanalysis</i> , 2016, 22, 768-777.	0.4	11
11	Virtual rough samples to test 3D nanometer-scale scanning electron microscopy stereo photogrammetry. <i>Proceedings of SPIE</i> , 2016, 9778, .	0.8	5
12	Comparison of Secondary, Backscattered and Low Loss Electron Imaging for Dimensional Measurements in the Scanning Electron Microscope. <i>Microscopy and Microanalysis</i> , 2015, 21, 1105-1106.	0.4	1
13	Optimizing hybrid metrology: rigorous implementation of Bayesian and combined regression. <i>Journal of Micro/ Nanolithography, MEMS, and MOEMS</i> , 2015, 14, 044001.	0.9	9
14	Optimizing hybrid metrology: rigorous implementation of Bayesian and combined regression. <i>Proceedings of SPIE</i> , 2015, , .	0.8	4
15	Scanning electron microscope measurement of width and shape of 10 nm patterned lines using a JMONSEL-modeled library. <i>Ultramicroscopy</i> , 2015, 154, 15-28.	1.9	83
16	New insights into subsurface imaging of carbon nanotubes in polymer composites via scanning electron microscopy. <i>Nanotechnology</i> , 2015, 26, 085703.	2.6	15
17	10nm three-dimensional CD-SEM metrology. <i>Proceedings of SPIE</i> , 2014, , .	0.8	12
18	3D Monte Carlo modeling of the SEM: Are there applications to photomask metrology?. , 2014, , .		6

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19	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
20	Can we get 3D-CD metrology right?. , 2012, , .		9
21	Scanning electron microscopy imaging of ultra-high aspect ratio hole features. , 2012, , .		7
22	Proximity-associated errors in contour metrology. , 2010, , .		4
23	Sensitivity of SEM width measurements to model assumptions. , 2009, , .		12
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	Blind estimation of general tip shape in AFM imaging. Ultramicroscopy, 2008, 109, 44-53.	1.9	47
26	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
27	Linewidth roughness and cross-sectional measurements of sub-50 nm structures with CD-SAXS and CD-SEM. Proceedings of SPIE, 2008, , .	0.8	1
28	Accurate and traceable dimensional metrology with a reference CD-SEM. , 2008, , .		1
29	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
30	Image simulation and surface reconstruction of undercut features in atomic force microscopy. , 2007, , .		11
31	Line edge roughness characterization of sub-50nm structures using CD-SAXS: round-robin benchmark results. , 2007, , .		2
32	Monte Carlo modeling of secondary electron imaging in three dimensions. , 2007, , .		31
33	General three-dimensional image simulation and surface reconstruction in scanning probe microscopy using a dixel representation. Ultramicroscopy, 2007, 108, 29-42.	1.9	26
34	Advanced metrology needs for nanoelectronics lithography. Comptes Rendus Physique, 2006, 7, 931-941.	0.9	11
35	Unbiased estimation of linewidth roughness. , 2005, 5752, 480.		44
36	Influence of focus variation on linewidth measurements. , 2005, , .		15

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37	Scanning electron microscope dimensional metrology using a model-based library. Surface and Interface Analysis, 2005, 37, 951-958.	1.8	69
38	Issues in Line Edge and Linewidth Roughness Metrology. AIP Conference Proceedings, 2005, , .	0.4	9
39	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
40	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
41	Determination of optimal parameters for CD-SEM measurement of line-edge roughness. , 2004, 5375, 515.		62
42	Dimensional metrology of resist lines using a SEM model-based library approach. , 2004, 5375, 199.		29
43	Tip Characterization for Dimensional Nanometrology. Nanoscience and Technology, 2004, , 147-168.	1.5	4
44	Simulation study of repeatability and bias in the CD-SEM. , 2003, , .		31
45	CD-SEM measurement line edge roughness test patterns for 193 nm lithography. , 2003, 5041, 127.		7
46	New way of handling dimensional measurement results for integrated circuit technology. , 2003, 5038, 508.		3
47	Scanning electron microscope analog of scatterometry. , 2002, 4689, 304.		35
48	Edge determination for polycrystalline silicon lines on gate oxide. , 2001, , .		19
49	Nanoindentation of polymers: an overview. Macromolecular Symposia, 2001, 167, 15-44.	0.7	413
50	Experimental test of blind tip reconstruction for scanning probe microscopy. Ultramicroscopy, 2000, 85, 141-153.	1.9	130
51	<title>Linewidth measurement intercomparison on a BESOI sample</title>. , 2000, 3998, 84.		8
52	<title>Grating pitch measurements with the molecular measuring machine</title>. , 1999, 3806, 46.		4
53	Intercomparison of SEM, AFM, and electrical linewidths. , 1999, , .		22
54	Toward nanometer accuracy measurements. , 1999, 3677, 1017.		12

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55	Developing a method to determine linewidth based on counting the atom spacings across a line. , 1998, 3332, 441.		1
56	Strategy for faster blind reconstruction of tip geometry for scanned probe microscopy. , 1998, 3332, 10.		8
57	Tip characterization for scanning probe microscope width metrology. , 1998, , .		1
58	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
59	<title>Electrical test structures replicated in silicon-on-insulator material</title>. , 1996, , .		8
60	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
61	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
62	Progress on accurate metrology of pitch, height, roughness, and width artifacts using an atomic force microscope. , 1995, , .		5
63	Morphological estimation of tip geometry for scanned probe microscopy. Surface Science, 1994, 321, 287-300.	1.9	272
64	Formation of Si(111)-(1 $\times$ 1)Cl. Physical Review B, 1990, 41, 9865-9870.	3.2	137
65	Identification of the Products from the Reaction of Chlorine with the Silicon(111)-(7 $\times$ 7) Surface. Science, 1990, 248, 838-840.	12.6	97
66	Scanning-tunneling-microscopy study of the Si(111)-7 $\times$ 7 rest-atom layer following adatom removal by reaction with Cl. Physical Review Letters, 1989, 63, 306-309.	7.8	118
67	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
68	Multidetector electron energy-loss spectrometer for time-resolved surface studies. Review of Scientific Instruments, 1988, 59, 22-44.	1.3	43
69	Nitric oxide adsorption, decomposition, and desorption on Rh(100). Journal of Chemical Physics, 1987, 87, 750-764.	3.0	146
70	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
71	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
72	Observation of significant nitrogen-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

#	ARTICLE	IF	CITATIONS
73	Summary Abstract: Kinetics of the adsorption and reaction of H <sub>2</sub> and O <sub>2</sub> on nickel(110). Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 1984, 2, 1019-1020.	2.1	0