

## JORGE J. ROCCA

### PERSONAL:

Birth Date: 10/6/53, Argentina

Citizenship: USA, Naturalized 1990

### PRESENT POSITION:

Professor, Department of Electrical and Computer Engineering

Professor, Department of Physics

Colorado State University

### EDUCATION:

1983 Ph.D. Electrical Engineering, Colorado State University

1978 Physics Diploma, University of Rosario (Argentina)

### PROFESSIONAL CAREER:

2003 – Present Director, National Science Foundation ERC for Extreme Ultraviolet Science and Technology- a partnership between Colorado State University, University of Colorado, and University of California Berkeley/Lawrence Berkeley Nat. Lab.

2002 – Present Affiliate Professor of Physics  
Colorado State University

1991 - Present Professor of Electrical and Computer Engineering  
Colorado State University

1987 – 1991 Associate Professor of Electrical Engineering  
Colorado State University

1983 – 1987 Assistant Professor of Electrical Engineering  
Colorado State University

1979 – 1983 Research Assistant - Department of Electrical Engineering  
Colorado State University

1978 – 1979 Assistant Professor of Physics - University of La Pampa, Argentina  
Research Staff Member - CEILAP Laser Laboratory, Buenos Aires, Argentina

### HONORS and AWARDS:

2011 Schawlow Prize in Laser Science (American Physical Society)

Distinguished Lecturer Award, Lasers Electro-Optics Society of the Institute of Electrical and Electronic Engineers (IEEE-LEOS), 2008

University Distinguished Professor, Colorado State University, 2007

Fellow of the American Physical Society, 2006, Citation: “*For breakthrough developments in compact soft x-ray lasers and in the applications of these lasers to plasma diagnostics, interferometry and material studies*”.

Fellow of the Institute of Electrical and Electronic Engineers, 2000, Citation: “*For the development of plasma excited lasers and the table-top soft x-ray laser*”.

Fellow of the Optical Society of America, 1997, Citation: “*For the demonstration of the first discharge pumped soft x-ray laser and contributions to the understanding of capillary discharges*”.

Abell Research and Graduate Program Award, Colorado State University, 2006

W.M. Keck Foundation Award, 2000

Colorado State University Research Foundation “Researcher of the Year Award,” 1995

Abell Research and Graduate Program Award, Colorado State University, 1995

Colorado Advanced Technology Institute Technology Transfer Award, 1995

Halliburton Education Foundation Award, 1985

National Science Foundation Presidential Young Investigator Award, 1985-1990

### EDITORSHIPS:

Editorial Board, Opto-Electronic Review (2006-present)  
Editorial Board, Review of Scientific Instruments, (2002-2004)  
Co-Editor, X-Ray Lasers 2002, American Institute of Physics, (2002)  
Co-Editor, Soft X-ray Lasers and Applications IV, SPIE J. Vol. 4504 (2001)  
Co-Editor, Soft X-ray Lasers and Applications III, SPIE J. Vol. 3776 (1999)  
Guest Co-Editor, IEEE Journal of Selected Topics in Quantum Electronics - Special Issue on "Short - Wavelength Lasers and Applications," (1999)  
Co-Editor, Soft X-ray Lasers and Applications II, SPIE J. Vol. 3156, (1997)  
Co-Editor, Soft X-ray Lasers and Applications, SPIE J. Vol. 2520, (1995)  
Associate Editor, IEEE Journal of Quantum Electronics, (1994-1996, 1997-1999)

### PROFESSIONAL SOCIETIES

Optical Society of America, Fellow  
American Physical Society, Fellow  
IEEE, Fellow  
American Association for the Advancement of Science

### SELECTED PROFESSIONAL SERVICE ACTIVITIES

- Interim Chair NIF Users Group 2009-2010
- Chair of HEDSA (High Energy Density Science Association) 2008-2009
- Co-Chair "Joint Conference on Ultrafast Optics VI and Applications of High Field and Short Wavelength Sources" XII, Santa Fe, New Mexico, Sept. 2007
- Chair Charles Townes Award Committee, Optical Society of America, 2003
- Co-Chair 8<sup>th</sup> International Conference on X-Ray Lasers, Aspen, Co, May 27-31, 2002
- Member International Advisory Board "International Conference on X-Ray Lasers" 1996-2010
- Chair Optical Society of America "X-ray and XUV Physics," Technical Group 1999-2000
- Chair IEEE LEOS Subcommittee on "Short Wavelength and Gas Lasers," 1998-1999; Member 1989 – 2000
- Member International Advisory Board "International Conference on X-Ray Lasers" 1996-2010
- Program Committee, IEEE Laser and Electro-Optics Society Annual Meeting, 1992-2002
- Conference co-Chair - SPIE Symposium, "Soft X-Ray Lasers and Applications III," SPIE, Denver, CO, July 1999
- Conference Co-chair, "X-Ray Lasers and Applications III," SPIE Conference, Denver, CO, July 19-20, 1999. (Co-chair: Dr. Luiz B. Da Silva, Lawrence Livermore Laboratory)
- Vice Chair Optical Society of America, "X-Ray and XUV Physics," Technical Group 1998
- Conference Co-chair, "X-Ray Lasers and Applications II," SPIE Conference, San Diego, CA, July 27-Aug 1, 1997. (Co-chair: Dr. Luiz B. DaSilva, Lawrence Livermore Laboratory)
- Symposium organizer, "Table Top Soft-X-Ray Lasers," Optical Society of America Annual Meeting, Rochester, NY, Oct. 1996
- Program Committee CLEO'95, Baltimore, MD, May 1995, CLEO'96, Anaheim, CA, June 1996
- Program Committee International Quantum Electronics Conference, Australia, June 1996
- Conference Co-chair, "X-Ray Lasers and Applications," SPIE Conference, San Diego, CA, July 10-11, 1995. (Co-chair: Prof. P. Hagelstein, MIT)

## TECHNICAL PUBLICATIONS

### REFEREED JOURNAL PUBLICATIONS:

1. D. Alessi, Y. Wang, D. Martz, B. Luther, Y. Liu, and **J.J. Rocca**, “Efficient excitation of gain-saturated sub-9 nm wavelength table-top soft X-ray lasers and lasing down to 7.36 nm”, *Physical Review X* (in press).
2. N. Rohringer, D. Ryan, R. A. London, M. Purvis, F. Albert, J. D. Bozek, C. Bostedt, J. Dunn, R. Hill, A. Graf, S. P. Hau-Riege and **J. J. Rocca**, “Realization of an atomic x-ray laser at 1.46 nm by photoionisation of neon with an XFEL”, *Nature* (in press)
3. J. -W. Shin, F. Dong, M. E. Grisham, **J. J. Rocca**, and E. R. Bernstein, "Extreme Ultraviolet Photoionization of Aldoses and Ketoses," *Chem. Phys. Lett.* **506**, 161 (2011).
4. H. Bravo , B.T. Szapiro , P.W. Wachulak,, M.C. Marconi, W. Chao , E.H. Anderson, D.T. Attwood, C.S. Menoni, **J.J. Rocca**, “ Demonstration of nanomachining with focuses extreme ultraviolet laser beams”, *IEEE Journal of Selected Topics in Quantum Electronics*, (in press)
5. A.H. Curtis, B. A. Reagan, K. A. Wernsing, F. J. Furch, B. M. Luther, and **J J. Rocca**, “Demonstration of a Compact 100 Hz, 0.1 J, Diode-Pumped Picosecond Laser”, *Optics Letters*, **36**, 2164, (2011).
6. L.M. Meng, D. Alessi, O. Guilbaud, Y. Wang, M. Berrill, B.M. Luther, S.R. Domingue, D.H. Martz, D. Joyeux, S. De Rossi, **J.J. Rocca** , and A. Klisnick, “Temporal coherence and spectral linewidth of an injection-seeded transient collisional soft x-ray laser”, *Optics Express* , **36**, 2164, (2011).
7. F. Brizuela, I. Howlett, S. Carbajo, A. Sakdinawat, Y. Liu, D. Attwood, M. Marconi, M. Marconi, **J.J. Rocca**, C.S. Menoni, “ Imaging at the nanoscales with practical EUV laser based full field microscopes”, *IEEE Journal of Selected Topics in Quantum Electronics*, (in press).
8. S. Heinbuch, F. Dong, **J.J. Rocca**, and E.R. Bernstein, “Experimental and theoretical studies of reactions of neutral vanadium and tantalum oxide clusters with NO and NH<sub>3</sub>,” *J. Chem. Phys.* **133**, 174314 (2010).
9. F. Brizuela, S. Carbajo, A. Sakdinawat, D. Alessi, D.H. Martz, Y. Wang, B. Luther, K.A. Goldberg, I. Mochi, D.T. Attwood, B. La Fontaine, **J.J. Rocca**, and C.S. Menoni, “Extreme ultraviolet laser-based table-top aerial image metrology of lithographic masks,” *Optics Express* **18**, 14467 (2010).
10. M. Berrill, D. Alessi, Y. Wang, S. Domingue, D. Martz, B. Luther, Y. Liu, and **J.J. Rocca**, “Improved beam characteristics of solid-target soft x-ray laser amplifiers by injection-seeding with high harmonics,” *Optics Letters* **35**, 2317 (2010).
11. D. Martz, D. Alessi, B.M. Luther, Y. Wang, D. Kemp, M. Berrill, and **J.J. Rocca**, “High Energy 13.9 nm Table-top Soft X-ray Laser at 2.5 Hz Repetition Rate Excited by a Slab-pumped Ti:sapphire Laser,” *Optics Letters* **35**, 1632 (2010).
12. D. Alessi, D.H. Martz, Y. Wang, M. Berrill, B.M. Luther, and **J.J. Rocca**, “1 Hz Operation of a Gain-Saturated 10.9 nm Table-Top Laser in Nickel-like Te,” *Optics Letters* **35**, 414 (2010).
13. M.A. Purvis, J. Grava, J. Filevich, D.P. Ryan, S.J. Moon, J. Dunn, V.N. Shlyaptsev, and **J.J. Rocca**, “Collimation of dense plasma jets created by low energy laser pulses and studied with soft x-ray interferometry,” *Phys. Rev. E* **81**, 036408 (2010).
14. Y. Xie, F. Dong, S. Heinbuch, **J.J. Rocca**, and E.R. Bernstein, “Oxidation reactions on neutral cobalt oxide clusters: experimental and theoretical studies,” *Physical Chemistry Chemical. Physics*, **12**, 947 (2010).
15. F. Dong, S. Heinbuch, Y. Xie, **J.J. Rocca** and E.R. Bernstein, “Experimental and theoretical study of neutral Al<sub>m</sub>C<sub>n</sub> and Al<sub>m</sub>C<sub>n</sub>H<sub>x</sub> clusters,” *Physical Chemistry Chemical Physics* **12**, 2569 (2010).

16. F. Furch, B. Reagan, B. Luther, A. Curtis, S. Meehan, and **J.J. Rocca**, "Demonstration of an all-diode-pumped soft x-ray laser," *Optics Letters* **34**, 3352 (2009).
17. F. Brizuela, Y. Wang, C.A. Brewer, F. Pedaci, W. Chao, E.H. Anderson, Y. Liu, K.A. Goldberg, P. Naulleau, P. Wachulak, M.C. Marconi, D.T. Attwood, **J.J. Rocca**, and C.S. Menoni, "Microscopy of extreme ultraviolet lithography masks with 13.2 nm tabletop laser illumination," *Optics Letters* **34**, 271 (2009).
18. Y. Wang, M. Berrill, F. Pedaci, M.M. Shakya, S. Gilbertson, Z. Chang, E. Granados, B.M. Luther, M.A. Larotonda, and **J.J. Rocca**, "Measurement of 1 Picosecond Soft X-Ray Laser Pulses from an Injection-Seeded Plasma Amplifier," *Physical Review A* **79**, 023810 (2009).
19. D.H. Martz, H.T. Nguyen, D. Patel, J.A. Britten, D. Alessi, E. Krous, Y. Wang, M.A. Larotonda, J. George, B. Knollenberg, B.M. Luther, **J.J. Rocca** and C.S. Menoni, "Large area high efficiency broad bandwidth 800 nm dielectric gratings for high energy laser pulse compression," *Optics Express* **17**, 23809 (2009).
20. A. Isoyan, F. Jiang, Y.C. Cheng, F. Cerrina, P. Wachulak, L. Urbanski, **J.J. Rocca**, C. Menoni, and M. Marconi, "Talbot Lithography: Self-Imaging of Complex Structures," *J. Vac. Sci. Technology B* **37**, 2931 (2009).
21. J. Filevich, M. Purvis, J. Grava, D.P. Ryan, J. Dunn, S.J. Moon, V.N. Shlyaptsev, and **J.J. Rocca**, "Bow shocks formed by plasma collisions in laser irradiated semi-cylindrical cavities," *High Energy Density Physics* **5**, 276 (2009).
22. Y.P. Pershyn, E.N. Zubarev, D.L. Voronov, V.A. Sevryukova, V.V. Kondratenko, G. Vaschenko, M. Grisham, C.S. Menoni, **J.J. Rocca**, I.A. Artioukov, Y.A. Uspenskii, and A.V. Vinogradov, "Mechanisms of radiation damage to Sc/Si multilayer mirrors under EUV laser irradiation," *J. Phys. D: Appl. Phys.* **42**, 125407 (2009).
23. P.W. Wachulak, L. Urbanski, M.G. Capeluto, D. Hill, W.S. Rockward, C. Iemmi, E.H. Anderson, C.S. Menoni, **J.J. Rocca**, and M.C. Marconi, "New opportunities in interferometric lithography using extreme ultraviolet tabletop lasers," *J. Micro/Nanolith. MEMS MOEMS* **8**, 021206 (2009).
24. Y. Xie, F. Dong, S. Heinbuch, **J.J. Rocca**, and E. Bernstein, "Investigation of the reactions of small neutral iron oxide clusters with methanol," *J. Chem. Phys.* **130**, 114306 (2009).
25. F. Dong, S. Heinbuch, Y. Xie, E.R. Bernstein, **J.J. Rocca**, Z. Wang, X. Ding, and S.G. He, "C=C bond cleavage on neutral  $\text{VO}_3(\text{V}_2\text{O}_5)_n$  Clusters," *J. Am. Chem. Soc.* **131**, 1057 (2009).
26. Y. Wang, E. Granados, F. Pedaci, D. Alessi, B. Luther, M. Berrill, and **J.J. Rocca**, "Phase-coherent, injection-seeded, table-top soft-x-ray lasers at 18.9 nm and 13.9 nm," *Nature Photonics* **2**, 94 (2008).
27. Z.-C. Wang, W. Xue, Y.-P. Ma, X.-L. Ding, S.-G. He, F. Dong, S. Heinbuch, **J.J. Rocca**, and E.R. Bernstein, "Partial Oxidation of Propylene Catalyzed by  $\text{VO}_3$  Clusters: A Density Functional Theory Study," *J. Phys. Chem. A* **112**, 5984 (2008).
28. J. Nilsen, J.I. Castor, C.A. Iglesias, K.T. Cheng, J. Dunn, W.R. Johnson, J. Filevich, M.A. Purvis, J. Grava, and **J.J. Rocca**, "Understanding the anomalous dispersion of doubly-ionized carbon plasmas near 47 nm," *High Energy Density Physics* **4**, 107 (2008).
29. M. Purvis, J. Grava, J. Filevich, M.C. Marconi, J. Dunn, S.J. Moon, V.N. Shlyaptsev, E. Jankowska, and **J.J. Rocca**, "Soft x-ray laser interferometry of colliding laser-created plasmas in semi-cylindrical cavities," *IEEE Transactions on Plasma Sciences* **36**, 4, 1134 (2008).
30. J. Grava, M.A. Purvis, J. Filevich, M.C. Marconi, J. Dunn, S.J. Moon, V.N. Shlyaptsev, and **J.J. Rocca**, "Soft X-Ray Laser Interferometry of a Dense Plasma Jet," *IEEE Transactions on Plasma Sciences* **36**, 4, 1286 (2008).
31. S.-G. He, Y. Xie, F. Dong, S. Heinbuch, E. Jakubikova, J.J. Rocca, and E.R. Bernstein, "Reactions of Sulfur Dioxide with Neutral Vanadium Oxide Clusters in the Gas Phase. I. Experimental Study Employing Single Photon Ionization," *Journal of Physical Chemistry A* **112**, 11067 (2008).

32. P.W. Wachulak, C.A. Brewer, F. Brizuela, C.S. Menoni, W. Chao, E.H. Anderson, R.A. Bartels, **J.J. Rocca**, and M.C. Marconi, "Analysis of extreme ultraviolet microscopy images of patterned nanostructures based on a correlation method," *J. Opt. Soc. Am. B* **25**, B20 (2008).
33. J. Grava, M.A. Purvis, J. Filevich, M.C. Marconi, **J.J. Rocca**, J. Dunn, S.J. Moon, and V.N. Shlyaptsev, "Dynamics of a dense laboratory plasma jet investigated using soft x-ray laser interferometry," *Physical Review E* **78**, 016403 (2008).
34. F. Pedaci, Y. Wang, M. Berrill, B. Luther, E. Granados, and **J.J. Rocca**, "Highly coherent injection-seeded 13.2 nm table-top soft x-ray laser," *Optics Letters* **33**, 491 (2008).
35. M. Berrill, F. Brizuela, B. Langdon, H. Bravo, C.S. Menoni, and **J.J. Rocca**, "Warm Photoionized Plasmas Created by Soft X-Ray Laser Irradiation of Solid Targets," *Journal of the Optical Society of America B* **25**, B32 (2008).
36. C.A. Brewer, F. Brizuela, P. Wachulak, D.H. Martz, W. Chao, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artyukov, A.G. Ponomareko, V.V. Kondratenko, M.C. Marconi, **J.J. Rocca**, and C.S. Menoni, "Single shot extreme ultraviolet laser imaging of nanostructures with wavelength resolution," *Optics Letters* **33**, 518 (2008).
37. S. Heinbuch, F. Dong, **J.J. Rocca**, and E.R. Bernstein, "Gas phase study of the reactivity of optical coating materials with hydrocarbons by use of a desk-top size extreme ultra-violet laser," *J. Opt. Soc. Am. B* **25**, B85 (2008).
38. P. Wachulak, M. Grisham, S. Heinbuch, D. Martz, W. Rockward, D. Hill, **J.J. Rocca**, C.S. Menoni, E. Anderson, and M. Marconi, "Interferometric lithography with an amplitude division interferometer and a desktop extreme ultraviolet laser," *J. Opt. Soc. Am. B* **25**, B104 (2008).
39. P.W. Wachulak, M.G. Capeluto, C.S. Menoni, **J.J. Rocca**, and M.C. Marconi, "Nanopatterning in a compact setup using table top extreme ultraviolet lasers," *Opto-Electronics Review* **16**, 444 (2008).
40. P.W. Wachulak, M.C. Marconi, R.A. Bartels, C.S. Menoni, and **J.J. Rocca**, "Soft x-ray laser holography with wavelength resolution," *J. Opt. Soc. Am. B* **25**, 1811 (2008).
41. T. Popmintchev, M.-C. Chen, O. Cohen, M.E. Grisham, **J.J. Rocca**, M.M. Murnane, and H.C. Kapteyn, "Extended phase matching of high harmonics driven by mid-infrared light," *Optics Letters* **33**, 2128 (2008).
42. R.L. Sandberg, C. Song, P.W. Wachulak, D.A. Raymondson, A. Paul, B. Amirbekian, E. Lee, A.E. Sakdinawat, C. La-O-Vorakiat, M.C. Marconi, C.S. Menoni, M.M. Murnane, **J.J. Rocca**, H.C. Kapteyn, and J. Miao, "High Numerical Aperture Table Top Soft X Ray Diffraction Microscopy with 70 nm Resolution," *Proceedings of the National Academy of Science* **105**, 24 (2008).
43. F.G. Tomasel, V.N. Shlyaptsev, and **J.J. Rocca**, "Spectroscopically pure metal vapor source for highly charged ion spectroscopy and capillary discharged soft x-ray lasers," *Review of Scientific Instruments* **79**, 013503 (2008).
44. F. Dong, S. Heinbuch, Y. Xie, **J.J. Rocca**, E.R. Bernstein, Z.-C. Wang, K. Deng, and S.-G. He, "Experimental and Theoretical Study of the reactions between neutral vanadium oxide clusters and ethane, ethylene, and acetylene," *Journal of the American Chemical Society* **130**, 1932 (2008).
45. P.W. Wachulak, M.G. Capeluto, M.C. Marconi, D. Patel, C.S. Menoni, and **J.J. Rocca**, "Nanoscale patterning in high resolution HSQ photoresist by interferometric lithography with table top EUV lasers," *Journal of Vacuum Science and Technology* **25**, 2094 (2007).
46. M. Purvis, J. Grava, J. Filevich, M.C. Marconi, J. Dunn, S.J. Moon, V.N. Shlyaptsev, E. Jankowska, and **J.J. Rocca**, "Dynamics of converging laser-created plasmas in semi-cylindrical cavities studied using soft x-ray laser interferometry," *Physical Review E* **76**, 046402 (2007).
47. P.W. Wachulak, M.C. Marconi, R.A. Bartels, C.S. Menoni, and **J.J. Rocca**, "Volume extreme ultraviolet nano-holographic imaging with numerical optical sectioning," *Optics Express* **15**, 10622 (2007).

48. M. Berrill, Y. Wang, M.A. Larotonda, B.M. Luther, V.N. Shlyaptsev, and **J.J. Rocca**, “Pump pulsewidth of grazing incidence pumped transient collisional soft x-ray lasers,” *Physical Review A* **75**, 063821 (2007).
49. S. Heinbuch, F. Dong, **J.J. Rocca**, and E.R. Bernstein, “Single Photon Ionization of Hydrogen Bonded Clusters with a Soft X-Ray Laser:  $(\text{HCOOH})_x$  and  $(\text{HCOOH})_y(\text{H}_2\text{O})_z$ ,” *Journal of Chemical Physics* **126**, 244301 (2007).
50. B.A. Reagan, T. Popmintchev, M.E. Grisham, D.M. Gaudiosi, M. Berrill, O. Cohen, B.C. Walker, M.M. Murnane, **J.J. Rocca**, and H.C. Kapteyn, “Enhanced High Harmonic Generation from Xe, Kr, and Ar in a Capillary Discharge,” *Physical Review A* **76**, 013816 (2007).
51. P.W. Wachulak, M.G. Capeluto, M.C. Marconi, C.S. Menoni, and **J.J. Rocca**, “Patterning of nano-scale arrays by table-top extreme ultraviolet laser interferometric lithography,” *Optics Express* **15**, 3465 (2007).
52. M.G. Capeluto, P. Wachulak, M.C. Marconi, D. Patel, C.S. Menoni, **J.J. Rocca**, C. Iemmi, E.H. Anderson, W. Chao, and D.T. Attwood, “Table-top nanopatterning with extreme ultraviolet laser illumination,” *Microelectronic Engineering* **84**, 721 (2007).
53. J. Filevich, J. Grava, M. Purvis, M.C. Marconi, **J.J. Rocca**, J. Nilsen, J. Dunn, and W.R. Johnson, “Multiply ionized carbon plasmas with index of refraction greater than one,” *Laser Particle Beams* **25**, 47 (2007).
54. Y. Wang, E. Granados, M.A. Larotonda, M. Berrill, B.M. Luther, D. Patel, C.S. Menoni, and **J.J. Rocca**, “High-Brightness Injection-Seeded Soft-X-Ray-Laser Amplifier Using a Solid Target,” *Physical Review Letters* **97**, 123901 (2006).
55. D.M. Gaudiosi, B. Reagan, T. Popmintchev, M. Grisham, M. Berrill, O. Cohen, B.C. Walker, M.M. Murnane, H.C. Kapteyn, and **J.J. Rocca**, “High-Order Harmonic Generation from Ions in a Capillary Discharge,” *Physical Review Letters* **96**, 203001 (2006).
56. M.A. Larotonda, Y. Wang, M. Berrill, B.M. Luther, **J.J. Rocca**, M.M. Shakya, S. Gilbertson, and Z. Chang, “Pulse duration measurements of grazing incidence pumped high repetition rate Ni-like Ag and Cd transient soft x-ray lasers,” *Optics Letters* **31**, 3043 (2006).
57. G. Vaschenko, A.G. Etxarri, C.S. Menoni, **J.J. Rocca**, O. Hemberg, S. Bloom, W. Chao, E.H. Anderson, D. T. Attwood, Y. Lu, and B. Parkinson, “Nanometer scale ablation with a table-top soft x-ray laser,” *Optics Letters* **31**, 3615 (2006).
58. J. Filevich, J. Grava, M. Purvis, M.C. Marconi, **J.J. Rocca**, J. Nilsen, J. Dunn, and W.R. Johnson, “Prediction and observation of tin and silver plasmas with index of refraction greater than one in the soft x-ray range,” *Physical Review E* **74**, 016404 (2006).
59. G. Vaschenko, C. Brewer, F. Brizuela, Y. Wang, M.A. Larotonda, B.M. Luther, M.C. Marconi, **J.J. Rocca**, C.S. Menoni, E.H. Anderson, W. Chao, B.D. Harteneck, J.A. Liddle, Y. Liu, and D.T. Attwood, “Sub-38 nm resolution tabletop microscopy with 13 nm wavelength laser light,” *Optics Letters* **31**, 1214 (2006).
- A. Weith, M.A. Larotonda, Y. Wang, B.M. Luther, D. Alessi, M.C. Marconi, **J.J. Rocca**, and J. Dunn, “Continuous high repetition rate operation of collisional soft x-ray lasers using solid targets,” *Optics Letters* **31**, 1994 (2006).
60. Y. Liu, Y. Wang, M.A. Larotonda, B. Luther, **J.J. Rocca**, and D.T. Attwood, “Spatial Coherence Measurements of a 13.2 nm Transient Nickel-like Cadmium Soft X-ray Laser Pumped at Grazing Incidence,” *Optics Express* **14**, 12872 (2006).
61. P.W. Wachulak, R.A. Bartels, M.C. Marconi, C.S. Menoni, **J.J. Rocca**, Y. Lu, and B. Parkinson, “Sub 400 nm spatial resolution extreme ultraviolet holography with a table top laser,” *Optics Express* **14**, 9636 (2006).

62. F. Dong, S. Heinbuch, S.G. He, Y. Xie, **J.J. Rocca**, and E.R. Bernstein, "Formation and Distribution of Neutral Vanadium, Niobium, and Tantalum Oxide Clusters: Single Photon Ionization at 26.5 eV," *Journal of Chemical Physics* **125**, 164318 (2006).
63. S. Heinbuch, F. Dong, **J.J. Rocca**, and E.R. Bernstein, "Single photon ionization of van der Waals clusters with a soft x-ray laser:  $(\text{CO}_2)_n$  and  $(\text{CO}_2)_n(\text{H}_2\text{O})_m$ ," *Journal of Chemical Physics* **125**, 154316 (2006).
64. F. Dong, S. Heinbuch, **J.J. Rocca**, and E.R. Bernstein, "Single Photon Ionization of van der Waals clusters with a soft x-ray laser:  $(\text{SO}_2)_n$  and  $(\text{SO}_2)_n(\text{H}_2)_m$ ," *Journal of Chemical Physics* **125**, 154317 (2006).
65. F. Dong, S. Heinbuch, **J.J. Rocca**, and E.R. Bernstein, "Dynamics and fragmentation of van der Waals clusters:  $(\text{H}_2\text{O})_n$ ,  $(\text{CH}_3\text{OH})_n$ , and  $(\text{NH}_3)_n$  upon ionization by a 26.5 eV soft x-ray laser," *Journal of Chemical Physics* **124**, 224319 (2006).
66. J. Filevich, **J.J. Rocca**, M.C. Marconi, S.J. Moon, J. Nilsen, J.H. Scofield, J. Dunn, R.F. Smith, R. Keenan, J.R. Hunter, and V.N. Shlyaptsev, "Observation of multiply ionized plasmas with dominant bound electron contribution to the index of refraction," *Journal of Quantitative Spectroscopy and Radiative Transfer* **99**, 165 (2006).
67. M.G. Capeluto, G. Vaschenko, M. Grisham, M.C. Marconi, S. Ludueña, L. Pietrasanta, Y. Lu, B. Parkinson, C.S. Menoni, and **J.J. Rocca**, "Nanopatterning With Interferometric Lithography Using a Compact  $\lambda = 46.9$ -nm Laser," *IEEE Transactions on Nanotechnology* **5**, 3 (2006).
68. B.M. Luther, Y. Wang, M.A. Larotonda, D. Alessi, M. Berrill, **J.J. Rocca**, J. Dunn, R. Keenan, and V.N. Shlyaptsev, "High Repetition Rate Collisional Soft X-Ray Lasers Based on Grazing Incidence Pumping," *IEEE Journal of Quantum Electronics* **42**, 4 (2006).
69. Y. Wang, M.A. Larotonda, B.M. Luther, D. Alessi, M. Berrill, V.N. Shlyaptsev, and **J.J. Rocca**, "Demonstration of high-repetition-rate tabletop soft-x-ray lasers with saturated output at wavelengths down to 13.9 nm and gain down to 10.9 nm," *Physical Review A* **72**, 053807 (2005).
70. **J.J. Rocca**, Y. Wang, M.A. Larotonda, B.M. Luther, M. Berrill, and D. Alessi, "Saturated 13.2 nm high-repetition-rate laser in nickellike cadmium," *Optics Letters* **30**, 2581 (2005).
71. R.F. Smith, J. Dunn, J. Filevich, S. Moon, J. Nilsen, R. Keenan, V.N. Shlyaptsev, **J.J. Rocca**, J.R. Hunter, and M.C. Marconi, "Plasma conditions for improved energy coupling into the gain region of the Ni-like Pd transient collisional x-ray laser," *Physical Review E* **72**, 036404 (2005).
72. Y. Wang, B.M. Luther, M. Berrill, M. Marconi, F. Brizuela, **J.J. Rocca**, and V.N. Shlyaptsev, "Capillary discharge-driven metal vapor plasma waveguides," *Physical Review E* **72**, 026413 (2005).
73. S. Heinbuch, M. Grisham, D. Martz, and **J.J. Rocca**, "Demonstration of a desk-top size high repetition rate soft x-ray laser," *Optics Express* **13**, 4050 (2005).
74. F. Brizuela, G. Vaschenko, C. Brewer, M. Grisham, C.S. Menoni, M.C. Marconi, **J.J. Rocca**, W. Chao, J.A. Liddle, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, Y.P. Pershyn, and V.V. Kondratenko, "Reflection mode imaging with nanoscale resolution using a compact extreme ultraviolet laser," *Optics Express* **13**, 3983 (2005).
75. G. Vaschenko, F. Brizuela, C. Brewer, M. Grisham, H. Mancini, C.S. Menoni, M.C. Marconi, **J.J. Rocca**, W. Chao, J.A. Liddle, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, Y.P. Pershyn, and V.V. Kondratenko, "Nanoimaging with a compact extreme-ultraviolet laser," *Optics Letters* **30**, 2095 (2005).
76. L. Juha, M. Bittner, D. Chvostová, J. Krása, M. Kozlová, M. Pfeifer, J. Polan, A.R. Präg, B. Rus, M. Stupka, J. Feldhaus, V. Létal, Z. Otcenasek, J. Krzywinski, R. Nietubyc, J.B. Pelka, A. Andrejczuk, R. Sobierajski, L. Ryc, F.P. Boody, H. Fiedorowicz, A. Bartnik, J. Mikołajczyk, R. Rakowski, P. Kubát, L. Pina, M. Horváth, M.E. Grisham, G.O. Vaschenko, C.S. Menoni, and **J.J. Rocca**, "Short-wavelength ablation of molecular solids: pulse duration and wavelength effects," *Journal of*

- Microolithography, Microfabrication, and Microsystems **4**, 033007 (2005).
77. L. Juha, M. Bittner, D. Chvostova, V. Letal, J. Krasa, Z. Otcenasek, M. Kozlova, J. Polan, A.R. Präg, B. Rus, M. Stupka, J. Krzywinski, A. Andrejczuk, J.B. Pelka, R. Sobierajski, L. Ryc, J. Feldhaus, F.P. Boody, M.E. Grisham, G.O. Vaschenko, C.S. Menoni, and **J.J. Rocca**, “XUV-laser induced ablation of PMMA with nano-, pico-, and femtosecond pulses,” *Journal of Electron Spectroscopy and Related Phenomena* **144**, 929 (2005).
  78. B.M. Luther, Y. Wang, M. Berrill, D. Alessi, M.C. Marconi, M.A. Larotonda, and **J.J. Rocca**, “Highly Ionized Ar Plasma Waveguides Generated by a Fast Capillary Discharge,” *IEEE Transactions on Plasma Science* **33**, 582 (2005).
  79. Y. Wang, B.M. Luther, F. Pedaci, M. Berrill, F. Brizuela, M. Marconi, M.A. Larotonda, V.N. Shlyaptsev, and **J.J. Rocca**, “Dense Capillary Discharge Plasma Waveguide Containing Ag Ions,” *IEEE Transactions on Plasma Science* **33**, 584 (2005).
  80. J. Dunn, J. Filevich, R.F. Smith, S.J. Moon, **J.J. Rocca**, R. Keenan, J. Nilsen, V.N. Shlyaptsev, J.R. Hunter, A. NG, and M.C. Marconi, “Picosecond 14.7 nm interferometry of high intensity laser-produced plasmas,” *Laser and Particle Beams* **23**, 9 (2005).
  81. D.Alessi, B.M. Luther, Y. Wang, M.A. Larotonda, M. Berrill, and **J.J. Rocca**, “High repetition rate operation of saturated table-top soft x-ray lasers in transitions of neon-like ions near 30 nm,” *Optics Express* **13**, 2093 (2005).
  82. J. Filevich, **J.J. Rocca**, M.C. Marconi, S.J. Moon, J. Nilsen, J.H. Scofield, J. Dunn, R.F. Smith, R. Keenan, J.R. Hunter, and V.N. Shlyaptsev, “Observation of a Multiply Ionized Plasma with Index of Refraction Greater than One,” *Physical Review Letters* **94**, 035005 (2005).
  83. L. Juha, M. Bittner, D. Chvostova, J. Krasa, Z. Otcenasek, A.R. Präg, J. Ullschmied, Z. Pientka, J. Krzywinski, J.B. Pelka, A. Wawro, M.E. Grisham, G. Vaschenko, C.S. Menoni, and **J.J. Rocca**, “Ablation of organic polymers by 46.9-nm-laser radiation,” *Applied Physics Letters* **86**, 034109 (2005).
  84. B.M. Luther, Y. Wang, M.A. Larotonda, D. Alessi, M. Berrill, M.C. Marconi, **J.J. Rocca**, and V.N. Shlyaptsev, “Saturated high-repetition-rate 18.9-nm tabletop laser in nickellike molybdenum,” *Optics Letters* **30**, 165 (2005).
  85. M.A. Larotonda, B.M. Luther, Y. Wang, Y. Liu, D. Alessi, M. Berrill, A. Dummer, F. Brizuela, C.S. Menoni, M.C. Marconi, V.N. Shlyaptsev, J. Dunn, and **J.J. Rocca**, “Characteristics of a Saturated 18.9-nm Tabletop Laser Operating at 5-Hz Repetition Rate,” *IEEE Journal of selected topics in Quantum Electronics* **10**, 1363 (2004).
  86. A.Rahman, **J.J. Rocca**, and J.-F. Wyart, “Classification of the Nickel-like Silver Spectrum (AgXX) from a Fast Capillary Discharge Plasma,” *Physica Scripta* **70**, 21 (2004).
  87. J. Filevich, **J.J. Rocca**, M.C. Marconi, R.F. Smith, J. Dunn, R. Keenan, J.R. Hunter, S.J. Moon, J. Nilsen, A. Ng, and V.N. Shlyaptsev, “Picosecond-resolution soft-x-ray laser plasma interferometry,” *Applied Optics* **43**, 3938 (2004).
  88. B.M. Luther, Y. Wang, M.C. Marconi, J.L.A. Chilla, M.A. Larotonda, and **J.J. Rocca**, “Guiding of Intense Laser Beams in Highly Ionized Plasma Columns Generated by a Fast Capillary Discharge,” *Physical Review Letters* **92**, 235002 (2004).
  89. PH. Zeitoun, Ph. Balcou, S. Bucourt, F. Delmotte, G. Dovillaire, D. Douillet, J. Dunn, G. Faivre, M. Fajardo, K.A. Goldberg, S. Hubert, J.R. Hunter, M. Idir, S. Jacquemot, S. Kazamias, S. Le Pape, X. Levecq, C.L.S. Lewis, R. Marmoret, P. Mercere, A.S. Morlens, P.P. Naulleau, M.F. Ravet, C. Remond, **J.J. Rocca**, R.F. Smith, P. Troussel, C. Valentin, and L. Vanbostal, “Recent Developments in X-UV optics and X-UV diagnostics,” *Applied Physics B* **78**, 983 (2004).
  90. E.C. Hammarsten, B. Szapiro, E. Jankowska, J. Filevich, M.C. Marconi, and **J.J. Rocca**, “Soft X-ray laser diagnostics of exploding aluminum wire plasmas,” *Applied Physics B* **78**, 933 (2004).
  91. M. Grisham, G. Vaschenko, C.S. Menoni, **J.J. Rocca**, Yu.P. Pershyn, E.N. Zubarev, D.L. Voronov,



- V.A. Sevryukova, V.V. Kondratenko, A.V. Vinogradov, and I.A. Artiukov, "Damage to extreme-ultraviolet Sc/Si multilayer mirrors exposed to intense 46.9-nm laser pulses," *Optics Letters* **29**, 620 (2004).
92. J. Filevich, **J.J. Rocca**, E. Jankowska, E.C. Hammarsten, K. Kanizay, M.C. Marconi, S.J. Moon and V.N. Shlyaptsev, "Two-dimensional effects in laser-created plasmas measured with soft-x-ray laser interferometry," *Physical Review E* **67**, 056409 (2003).
  93. **J.J. Rocca**, and A.V. Vinogradov, "Repetitively pulsed X-ray laser operating on the 3p-3s transition of the Ne-like argon in a capillary discharge," *Soviet Journal of Quantum Electronics* **33**, 7 (2003).
  - A. Rahman, E.C. Hammarsten, S. Sakadzic, **J.J. Rocca**, and J.-F. Wyart, "Identification of  $n=4$ ,  $\Delta n=0$  Transitions in the Spectra of Nickel-like Cadmium Ions from a Capillary Discharge Plasma Column," *Physica Scripta* **67**, 414 (2003).
  94. **J.J. Rocca**, E.C. Hammarsten, E. Jankowska, J. Filevich, M.C. Marconi, S. Moon, and V.N. Shlyaptsev, "Application of extremely compact capillary discharge soft x-ray lasers to dense plasma diagnostics," *Physics of Plasma* **10**, 2031 (2003). (**Invited Paper**)
  95. R.F. Smith, J. Dunn, J. Nielsen, J.R. Hunter, V.N. Shlyaptsev, **J.J. Rocca**, J. Filevich, and M.C. Marconi, "Refraction effects on x-ray and ultraviolet interferometric probing of laser-produced plasmas," *Journal of the Optical Society of America B* **20**, 254 (2003).
  96. **J.J. Rocca**, J. Filevich, E.C. Hammarsten, E. Jankowska, B.R. Benware, M.C. Marconi, B. Luther, A. Vinogradov, I. Artiukov, S. Moon, and V.N. Shlyaptsev, "Extremely compact soft X-ray lasers based on capillary discharges," *Nuclear Instruments and Methods in Physics Research Section A - Accelerators Spectrometers Detectors and Associated Equipment* **507**, 515 (2003).
  97. K.A. Janulewicz, F. Bortolotto, A. Lucianetti, W. Sandner, P.V. Nickles, **J.J. Rocca**, N. Bobrova, and P.V. Satorov, "Fast capillary discharge plasma as a preformed medium for longitudinally pumped collisional x-ray lasers," *Journal of the Optical Society of America B: Optical Physics* **20**, 215 (2003).
  98. S. Le Pape, Ph Zeitoun, M. Idir, P. Dhez, D. Ros, A. Carillon, **J.J. Rocca**, and M. Francois, "Wavefront measurements in the soft X-ray range," *European Physical Journal - Applied Physics* **20**, 197 (2002).
  99. R.F. Smith, J. Dunn, J. Nilsen, V.N. Shlyaptsev, S. Moon, J. Filevich, **J.J. Rocca**, M.C. Marconi, J.R. Hunter, and T.W. Barbee Jr., "Picosecond X-ray Laser Interferometry of Dense Plasmas," *Physical Review Letters* **89**, 065004 (2002).
  100. S. Le Pape, Ph. Zeitoun, M. Idir, P. Dhez, **J.J. Rocca**, and M. François, "Electromagnetic-Field Distribution Measurements in the Soft X-Ray Range: Full Characterization of a Soft X-Ray Laser Beam," *Physical Review Letters* **88**, 183901 (2002).
  101. J.J. Gonzalez, M. Frati, **J.J. Rocca**, V.N. Shlyaptsev, and A.L. Osterheld, "High-power-density capillary discharge plasma columns for shorter wavelength discharge-pumped soft x-ray lasers," *Physical Review E* **65**, 026404 (2002).
  102. E.Jankowska, E.C. Hammarsten, J. Filevich, M.C. Marconi, and **J.J. Rocca**, "Table-Top Soft X-Ray Laser Interferograms of Dense Laser-Created Plasma," *IEEE Transactions on Plasma Science* **30**, 46 (2002).
  103. Y. Liu, M. Seminario, F.G. Tomasel, C. Chang, **J.J. Rocca**, and D.T. Attwood, "Spatial coherence measurement of a high average power table-top soft X-ray laser," *Journal de Physique IV* **11**, 123 (2001).
  104. B.M. Luther, L. Furfaro, A. Klix, and **J.J. Rocca**, "Femtosecond laser triggering of a sub-100 picosecond jitter high-voltage spark gap," *Applied Physics Letters* **79**, 3248 (2001).
  105. P.V. Nickles, K.A. Janulewicz, **J.J. Rocca**, F. Bortolotto, A. Lucianetti, and W. Wandner, "Hybridly pumped collisional soft X-ray laser in Ne-like sulphur," *Journal de Physique IV* **11**, 93 (2001).

106. I.A. Artioukov, B.R. Benware, R.M. Fechtchenko, **J.J. Rocca**, M. Seminario, A.V. Vinogradov, and M. Yamamoto, "The prospects of reflectometry and ellipsometry with Colorado State University tabletop XUV laser," *Journal de Physique IV* **11**, 451 (2001).
107. J. Filevich, M.C. Marconi, K. Kanizay, J.L.A. Chilla, and **J.J. Rocca**, "Dense plasma interferometry with a tabletop soft X-ray laser and an amplitude division interferometer based on diffraction gratings," *Journal de Physique IV* **11**, 483 (2001).
108. M. Frati, F.G. Tomasel, B. Bowers, J.J. Gonzalez, V.N. Shlyaptsev, and **J.J. Rocca**, "Generation of highly ionized cadmium plasma columns for a discharge-pumped Nickel-like Cd laser," *Journal de Physique IV* **11**, 571 (2001).
109. Y. Liu, M. Seminario, F.G. Tomasel, C. Chang, **J.J. Rocca**, and D.T. Attwood, "Achievement of essentially full spatial coherence in a high-average-power soft-x-ray laser," *Physical Review A* **63**, 033802 (2001).
110. **J.J. Rocca**, M. Seminario, M. Frati, B.R. Benware, H.L. Mancini, J. Filevich, M.C. Marconi, K. Kanizay, A. Ozols, I.A. Artioukov, A.V. Vinogradov, Yu.A. Uspenskii, F.G. Tomasel, and V.N. Shlyaptsev, "Applications of high repetition rate tabletop soft X-ray lasers become a reality in several fields," *Journal de Physique IV* **11**, 459 (2001).
111. K.A. Janulewicz, **J.J. Rocca**, F. Bortolotto, M.P. Kalachnikov, V.N. Shlyaptsev, W. Sandner, and P.V. Nickles, "Demonstration of a hybrid collisional soft-x-ray laser," *Physical Review A* **63**, 033803 (2001).
112. B.R. Benware, M. Seminario, A.L. Lecher, **J.J. Rocca**, Y.A. Unspenskii, A.V. Vinogradov, V.V. Kondratenko, Y.P. Pershing, and B. Bach, "Generation and applications of a high-average-power polarized soft-x-ray laser beam," *Journal of the Optical Society of America B* **18**, 1041 (2001).
113. M. Seminario, **J.J. Rocca**, R.A. Depine, B. Bach, and B. Bach, "Characterization of diffraction gratings by use of a tabletop soft x-ray laser," *Applied Optics* **40**, 5539 (2001).
114. **J.J. Rocca**, M. Frati, B.R. Benware, M. Seminario, J. Filevich, M.C. Marconi, K. Kanizay, A. Ozols, I.A. Artioukov, A. Vinogradov, and Y.A. Uspenskii, "Capillary discharge tabletop soft X-ray lasers reach new wavelengths and applications," *Comptes Rendus De L' Academie Des Sciences Serie IV, Physique Astrophysique* **8**, 1065 (2000). (**Invited Paper**)
115. M.C. Marconi, C.H. Moreno, **J.J. Rocca**, V.N. Shlyaptsev, and A.L. Osterheld, "Dynamics of a microcapillary discharge plasma using a soft x-ray laser backlighter," *Physical Review E* **62**, 7209 (2000).
116. J. Filevich, K. Kanizay, M.C. Marconi, J.L.A. Chilla, and **J.J. Rocca**, "Dense plasma diagnostics with an amplitude-division soft-x-ray laser interferometer based on diffraction gratings," *Optics Letters* **25**, 356 (2000).
117. M. Frati, M. Seminario, and **J.J. Rocca**, "Demonstration of a 10- $\mu$ J tabletop laser at 52.9nm in neonlike chlorine," *Optics Letters* **25**, 1022 (2000).
118. K.A. Janulewicz, **J.J. Rocca**, F. Bortolotto, W. Sandner, and P.V. Nickles, "Collisionally pumped hybrid soft x-ray laser in Ne-like sulphur," *Comptes Rendus De L' Academie Des Sciences Serie IV Physique Astrophysique* **8**, 1083 (2000).
119. N. Mingolo, Y. Cesa, O.E. Martinez, J.I. Etcheverry, and **J.J. Rocca**, "Enhanced Energy Deposition Efficiency of Glow Discharge Electron Beams for Metal Surface Treatment," *IEEE Transactions on Plasma Science* **28**, 386 (2000).
120. I.A. Artioukov, B.R. Benware, A.V. Vinogradov, Y.S. Kas'yanov, V.V. Kondratenko, C.D. Macchietto, A. Ozols, **J.J. Rocca**, and J.L.A. Chilla, "Focusing the beam of a compact, repetitively pulsed x-ray laser to study the interaction of radiation with metallic targets and x-ray reflectometry," *Quantum Electronics* **30**, 328 (2000).
121. **J.J. Rocca**, "Table-top soft X-ray lasers," *Review of Scientific Instruments* **70**, 3799 (1999). (Invited Review Paper)

122. C.D. Macchietto, B.R. Benware, and **J.J. Rocca**, "Generation of millijoule-level soft-x-ray laser pulses at a 4-Hz repetition rate in a highly saturated tabletop capillary discharge amplifier," *Optics Letters* **24**, 1115 (1999).
123. **J.J. Rocca**, C.H. Moreno, M.C. Marconi, and K. Kanizay, "Soft-x-ray laser interferometry of a plasma with a tabletop laser and Lloyd's mirror," *Optics Letters* **24**, 420 (1999).
124. B.R. Benware, A. Ozols, **J.J. Rocca**, I.A. Artioukov, V.V. Kondratenko, and A.V. Vinogradov, "Focusing of a tabletop soft-x-ray laser beam and laser ablation," *Optics Letters* **24**, 1714 (1999).
125. C.H. Moreno, M.C. Marconi, K. Kanizay, **J.J. Rocca**, Yu.A. Uspenskii, A.V. Vinogradov, and Yu.A. Pershin, "Soft x-ray laser interferometry of a pinch discharge using a tabletop laser," *Physical Review E* **60**, 911 (1999).
126. O. Buccafusca, J.L.A. Chilla, **J.J. Rocca**, P. Brusenbach, and J. Martin-Regalado, "Transient Response of Vertical-Cavity Surface-Emitting Lasers of Different Active-Region Diameters," *IEEE Journal of Quantum Electronics* **35**, 608 (1999).
127. I.A. Artioukov, B.R. Benware, **J.J. Rocca**, M. Forsythe, Yu.A. Uspenskii, and A.V. Vinogradov, "Determination of XUV Optical Constants by Reflectometry Using a High-Repetition Rate 46.9-nm Laser," *IEEE Journal of Selected Topics In Quantum Electronics* **5**, 1495 (1999).
128. C.H. Moreno, M.C. Marconi, V.N. Shlyaptsev, and **J.J. Rocca**, "Shadowgrams of a Dense Micro-Capillary Plasma Obtained with a Table-Top Soft X-Ray Laser," *IEEE Transactions on Plasma Science* **27**, 6 (1999).
129. G. Vaschenko, M. Giudici, **J.J. Rocca**, C.S. Menoni, J.R. Tredicce, and S. Balle, "Temporal Dynamics of Semiconductor Lasers with Optical Feedback," *Physical Review Letters* **81**, 5536 (1998).
130. M. Giudici, J.R. Tredicce, G. Vaschenko, **J.J. Rocca**, and C.S. Menoni, "Spatio-temporal dynamics in vertical cavity surface emitting lasers excited by fast electrical pulses," *Optics Communications* **158**, 313 (1998).
131. B.R. Benware, C.D. Macchietto, C.H. Moreno, and **J.J. Rocca**, "Demonstration of a High Average Power Tabletop Soft X-Ray Laser," *Physical Review Letters* **81**, 5804 (1998).
132. C.H. Moreno, M.C. Marconi, V.N. Shlyaptsev, B.R. Benware, C.D. Macchietto, J.L.A. Chilla, **J.J. Rocca**, and A.L. Osterheld, "Two-dimensional near-field and far-field imaging of a Ne-like Ar capillary discharge table-top soft-x-ray laser," *Physical Review A* **58**, 1509 (1998).
133. M.C. Marconi, J.L.A. Chilla, C.H. Moreno, B.R. Benware, and **J.J. Rocca**, "Measurement of the Spatial Coherence Buildup in a Discharge Pumped Table-Top Soft X-Ray Laser," *Physical Review Letters* **79**, 2799 (1997).
134. **J.J. Rocca**, F.G. Tomasel, C.H. Moreno, V.N. Shlyaptsev, M.C. Marconi, B.R. Benware, J.J. Gonzalez, J.L.A. Chilla, and C.D. Macchietto, "Progress in the Development of Table-Top Discharge-Pumped Soft X-Ray Lasers," *Journal de Physique IV* **C4**, 353 (1997). (Invited Paper)
135. J. Martin-Regalado, J.L.A. Chilla, **J.J. Rocca**, and P. Brusenbach, "Polarization switching in vertical-cavity surface emitting lasers observed at constant active region temperature," *Applied Physics Letters* **70**, 3350 (1997).
136. N. Mingolo, C.R. Gonzalez, O.E. Martinez, and **J.J. Rocca**, "Stabilization of a cold cathode electron beam glow discharge for surface treatment," *Journal of Applied Physics* **82**, 4118 (1997).
137. B.R. Benware, C.H. Moreno, D.J. Burd, and **J.J. Rocca**, "Operation and output Pulse characteristics of an extremely compact capillary-discharge tabletop soft-x-ray laser," *Optics Letters* **22**, 796 (1997).
138. J.I. Etcheverry, N. Mingolo, **J.J. Rocca**, and O.E. Martinez, "A Simple Model of a Glow Discharge Electron Beam for Materials Processing," *IEEE Transactions on Plasma Science* **25**, 427 (1997).
139. C.S. Menoni, O. Buccafusca, M.C. Marconi, D. Patel, **J.J. Rocca**, G.Y. Robinson, and S.M.

- Goodnick, "Effect of indirect  $\Gamma$ -L and  $\Gamma$ -X transfer on the carrier dynamics of InGaP/InAlP multiple quantum wells," *Applied Physics Letters* **70**, 102 (1997).
140. K. Kobashi, S. Miyauchi, K. Miyata, K. Nishimura, and **J.J. Rocca**, "Etching of polycrystalline diamond films by electron beam assisted plasma," *Journal of Materials Research* **11**, 2744 (1997).
  141. M.A. Klosner, H.A. Bender, W.T. Silfvast, and **J.J. Rocca**, "Intense plasma discharge source at 13.5 nm for extreme-ultraviolet lithography," *Optics Letters* **22**, 34 (1997).
  142. F.G. Tomasel, **J.J. Rocca**, V.N. Shlyaptsev, and C.D. Macchietto, "Lasing at 60.8 nm in Ne-like sulfur ions in ablated material excited by a capillary discharge," *Physical Review A* **55**, 1437 (1997).
  143. **J.J. Rocca**, D.P. Clark, J.L.A. Chilla, and V.N. Shlyaptsev, "Energy Extraction and Achievement of the Saturation Limit in a Discharge-Pumped Table-Top Soft X-Ray Amplifier," *Physical Review Letters* **77**, 1476 (1996).
  144. F.G. Tomasel, V.N. Shlyaptsev, and **J.J. Rocca**, "Enhanced beam characteristics of a discharge-pumped soft-x-ray amplifier by an axial magnetic field," *Physical Review A* **54**, 2474 (1996).
  145. J.L.A. Chilla, **J.J. Rocca**, O.E. Martinez, and M.C. Marconi, "Soft-x-ray interferometer for single-shot laser linewidth measurements," *Optics Letters* **21**, 955 (1996).
  146. J.L.A. Chilla, and **J.J. Rocca**, "Beam optics of gain-guided soft-x-ray lasers in cylindrical plasmas," *Journal of the Optical Society of America B* **13**, 2841 (1996).
  147. F.G. Tomasel, **J.J. Rocca**, and V.N. Shlyaptsev, "Dynamics of the Plasma Column of a Capillary Discharge Soft X-Ray Laser," *IEEE Transactions on Plasma Science* **24**, 49 (1996).
  148. O. Buccafusca, J.L.A. Chilla, **J.J. Rocca**, S. Feld, C. Wilmsen, V. Morosov, and R. Leibenguth, "Transverse mode dynamics in vertical cavity surface emitting lasers excited by fast electrical pulses," *Applied Physics Letters* **68**, 590 (1996).
  149. N. Mingolo, C.R. Gonzalez, **J.J. Rocca**, and O.E. Martinez, "Pulsed glow discharge electron gun for metal surface treatment," *Anales de la Asociacion Quimica Argentina* **83**, 259 (1995).
  150. **J.J. Rocca**, V.N. Shlyaptsev, F.G. Tomasel, O.D. Cortazar, H. Hartshorn, and J.L.A. Chilla, "Demonstration of a discharge pumped table-top soft-x-ray laser (vol. 73, pg. 2192, 1994)," *Physical Review Letters* **75**, 1236 (1995).
  151. **J.J. Rocca**, M.C. Marconi, J.L.A. Chilla, D.P. Clark, F.G. Tomasel, and V.N. Shlyaptsev, "Discharge-Driven 46.9-nm Amplifier with Gain-Length Approaching Saturation," *IEEE Journal of Selected Topics in Quantum Electronics* **1**, 945 (1995).
  152. O.F. Buccafusca, J.L.A. Chilla, **J.J. Rocca**, C. Wilmsen, S. Feld, and R. Leibenguth, "Ultrahigh frequency oscillations and multimode dynamics in vertical cavity surface emitting lasers," *Applied Physics Letters* **67**, 185 (1995).
  153. **J.J. Rocca**, F.G. Tomasel, M.C. Marconi, V.N. Shlyaptsev, J.L.A. Chilla, B.T. Szapiro, and G. Giudice, "Discharge-pumped soft-x-ray laser in neon-like argon," *Physics of Plasmas* **2**, 2547 (1995). (**Invited Paper**)
  154. J.L.A. Chilla, B.R. Benware, M.E. Watson, P. Stanko, **J.J. Rocca**, C. Wilmsen, S. Feld, and R. Leibenguth, "Coherence of VCSEL's for Holographic Interconnects," *IEEE Photonics Technology Letters* **7**, 449 (1995).
  155. M.E. Watson, J.L.A. Chilla, **J.J. Rocca**, J.-W. Kim, D.L. Lile, T.J. Vogt, and G.Y. Robinson, "Saturation Intensity and Time Response of InGaAs-InGaP MQW Optical Modulators," *IEEE Journal of Quantum Electronics* **31**, 254 (1995).
  156. **J.J. Rocca**, V.N. Shlyaptsev, F.G. Tomasel, O.D. Cortazar, D. Hartshorn, and J.L.A. Chilla, "Demonstration of a Discharge Pumped Table-Top Soft-X-Ray Laser," *Physical Review Letters* **73**, 2192 (1994).
  157. M. Prasad, O.E. Martinez, C.S. Menoni, **J.J. Rocca**, J.L.A. Chilla, M.J. Hafich, and G.Y. Robinson, "Transient Grating Measurement of Ambipolar Diffusion and Carrier Recombination in

- InGaP/InAlP Multiple Quantum Wells and InGaP Bulk,” *Journal of Electronic Materials* **23**, 359 (1994).
158. J.L.A. Chilla, O. Buccafusca, and **J.J. Rocca**, “Origin of photoluminescence signals obtained by picosecond-excitation correlation measurements,” *Physical Review B* **48**, 14347 (1993).
  159. **J.J. Rocca**, O.D. Cortazar, F.G. Tomasel, and B.T. Szapiro, “Efficient generation of highly ionized calcium and titanium plasma columns for collisionally excited soft-x-ray lasers in a fast capillary discharge,” *Physical Review E* **48**, R2378 (1993).
  160. F.G. Tomasel, **J.J. Rocca**, O.D. Cortazar, B.T. Szapiro, and R.W. Lee, “Plasma-density evolution in compact polyacetal capillary discharges,” *Physical Review E* **47**, 3590 (1993).
  161. O.F. Buccafusca, J.L.A. Chilla, C.S. Menoni, **J.J. Rocca**, M.J. Hafich, L.M. Woods, and G.Y. Robinson, “Nonresonant tunneling in InGaP/InAlP asymmetric double quantum wells,” *Applied Physics Letters* **62**, 399 (1993).
  162. **J.J. Rocca**, O.D. Cortazar, B.T. Szapiro, K. Floyd, and F.G. Tomasel, “Fast-discharge excitation of hot capillary plasmas for soft-x-ray amplifiers,” *Physical Review E* **47**, 1299 (1993).
  163. **J.J. Rocca**, M.C. Marconi, and F.G. Tomasel, “Study of the Soft X-Ray Emission from Carbon Ions in a Capillary Discharge,” *IEEE Journal of Quantum Electronics* **29**, 182 (1993).
  164. O.F. Buccafusca, **J.J. Rocca**, M.C. Marconi, and C.S. Menoni, “Generation of synchronized trains of picosecond laser pulses at two wavelengths in a single-cavity synchronously mode-locked dye laser,” *Review of Scientific Instruments* **64**, 259 (1992).
  165. **J.J. Rocca** and K. Floyd, “Glow discharge plasma switch controlled by a small magnetic field,” *Applied Physics Letters* **61**, 901 (1992).
  166. G.J. Fetzer and **J.J. Rocca**, “A Self-Consistent Model for Negative Glow Discharge Lasers: The Hollow Cathode Helium Mercury Laser,” *IEEE Journal of Quantum Electronics* **28**, 1941 (1992).
  167. N. Mingolo and **J.J. Rocca**, “Production of amorphous metallic surfaces by means of a pulsed glow discharge electron beam,” *Journal of Materials Research* **7**, 1096 (1992).
  168. P. Thiagarajan, J.F. Schmerge, C.S. Menoni, M.C. Marconi, O.E. Martinez, **J.J. Rocca**, M.J. Hafich, H.Y. Lee, and G.Y. Robinson, “Picosecond absorption dynamics of photoexcited InGaP epitaxial films,” *Applied Physics Letters* **59**, 90 (1991).
  169. M.C. Marconi, **J.J. Rocca**, J.F. Schmerge, M. Villagran, and F.J. Lehmann, “Effect of a Strong Axial Magnetic Field in the Plasma Recombination and Extreme Ultraviolet Emission from a Highly-Ionized Capillary Discharge,” *IEEE Journal of Quantum Electronics* **26**, 1809 (1990).
  170. B.Wernsman, **J.J. Rocca**, H.L. Mancini, D. Schinca, and J.O. Tocho, “Recombination Lasers in a Flowing Negative Glow Discharge,” *IEEE Journal of Quantum Electronics* **26**, 1624 (1990). (Invited Paper)
  171. M. Villagran and **J.J. Rocca**, “Temporal Evolution of Plasma from a Highly Ionized Helium Capillary Discharge,” *IEEE Transactions on Plasma Science* **18**, 784 (1990).
  172. B.Wernsman, **J.J. Rocca**, and H.L. Mancini, “CW Ultraviolet and Visible Laser Action from Ionized Silver in an Electron Beam Generated Plasma,” *IEEE Photonics Technology Letters* **2**, 12 (1990).
  173. O.E. Martinez, P. Thiagarajan, M.C. Marconi, and **J.J. Rocca**, “Magnified Expansion and Compression of Subpicosecond Pulses from a Frequency-Doubled Nd: YLF Laser,” *IEEE Journal of Quantum Electronics* **25**, 2124 (1989).
  174. M.C. Marconi and **J.J. Rocca**, “Time-resolved extreme ultraviolet emission from a highly ionized lithium capillary discharge,” *Applied Physics Letters* **54**, 2180 (1989).
  175. M.C. Marconi, **J.J. Rocca**, and G.J. Krausse, “Fast gating of a windowless dual-multichannel-plate-intensified array detector,” *Journal of Physics E Scientific Instruments* **22**, 849 (1989).
  176. B.Murray, B. Szapiro, and **J.J. Rocca**, “Electron beam generation by electron multiplication,” *Applied Physics Letters* **54**, 2303 (1989).

177. M.C. Marconi, J.F. Schmerge, and **J.J. Rocca**, "Light collection and wavelength calibration for an extreme ultraviolet diode array spectrograph," *Review of Scientific Instruments* **60**, 966 (1989).
178. B.T. Szapiro and **J.J. Rocca**, "Electron emission from glow-discharge cathode materials due to neon and argon ion bombardment," *Journal of Applied Physics* **65**, 3713 (1989).
179. **J.J. Rocca**, D.C. Beethe and M.C. Marconi, "Proposal for soft-x-ray and XUV lasers in capillary discharges," *Optics Letters* **13**, 565 (1988).
180. R.O. Martinez, T.R. Verhey, P.K. Boyer, and **J.J. Rocca**, "Broad-area electron-beam-assisted etching of silicon in sulfur hexafluoride," *Journal of Vacuum Science and Technology B* **6**, 1581 (1988).
181. B.T. Szapiro, **J.J. Rocca**, and T. Prabhuram, "Electron yield of glow discharge cathode materials under helium ion bombardment," *Applied Physics Letters* **53**, 358 (1988).
182. A. Wernsman, T. Prabhuram, K. Lewis, F. Gonzalez, M. Villagran, and **J.J. Rocca**, "CW Silver Ion Laser with Electron Beam Excitation," *IEEE Journal of Quantum Electronics* **24**, 1554 (1988).
183. C.S. Murray, **J.J. Rocca**, and B.T. Szapiro, "A Reflex Electron Beam Discharge as a Plasma Source for Electron Beam Generation," *IEEE Transactions on Plasma Science* **16**, 570 (1988).
184. T.R. Verhey, **J.J. Rocca**, and P.K. Boyer, "Anisotropic plasma-chemical etching by an electron-beam-generated plasma," *Journal of Applied Physics* **63**, 2463 (1988).
185. T.R. Verhey, **J.J. Rocca**, and P.K. Boyer, "Low-energy broad area electron beam for etching microelectronic materials," *Journal of Applied Physics* **62**, 3001 (1987).
186. S.A. Lee, L.-U.A. Andersen, **J.J. Rocca**, M.C. Marconi, and N.D. Reesor, "Electric field distribution in the cathode sheath of an electron beam glow discharge," *Applied Physics Letters* **51**, 409 (1987).
187. H.F. Ranea-Sandoval, N. Reesor, B.T. Szapiro, C. Murray, and **J.J. Rocca**, "Study of Intense Electron Beams Produced by High-Voltage Pulsed Glow Discharges," *IEEE Transactions on Plasma Science* **PS-15**, 361 (1987).
188. **J.J. Rocca**, B.T. Szapiro, and T. Verhey, "High current density hollow cathode electron beam source," *Applied Physics Letters* **50**, 1334 (1987).
189. M. Villagran, M. Gallardo, J.O. Tocho, and **J.J. Rocca**, "The electron temperature in the plasma of a spark-recombination laser," *Journal of Applied Physics* **61**, 4447 (1987).
190. G.J. Fetzer, **J.J. Rocca**, G.J. Collins, and R. Jacobs, "Model of cw argon ion lasers excited by low-energy electron beams," *Journal of Applied Physics* **60**, 2739 (1986).
191. A. Wernsman, H.F. Ranea-Sandoval, **J.J. Rocca**, and H. Mancini, "Generation of Pulsed Electron Beams by Simple Cold Cathode Plasma Guns," *IEEE Transactions on Plasma Science* **PS-14**, 518 (1986).
192. **J.J. Rocca**, H.L. Mancini, and B. Wernsman, "Cd Recombination Laser in a Plasma Generated by an Electron Beam," *IEEE Journal of Quantum Electronics* **QE-22**, 509 (1986).
193. **J.J. Rocca**, "Cw recombination laser in a flowing negative glow plasma," *Applied Physics Letters* **47**, 1145 (1985).
194. B.J. Stanbery, W.S. Chen, R.A. Mickelsen, G.J. Collins, K.A. Emery, **J.J. Rocca**, and L.R. Thompson, "Silicon nitride anti-reflection coatings for CdS/CuInSe<sub>2</sub> thin film solar cells by electron beam assisted chemical vapor deposition," *Solar Cells* **14**, 289 (1985).
195. C.A. Moore, **J.J. Rocca**, G.J. Collins, P.E. Russell, and J.D. Geller, "Titanium disilicide formation by wide-area electron beam irradiation," *Applied Physics Letters* **45**, 169 (1984).
196. **J.J. Rocca**, J.D. Meyer, M.R. Farrell, and G.J. Collins, "Glow-discharge-created electron beams: Cathode materials, electron gun designs, and technological applications," *Journal of Applied Physics* **56**, 790 (1984).
197. **J.J. Rocca**, J.D. Meyer, B.G. Pihlstrom, and G.J. Collins, "CW Laser Action in Atomic Fluorine,"

- IEEE Journal of Quantum Electronics **QE-20**, 625 (1984).
198. L.R. Thompson, L. Gobis, D. Bishop, **J.J. Rocca**, K. Emery, and G.J. Collins, "Conformal Step Coverage of Electron Beam-Assisted CVD of SiO<sub>2</sub> and Si<sub>3</sub>N<sub>4</sub> Films," Journal of the Electrochemical Society **131**, 462 (1984).
  199. D.C. Bishop, K.A. Emery, **J.J. Rocca**, L.R. Thompson, H. Zarnani, and G.J. Collins, "Silicon nitride films deposited with an electron beam created plasma," Applied Physics Letters **44**, 598 (1984).
  200. **J.J. Rocca**, L. Thompson, D. Bishop, and G.J. Collins, "Large Area Electron Beam Processing of Microelectronic Films," Journal of Electrochemical Society **131**, C311 (1984).
  201. K. Emery, L.R. Thompson, **J.J. Rocca**, G.J. Collins, "Electron beam assisted CVD of silicon dioxide and silicon nitride films," Proceedings of the Society of Photo-Optical Instrumentation Engineers **459**, 82 (1984).
  202. **J.J. Rocca**, and G.J. Collins, "Ultraviolet Ion Lasers," "ATOMTRYA" (Automatic Monitoring and Measurements) **3**, 1 (1984). (Invited Review Paper)
  203. L.R. Thompson, **J.J. Rocca**, K. Emery, P.K. Boyer, and G.J. Collins, "Electron beam assisted chemical vapor deposition of SiO<sub>2</sub>," Applied Physics Letters **43**, 777 (1983).
  204. C.A. Moore, **J.J. Rocca**, T. Johnson, G.J. Collins, and P.E. Russell, "Large area electron beam annealing," Applied Physics Letters **43**, 290 (1983).
  205. **J.J. Rocca**, J.D. Meyer and G.J. Collins, "1-W cw Zn ion laser," Applied Physics Letters **43**, 37 (1983).
  206. **J.J. Rocca**, D.M. McClure, and G.J. Collins, "Compact Hg II Laser Excited by a Transverse Electron Beam Glow Discharge," IEEE Journal of Quantum Electronics **QE-19**, 1485 (1983).
  207. Z. Yu, **J.J. Rocca**, G.J. Collins, and C.Y. She, "The Energy of Thermal Electrons in Electron Beam Created Helium Discharges," Physics Letters **96 A**, 125 (1983).
  208. Z. Yu, **J.J. Rocca**, and G.J. Collins, "Studies of a glow discharge electron beam," Journal of Applied Physics **54**, 131 (1983).
  209. **J.J. Rocca**, J.D. Meyer, and G.J. Collins, "CW Laser Oscillations in Cd II in an Electron Beam Created Plasma," Physics Letters **90 A**, 358 (1982).
  210. **J.J. Rocca**, J.D. Meyer, Z. Yu, and G.J. Collins, "CW Ion Lasers Pumped By Electron Beams," Applied Physics B **28**, 239 (1982).
  211. Z. Yu, **J.J. Rocca**, J.D. Meyer, and G.J. Collins, "Transverse electron guns for plasma excitation," Journal of Applied Physics **53**, 4704 (1982).
  212. J.D. Meyer, **J.J. Rocca**, Z. Yu, and G.J. Collins, "CW Iodine Ion Laser Excited by an Electron Beam," IEEE Journal of Quantum Electronics **QE-18**, 326 (1982).
  213. **J.J. Rocca**, J.D. Meyer, Z. Yu, M. Farrell, and G.J. Collins, "Multikilowatt electron beams for Pumping cw ion lasers," Applied Physics Letters **41**, 811 (1982).
  214. **J.J. Rocca**, J.D. Meyer, and G.J. Collins, "Hollow Cathode Electron Gun for the Excitation of CW Lasers," Physics Letters **87 A**, 237 (1982).
  215. **J.J. Rocca**, J.D. Meyer, and G.J. Collins, "Zn II and As II CW Laser Transitions Excited by an Electron Beam," IEEE Journal of Quantum Electronics **QE-18**, 1052 (1982).
  216. **J.J. Rocca**, J.D. Meyer and G.J. Collins, "Electron Beam Pumped CW Se II Laser," Optics Communications **42**, 125 (1982).
  217. **J.J. Rocca**, J.D. Meyer, and G.J. Collins, "Electron Beam Pumped cw Hg Ion Laser," Applied Physics Letters **40**, 300 (1982).
  218. **J.J. Rocca**, G.J. Fetzer and G.J. Collins, "The Effect of an Axial Magnetic Field on the Spontaneous Emission from an Argon Hollow Cathode Discharge," Physics Letters A **84**, 118 (1981).

## SCIENCE NEWS ARTICLES

1. Y. Wang, M. Berrill, F. Pedaci, M.M. Shakya, S. Gilbertson, Zenghu Chang, E. Granados, B.M. Luther, M.A. Larotonda and **J.J. Rocca**, "Picosecond Soft X-Ray Laser Pulses from an Injection-Seeded Plasma Amplifier," *Optics & Photonics News*, "Optics in 2009," **20**, 4 (2009).
2. Y. Wang, F. Pedaci, M. Berrill, D. Alessi, E. Granados, B.M. Luther, and J.J. Rocca, "Phase-Coherent Injection-Seeded Soft X-Ray Lasers at Wavelengths Down to 13.2 nm," *Optics & Photonics News*, "Optics in 2008," **19**, 29 (2008).
3. F. Brizuela, H. Bravo, M. Berrill, G. Vaschenko, B. Longhon, E.H. Anderson, W. Chao, D.T. Attwood, O. Hamberg, S. Bloom, **J.J. Rocca**, and C.S. Menoni, "Ablation of Sub-100-nm Features with a Tabletop Soft X-ray Laser," *Optics & Photonics News*, "Optics in 2007," **18**, 45 (2007).
4. P.W. Wachulak, M.C. Marconi, R.A. Bartels, C.S. Menoni, and **J.J. Rocca**, "Numerical Optical Sectioning for 3D Holographic Images with EUV Lasers," *Optics & Photonics News*, "Optics in 2007," **18**, 22 (2007).
5. **J.J. Rocca**, H. Kapteyn, D. Attwood, M. Murnane, C.S. Menoni, and E. Anderson, "Tabletop Lasers in the Extreme Ultraviolet," *Optics & Photonics News* **17**, 30 (2006).
6. Y. Wang, E. Granados, M.A. Larotonda, M. Berrill, B.M. Luther, D. Patel, C.S. Menoni, and **J.J. Rocca**, "High Brightness Soft X-ray Laser by Injection Seeding of a Dense Plasma Amplifier," *Optics & Photonics News*, "Optics in 2006," **17**, 46 (2006).
7. D. Gaudiosi, B. Reagan, T. Popmintchev, M. Grisham, M. Berrill, O. Cohen, B.C. Walker, M.M. Murnane, H.C. Kapteyn, and **J.J. Rocca**, "High Harmonic Generation from Ions in a Capillary Discharge Plasma Waveguide," *Optics & Photonics News*, "Optics in 2006," **17**, 44 (2006).
8. C. Brewer, F. Brizuela, G. Vaschenko, Y. Wang, M.A. Larotonda, B.M. Luther, M.C. Marconi, **J.J. Rocca**, C.S. Menoni, E.H. Anderson, W. Chao, Y. Liu, and D.T. Attwood, "Light-Based Microscopy Reaches Sub-38nm Resolution with Extreme UV Laser," *Optics & Photonics News*, "Optics in 2006," **17**, 45 (2006).
9. Y. Wang, M.A. Larotonda, B.M. Luther, D. Alessi, M. Berrill, M.C. Marconi, V.N. Shlyaptsev, and **J.J. Rocca**, "High Repetition Rate Tabletop Soft X-ray Lasers with Saturated Output at Wavelengths down to 13.2 nm," *Optics & Photonics News*, "Optics in 2005," **16**, 26 (2005).
10. G. Vaschenko, F. Brizuela, C. Brewer, M. Grisham, C.S. Menoni, M.C. Marconi, **J.J. Rocca**, W. Chao, J.A. Liddle, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, Y.P. Persyn, and V.V. Kondratenko, "Nano-Imaging with Compact Extreme Ultraviolet Lasers," *Optics & Photonics News*, "Optics in 2005," **16**, 25 (2005).
11. Y. Wang, M.A. Larotonda, B.M. Luther, D. Alessi, M. Berrill, M.C. Marconi, V.N. Shlyaptsev, **J.J. Rocca**, P. Polynkin, A. Polynkin, M. Mansuripur, J. Moloney, and N. Peyghambarian, "Lasers," *Optics & Photonics News* **16**, 26 (2005).
12. D.L. Marks, C. Vinegoni, J.S. Bredfeldt, S.A. Boppart, R.P. Millane, W.H. Hsiao, G. Vaschenko, F. Brizuela, C. Brewer, M. Grisham, C.S. Menoni, M.C. Marconi, **J.J. Rocca**, W. Chao, J.A. Liddle, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, Y.P. Pershyn, and V.V. Kondratenko, "Imaging," *Optics & Photonics News* **16**, 23 (2005).
13. S. Le Pape, Ph. Zeitoun, M. Idir, P. Dhez, **J.J. Rocca**, and M. Francois, "Electromagnetic Field Distribution Measurements in the Soft X-Ray Range: Full Characterization of a Soft X-Ray Laser beam," *Optics & Photonics News*, "Optics in 2002," **13**, 44 (2002).
14. Y. Liu, **J.J. Rocca**, and D.T. Attwood, "Soft x-ray laser approaching full spatial coherence," *Optics & Photonics News*, "Optics in 2001," **12**, 72 (2001).



15. J. Filevich, K. Kanizay, M.C. Marconi, J.L.A. Chilla, and **J.J. Rocca**, “Dense plasma interferometry with an amplitude-division soft x-ray laser interferometer based on diffraction gratings,” *Optics & Photonics News* **11**, 20 (2000).
16. C.D. Macchietto, B.R. Benware, and **J.J. Rocca**, “Generation of Milli-Joule Level Soft X-ray Laser Pulses at 4Hz Repetition Rate in a Highly Saturated Table-Top Capillary Discharge Amplifier,” *Optics & Photonics News*, “Optics in 1999,” **10**, 18 (1999).
17. C.H. Moreno, M.C. Marconi, V.N. Shlyaptsev, B.R. Benware, C.D. Macchietto, J.L.A. Chilla, and **J.J. Rocca**, “Two dimensional Near-Field and Far-Field Imaging of a Ne-like Capillary Discharge Tabletop Soft X-Ray Laser,” *Optics & Photonics News* “Optics in 1998,” Dec. (1998).
18. M.C. Marconi, J.L.A. Chilla, C.H. Moreno, B.R. Benware and **J.J. Rocca**, “Build-up of the Spatial Coherence in a Discharge Pumped Table-Top Soft X-Ray Laser,” *Optics & Photonics News*, “Optics in 1997,” Dec. (1997).
19. **J.J. Rocca**, “Researchers Close the Gap in the Hunt for Soft X-Ray Lasers,” *Photonics Spectra* **102**, July, (1996).
20. **J.J. Rocca**, D. Clark, J. Chilla, and V.N. Shlyaptsev, “Achievement of the Saturation Limit and Energy Extraction in a Discharge Pumped Table- Top Soft X-Ray Amplifier,” *Optics & Photonics News*, “Optics in 1996,” **39**, Dec. (1996).
21. **J.J. Rocca**, “Discharge Pumped Table Top Soft X-ray Laser,” *Physics News in 1995*, American Institute of Physics, April (1996). (**Invited**)
22. **J.J. Rocca**, “Discharge Pumping Puts Soft X-Ray Lasers on the Table-Top,” *IEEE Lasers and Electro-Optics Society Newsletter*, Oct. (1995). (**Invited Article**)
23. **J.J. Rocca**, V.N. Shlyaptsev, F.G. Tomasel, O.D. Cortazar, D. Hartshorn, J.L.A. Chilla, and M.C. Marconi, “Discharge Pumped Soft X-Ray Laser,” *Optics & Photonics News*, “Optics in 1994,” **16**, Dec. (1994).

## PATENTS

1. **J.J. Rocca**, H. Kapteyn, M. Murnane, D. Gaudiosi, M.E. Grisham, T.V. Potmintchev, “High-Order Harmonic Generation in a Capillary Discharge”, United States Patent Number 11/804,888, 2010.
2. M.C. Marconi, P. Wachulak, C.S. Menoni, **J.J. Rocca**, “Nanometer-Scale Lithography Using Extreme Ultraviolet/Soft X-Ray Laser Interferometry”. U.S. Patent 7,705,332, (2010).
3. **J.J. Rocca**, “Renewable laser target,” United States patent Number 7,609,816, (2009).
4. **J.J. Rocca**, D. Alessi, B. Luther, M. Berrill, M.A. Larotonda, Y. Wang, “Increased laser output energy and average power at wavelengths below 35 nm,” United States patent Number 7,308,007, (2007).
5. **J.J. Rocca**, “Capillary discharge x-ray laser,” United States patent Number 7,251,263, (2007).
6. **J.J. Rocca**, “Compact Discharge Soft X-Ray Laser,” United States patent Number 6,167,065, (2000).
7. **J.J. Rocca**, “Method and Apparatus for Producing Soft X-Ray Lasers in a Capillary Discharge Plasma,” United States Patent Number 4, 937, 832, June 26, (1990).
8. G.J. Collins, **J.J. Rocca**, and J.D. Meyer, “D.C. Electron Beam Method of Continuous Wave Laser Excitation,” United States Patent Number 4, 641, 316, Feb. 3, (1987).

9. G.J. Collins, L.R. Thompson, **J.J. Rocca** and P.K. Boyer, "Electron Beam Induced Chemical Vapor Deposition," United States Patent Number 4, 509, 451, April 9, (1985).
10. **J.J. Rocca**, and G.J. Collins, "Electron Beam Assisted Etching of Integrated Circuit Structures," United States Patent Number 4, 496, 449, Jan. 29, (1985).

#### BOOKS CHAPTERS

1. M.E. Grisham, G. Vaschenko, C.S. Menoni, L. Juha, M. Bittner, Yu.P. Rershin, V.V. Kondratenko, E.N. Zubarev, A.V. Vinogradov, I.A. Artioukov, and **J.J. Rocca**, "Materials modification with intense extreme ultraviolet pulses from a compact laser," in "Laser Ablation and its Applications," Chapter 21, p. 521, (2006).
2. **J.J. Rocca**, "Soft X-Ray Lasers," in "Handbook of Lasers," Institute of Physics, Bristol, England, (2003).

#### INVITED CONFERENCE ABSTRACTS OR PROCEEDINGS

1. **J.J. Rocca**, D. Alessi, D.H. Martz, Y. Wang, B. Reagan, B.M. Luther, F. Furch, A. Curtis, K. Wernsing, M. Berrill, "Advances in compact high brightness soft x-ray lasers: sub-10 nm wavelengths and smaller size," 41<sup>st</sup> Progress in Quantum Electronics Symposium, Snowbird, UT, Jan. 2-6, (2011). **Plenary Talk**
2. **J.J. Rocca**, B.A. Reagan, F.J. Furch, Y. Wang, D. Alessi, D.H. Martz, B.M. Luther, M. Berrill and A.H. Curtis, "Advances in Compact High Repetition Rate Soft X-Ray Lasers," The 23rd Annual Meeting of the IEEE Photonics Society, Denver, CO, November 7 – 11, (2010).
3. **J.J. Rocca**, F. Furch, B. Reagan, D. Alessi, Y. Wang, D.H. Martz, M. Berrill, A.H. Curtis, D. Kemp, S. Domingue, V.N. Shlyaptsev, and B.M. Luther, "Demonstration of an All-Diode-Pumped Soft X-Ray laser and Other Advances in Table-top Soft X-Ray Laser Development," 12<sup>th</sup> International Conference on X-Ray Lasers, Gwangju, Korea, May 30 – June 4, (2010).
4. M. Berrill, B.M. Luther, **J.J. Rocca**, Y. Wang, D. Alessi and D.H. Martz, "Demonstration of 10.9 nm Table-Top Soft X-Ray Laser at 1 Hz Repetition Rate," The 23rd Annual Meeting of the IEEE Photonics Society, Denver, CO, November 7 – 11, (2010).
5. M.C. Marconi, P. Wachulak, L. Urbanski, C.S. Menoni, **J.J. Rocca**, A. Isoyan, F. Jiang, Y.-C. Cheng and F. Cerrina, "Extreme Ultraviolet Lasers Demonstrate New Nano-Patterning Schemes," The 23rd Annual Meeting of the IEEE Photonics Society Denver, CO, November 7 – 11, (2010).
6. C.S. Menoni, F. Brizuela, S. Carbajo, Y. Wang, D. Alessi, B. M. Luther, A. Sakdinawat, K. Goldberg, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, M.C. Marconi, and **J.J. Rocca**, "Reflection microscope for actinic mask inspection and other progress in soft x-ray laser nano-imaging," 12<sup>th</sup> International Conference on X-Ray Lasers, Gwangju, Korea, May 30 – June 4, (2010).
7. A. Klisnick, O. Guilbaud, J.P. Goddet, J. Habib, F. Tissandier, L.M. Meng, S. Domingue, L. Urbanski, J. Gautier, B. Zielbauer, S. de Rossi, Y. Wang, D. Alessi, B. Luther, S. Kazamias, D. Ros, D. Phalippou, G. Maynard, D. Benredjem, A. Calisti, S. Sebban, **J.J. Rocca**, M. Marconi, D. Joyeux, and P. Zeitoun, "Temporal coherence and spectral width of seeded and ASE XUV lasers," 12<sup>th</sup> International Conference on X-Ray Lasers, Gwangju, Korea, May 30 – June 4, (2010).
8. B.A. Reagan, F.J. Furch, B.M. Luther, A.H. Curtis, S.P. Meehan, and **J.J. Rocca**, "Soft X-Ray Laser Pumped by a Joule-Class, All-Diode-Pumped Laser System," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications

Systems Technologies 2010, Technical Digest (Optical Society of America, Washington, DC, 2009), San Jose, CA, (2010).

9. **J.J. Rocca**, F.J. Furch, B.A. Reagan, Y. Wang, D. Alessi, D. Martz, B.M. Luther, A.H. Curtis, S.P. Meehan, S. Domingue, D. Kemp, “New advances in high repetition rate table-top soft x-ray lasers,” SPIE Photonics Europe, Brussels, Belgium, April 12 – 16, (2010).
10. **J.J. Rocca**, F.J. Furch, B.A. Reagan, Y. Wang, D. Alessi, D. Martz, B.M. Luther, A.H. Curtis, S.P. Meehan, S. Domingue, and D. Kemp, “Recent Advances of Table-Top Soft X-ray Lasers,” Advanced Solid-State Photonics (ASSP), San Diego, CA, Jan. 31–Feb. 3, (2010).
11. **J.J. Rocca**, D. Alessi, Y. Wang, D.H. Martz, F. Furch, B. Reagan, M. Berrill, and B.M. Luther, “Table-top soft x-ray lasers with shorter wavelengths and smaller size,” 40<sup>th</sup> Progress in Quantum Electronics Symposium, Snowbird, UT, Jan. 3-6, (2010).
12. C.S. Menoni, F. Brizuela, P. Watchulak, M.C. Marconi, and **J.J. Rocca**, “Nanoscale imaging and patterning using bright beams of soft x-ray light from table-top lasers,” 40<sup>th</sup> Progress in Quantum Electronics Symposium, Snowbird, UT, Jan. 3-6, (2010).
13. C.S. Menoni, F. Brizuela, C. Brewer, Y. Wang, F. Pedaci, B.M. Luther, W. Chao, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artiukov, A.G. Ponomareko, V.V. Kondratenko, M.C. Marconi, and **J.J. Rocca**, “Nanoscale Microscopy with Table-Top Extreme Ultraviolet Lasers,” Frontiers in Optics, San Jose, CA, Oct. 11 – 15, (2009).
14. **J.J. Rocca**, “Dense Plasma Diagnostics with Compact Bright Soft X-Ray Laser Probes,” The Sixth International Conference on Inertial Fusion Sciences and Applications (IFSA 2009), San Francisco, CA, Sept. 6 – 11, (2009). **Plenary Talk.**
15. **J.J. Rocca**. “Compact Soft X-ray Lasers: a doorway to coherent soft x-ray science on a tabletop” SPIE Optics and Photonics Annual Meeting, San Diego, CA, Aug. 4-9 (2009). **Plenary talk.**
16. **J.J. Rocca**, F.J. Furch, B.A. Reagan, Y. Wang, D. Alessi, D. Martz, B. Luther, M. Berrill, S. Domingue, D. Kemp, F. Pedaci, V.N. Shlyaptsev, M. Marconi, and C.S. Menoni, “Progress in the development of compact high-repetition-rate soft x-ray lasers: gain saturation at 10.9 nm and first demonstration of an all-diode-pumped soft x-ray laser,” Soft X-Ray Lasers and Applications VIII SPIE Optics and Photonics, San Diego, CA, Aug. 4-9, J. Dunn and G.J. Tallents, eds., Proc. SPIE **7451**, 745106 (2009).
17. C.S. Menoni, F. Brizuela, Y. Wang, C.A. Brewer, B.M. Luther, F. Pedaci, P.W. Wachulak, M.C. Marconi, **J.J. Rocca**, W. Chao, E.H. Anderson, Y. Liu, K.A. Goldberg, D.T. Attwood, Jr., A.V. Vinogradov, I.A. Artyukov, Y.P. Pershyn, and V. Kondratenko, “Advances in full field microscopy with table-top soft x-ray lasers,” Soft X-Ray Lasers and Applications VIII SPIE Optics and Photonics, San Diego, CA, Aug. 4-9, J. Dunn and G.J. Tallents, eds., Proc. **7451**, 74510I, (2009).
18. M. Purvis, J. Grava, J. Filevich, D.P. Ryan, S.J. Moon, J. Dunn, V.N. Shlyaptsev, and **J.J. Rocca**, “Elucidating the collimation of laboratory plasma jets using soft x-ray interferometry,” Soft X-Ray Lasers and Applications VIII SPIE Optics and Photonics, San Diego, CA, Aug. 4-9, J. Dunn and G.J. Tallents, eds., Proc. **7451**, 74510L, (2009).
19. **J.J. Rocca**, “Phase-coherent injection-seeded soft x-ray lasers,” The 39<sup>th</sup> Winter Colloquium on the Physics of Quantum Electronics, Snowbird, UT, Jan. 4-8, (2009). **Plenary Talk.**
20. **J.J. Rocca**, Y. Wang, M. Berrill, B. Luther, F. Pedaci, E. Granados, D. Alessi, and D. Martz, “Phase-coherent injection-seeded soft x-ray lasers at wavelengths down to 13.2 nm,” 13<sup>th</sup> International Workshop on Radiative Properties of Hot Dense Matter, Santa Barbara, CA, Nov. 10 – 14, (2008). Proceedings to be published in the Journal of Quantitative Spectroscopy and Radiative Transfer, (2008).

21. **J.J. Rocca**, “Phase-coherent injection-seeded soft x-ray lasers at wavelengths down to 13.2 nm,” 4th Asian Symposium on Intense Laser Science, Gwangju, Korea, Nov. 3 - 6, (2008). Plenary Talk.
22. **J.J. Rocca**, Y. Wang, F. Pedaci, M. Berrill, B. Luther, D. Alessi, D. Martz, B. Reagan, F. Furch, E. Granados, F. Brizuela, P. Wachulak, M.C. Marconi, and C.S. Menoni, “Phase-coherent Soft X-ray Lasers at Wavelengths down to 13.2nm,” 30th European Conference on Laser Interaction with Matter, XXX ECLIM, Darmstadt, Germany, Aug. 31 – Sept. 5, (2008).
23. J. Dunn, S.J. Moon, J. Nilsen, M. Purvis, J. Filevich, J. Grava, M.C. Marconi, **J.J. Rocca**, and V.N. Shlyaptsev, “X-ray Laser Interferometry of Confined Laser-Produced Plasmas,” X-Ray Lasers 2008, Belfast, UK, August (2008).
24. **J.J. Rocca**, Y. Wang, F. Pedaci, B. Luther, M. Berrill, D. Alessi, E. Granados, M. Man Shakya, S. Gilbertson, Z. Chang, “High Coherence Injection-Seeded Table-Top Soft X-Ray Lasers at Wavelengths Down to 13.2 nm,” X-Ray Lasers 2008, Belfast, UK, Proceedings of the 11th International Conference on X-Ray Lasers, August 2008, Springer Netherlands, **130**, 125, (2009).
25. C.S. Menoni, F. Brizuela, C. Brewer, D. Martz, P. Wachulak, S. Fernandez Jimenez, C. Marconi, **J.J. Rocca**, W. Chao, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, A. Artioukov, Y.P. Pershyn, V.V. Kondratenko, “Advances in Nanoscale resolution soft x-ray laser microscopy,” X-Ray Lasers 2008, Belfast, UK, Proceedings of the 11th International Conference on X-Ray Lasers, August 2008, Springer Netherlands, **130**, 341, (2009).
26. M.M. Murnane, **J. Rocca**, J. Miao, R. Yang, K. Nelson, E. Anderson, M. Aeschlimann, C. Menoni, M. Marconi, and H.C. Kapteyn, “Harnessing Attosecond Science for Visualizing the Nanoworld,” Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008, Technical Digest (Optical Society of America, Washington, DC, 2008), San Jose, CA, QMF1, (2008).
27. C.S. Menoni, D. Patel, B. Langdon, D. Alessi, Y. Wang, F. Tomasel, **J.J. Rocca**, P. Langston, A. Ogloza, A. Markosyan, R. Route, M.M. Fejer, Cravetchi, D. Ngyuen, W. Rudolph, and M. Shinn, “Influence of process conditions on the loss and resistance to laser damage of HfO<sub>2</sub>/SiO<sub>2</sub> coatings for high power lasers,” Directed Energy Professional Society (DEPS) Annual Meeting, Huntsville, AL, Nov. 5-9, (2007).
28. C.S. Menoni, F. Brizuela, C. Brewer, H. Bravo, B. Langdon, D. Martz, G. Vaschenko, B. Luther, M.C. Marconi, **J.J. Rocca**, W. Chao, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, Y.P. Pershyn, and V.V. Kondratenko, “Nanoscale resolution microscopy and ablation with extreme ultraviolet lasers,” IEEE-LEOS Annual Meeting, Orlando, FL, Oct. 22-25, (2007).
29. **J.J. Rocca**, Y. Wang, B.M. Luther, E. Granados, M.A. Berrill, M.A. Larotonda, D.A. Alessi, D.H. Martz, D. Patel, F. Pedaci, C.S. Menoni, and V.N. Shlyaptsev, “High-brightness tabletop soft x-ray lasers at high repetition rate: injection-seeding of dense plasma amplifiers and other developments,” Conference on Soft X-Ray Lasers and Applications VII, Proc. SPIE **6702**, 670202 (2007).
30. S.C. Heinbuch, F. Dong, **J.J. Rocca**, and E.R. Bernstein, “Neutral nanocluster structure and chemistry studied by soft x-ray laser single-photon ionization,” Conference on Soft X-Ray Lasers and Applications VII, Proc. SPIE **6702**, 67020K (2007).
31. **J.J. Rocca**, Y. Wang, B. Luther, M. Berrill, D. Alessi, M. Larotonda, E. Granados, D. Patel, C. Menoni, and V.N. Shlyaptsev, “High brightness table-top soft x-ray lasers at high repetition rate,” CAP Congress 2007, Saskatchewan, Canada, June 17-20, (2007).
32. **J.J. Rocca**, S. Heinbuch, D. Martz, M. Grisham, B. Reagan, Y. Wang, B.M. Luther, M. Berrill, D. Alessi, M. Larotonda, D. Gaudiossi, T. Popmintchev, M.M. Murnane, H. Kapteyn, and V.N. Shlyaptsev, “Dense plasmas for the generation of coherent soft X-ray light,” XXVIII International Conference on Phenomena in Ionized Gases, Proc. ICOPIG 65, (2007).

33. C.S. Menoni, F. Brizuela, C. Brewer, H. Bravo, B. Langdon, M. Berrill, D. Martz, G. Vaschenko, M.C. Marconi, **J.J. Rocca**, W. Chao, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, Y.P. Pershyn, V.V. Kondratenko, O. Hemberg, B. Frazer, and S. Bloom, “Nanometer-scale imaging and ablation with Extreme Ultraviolet lasers,” Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2007, Technical Digest (Optical Society of America, Washington, DC, 2007), CThCC2, (2007).
34. **J.J. Rocca**, “Recent Developments in Repetition Soft X-Ray Lasers,” 36<sup>th</sup> Winter Colloquium on the Physics of Quantum Electronics, UT, Jan. 2 - 6, (2007).
35. **J.J. Rocca**, Y. Wang, M. Larotonda, B. Luther, D. Alessi, M. Berrill, S. Heinbuch, M.C. Marconi, V. Shlyaptsev, and C.S. Menoni, “High Repetition Rate Soft X-Ray Lasers: A Doorway to Coherent Soft X-Ray Science on a Tabletop,” *Frontiers in Optics 2006*, Rochester, NY, Oct. 8 – 12, (2006).
36. **J.J. Rocca**, Y. Wang, M. Larotonda, B. Luther, M. Berrill, D. Alessi, A. Weith, M.C. Marconi, D. Patel, C.S. Menoni, V.N. Shlyaptsev, Y.W. Liu, D.T. Attwood, J. Dunn, M. Man Shakya, S. Gilbertson, and Z. Chang, “Advances in High Repetition Rate Soft X-Ray Lasers,” 10<sup>th</sup> International Conference on X-Ray Lasers, Berlin, Germany, Aug. 21 – 25, (2006).
37. J. Dunn, V.N. Shlyaptsev, J. Nilsen, R.F. Smith, R. Keenan, S. J. Moon, J. Filevich, **J.J. Rocca**, A.J. Nelson, J.R. Hunter, M.C. Marconi, Y.L. Li, A.L. Osterheld, R. Shepherd, H. Fiedorowicz, A. Bartnik, A.Ya. Faenov, T.A. Pikuz, P. Zeitoun, S. Hubert, S. Jacquemot, and M. Fajardo, “Overview of Tabletop X-ray laser: Development at the Lawrence Livermore National Laboratory,” 10<sup>th</sup> International Conference on X-Ray Lasers, Berlin, Germany, Aug. 21 – 25, (2006).
38. C.S. Menoni, G. Vaschenko, F. Brizuela, C. Brewer, Y. Wang, M.A. Larotonda, B.M. Luther, M.C. Marconi, **J.J. Rocca**, W. Chao, J.A. Liddle, Y. Liu, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, Y.P. Pershyn, and V.V. Kondratenko, “Nanoscale imaging with tabletop soft x-ray lasers,” 10<sup>th</sup> International Conference on X-Ray Lasers, Berlin, Germany, Aug. 21 – 25, (2006).
39. V.N. Shlyaptsev, R.O. Tatchyn, and **J.J. Rocca**, “Can Plasma X-Ray lasers challenge X-FEL?” 10<sup>th</sup> International Conference on X-Ray Lasers, Berlin, Germany, Aug. 21 – 25, (2006).
40. J. Nilsen, J. Dunn, W.R. Johnson, J. Filevich, J. Grava, M. Purvis, M.C. Marconi, and **J.J. Rocca**, “Looking for anomalous dispersion in weakly ionized plasmas using XRL interferometry,” 10<sup>th</sup> International Conference on X-Ray Lasers, Berlin, Germany, Aug. 21 – 25, (2006).
41. **J.J. Rocca**, “Compact Soft X-ray Lasers: a Doorway to Coherent Soft X-ray Science on a Table-Top,” 8<sup>th</sup> International School and Symposium on Synchrotron Radiation in Natural Sciences, *Bulletin of the Polish Synchrotron Radiation Society* **5**, 16, (2006).
42. J. Filevich, J. Grava, M. Purvis, M.C. Marconi, **J.J. Rocca**, J. Nilsen, J. Scofield, S.J. Moon, J. Dunn, R.F. Smith, R. Keenan, J.R. Hunter, W.R. Johnson, and V.N. Shlyaptsev, “Multiply ionized plasmas with index of refraction greater than one,” XXIX ECLIM-29<sup>th</sup> European Conference on Laser Interaction with Matter, Madrid, Spain, June 11-16, (2006).
43. **J.J. Rocca**, “Applications of compact soft x-ray lasers,” First LASERX Workshop, Universite Paris-Sud 11, France, Feb. 3, (2006).
44. **J.J. Rocca**, B.M. Luther, S. Heinbuch, M.A. Larotonda, Y. Wang, D. Alessi, M. Berrill, M.C. Marconi, C.S. Menoni, and V.N. Shlyaptsev, “High repetition rate table-top soft x-ray lasers with capillary discharges and laser-created plasmas,” 6<sup>th</sup> International Conference on Dense Z-pinchs, J. Chittenden, eds., *Proc. AIP* **808**, 241, (2006).
45. J. Filevich, **J.J. Rocca**, M.C. Marconi, S.J. Moon, J. Nilsen, J.H. Scofield, J. Dunn, R.F. Smith, R. Keenan, J.R. Hunter, and V.N. Shlyaptsev, “Observation of Multiply ionized plasmas with

- dominant bound electron contribution to the index of refraction,” 11<sup>th</sup> International Workshop on Radiative Properties of Hot Dense Matter, Proc. Journal of Quantitative Spectroscopy and Radiative Transfer, **99**, 165, (2006).
46. **J.J. Rocca**, B.M. Luther, S. Heinbuch, M.A. Larotonda, Y. Wang, M. Grisham, D. Alessi, M. Berrill, M.C. Marconi, V.N. Shlyaptsev, A. Dummer, F. Brizuela, and C.S. Menoni, “Demonstration of High Repetition Rate Desk-Top and Table-Top Soft X-Ray Lasers,” The 9<sup>th</sup> International Conference on X-Ray Lasers, Beijing, China, May 24-28, 2004; X-ray Lasers 2004, Institute of Physics Conference Series Number **186**, 19, (2006).
  47. V.N. Shlyaptsev, J. Dunn, R. Keenan, R. Smith, P. Patel, D.F. Price, **J.J. Rocca**, J. Filevich, B. Luther, Y. Wang, and M.C. Marconi, “Pumping efficiency of transverse, longitudinal, and grazing incidence schemes,” The 9<sup>th</sup> International Conference on X-Ray Lasers, Beijing, China, May 24-28, 2004; X-ray Lasers 2004, Institute of Physics Conference Series Number **186**, 325, (2006).
  48. R.F. Smith, J. Dunn, J. Nilsen, S. Moon, R. Keenan, R. Shepherd, R. Booth, J.R. Hunter, J. Filevich, **J.J. Rocca**, M.C. Marconi, and V.N. Shlyaptsev, “Improved Energy Coupling into the Gain Region of the Ni-like Pd Transient Collisional x-ray laser,” The 9<sup>th</sup> International Conference on X-Ray Lasers, Beijing, China, May 24-28, 2004; X-ray Lasers 2004, Proc. Institute of Physics Conference Series Number **186**, 87, (2006).
  49. **J.J. Rocca**, “High repetition rate tabletop soft x-ray lasers at wavelength down to 13.2 nm,” Workshop, “Frontiers of Laser and Optical Sciences,” Tokyo University, Tokyo, Japan, Oct. 1-2, (2005).
  50. **J.J. Rocca**, B.M. Luther, Y. Wang, S. Heinbuch, M.A. Larotonda, D. Alessi, M. Berrill, M.C. Marconi, C.S. Menoni, and V.N. Shlyaptsev, “High average power tabletop soft x-ray lasers at wavelengths down to 13.2 nm,” Joint Conference on Ultrafast Optics V and Applications of High Field and Short Wavelength Sources XI, Nara, Japan, Sept. 25-30, (2005).
  51. **J.J. Rocca**, Y. Wang, M. Larotonda, B.M. Luther, D. Alessi, M. Berrill, A. Weith, M.C. Marconi, C.S. Menoni, and V.N. Shlyaptsev, “Demonstration of saturated high repetition rate tabletop soft x-ray lasers at wavelengths down to 13.2 nm,” SPIE conference on Soft X-Ray Lasers and Applications, E.E. Fill, eds., Proc. SPIE **5919**, 591901, (2005).
  52. **J.J. Rocca**, “Engineering the Nano-world with Short Wavelength Laser Light,” Information Science and Technology Symposium, Colorado State University, Fort Collins, CO, April 13-14, (2005).
  53. **J.J. Rocca**, “High Repetition rate table-top and desk-top size soft x-ray lasers,” 35<sup>th</sup> Winter Colloquium on The Physics of Quantum Electronics, UT, Jan. 2-6, (2005).
  54. **J.J. Rocca**, B.M. Luther, S. Heinbuch, Y. Wang, M.A. Larotonda, M. Grisham, D. Alessi, M. Berrill, M.C. Marconi, V.N. Shlyaptsev, A. Dummer, F. Brizuela, and C.S. Menoni, “Demonstration of high repetition rate desk-top and table-top soft x-ray lasers,” The 17<sup>th</sup> Annual Meeting of the IEEE Lasers and Electro-Optics Society, LEOS, Proc. IEEE **2**, 886, (2004).
  55. **J.J. Rocca**, “Table Top sources of intense Soft X-ray Laser radiation,” Gordon Research Conference on Multiphoton Processes, Tilton, NH, June 13-18, (2004).
  56. **J.J. Rocca**, M.C. Marconi, Y. Wang, B.M. Luther, F. Pedaci, M. Grisham, G. Vaschenko, C.S. Menoni, J. Filevich, L. Juha, Yu. P. Pershin, E.N. Zubarev, D.L. Voronov, V.A. Sevryukova, V.V. Kondratenko, V.V. Shlyaptsev, A. Vinogradov, and I. Artioukov, “Recent results in capillary discharge soft x-ray laser research,” SPIE Conference on Soft X-Ray Lasers and Applications V, E.E. Fill, S. Suckewer, eds., Proc. SPIE **5197**, 174, (2003).
  57. **J.J. Rocca**, B. Luther, Y. Wang, J. Filevich, E. Hammarsten, E. Jankowska, M.C. Marconi, C.S. Menoni, V.N. Shlyaptsev, and S. Moon, “Small scale soft x-ray lasers and highly ionized plasma

- waveguides based on fast capillary discharges,” Applications of High Field and Short Wavelength Sources X, Biarritz, France, Oct. 12-15, 28, (2003).
58. J. Dunn, R.F. Smith, A.J. Nelson, S.J. Moon, J. Nilsen, R. Keenan, T.W. Van Buuren, J.R. Hunter, J. Filevich, **J.J. Rocca**, M.C. Marconi, A. Ng, O. Hemmers, D.W. Lindle, and V.N. Shlyaptsev, “Picosecond-Driven X-ray Lasers for Probing Matter Undergoing Rapid Changes,” Applications of High Field and Short Wavelength Sources X, Biarritz, France, Oct. 12-15, 37, (2003).
  59. J. Filevich, **J.J. Rocca**, E.C. Hammarsten, E. Jankowska, M.C. Marconi, R.F. Smith, R. Keenan, J. Dunn, S. Moon, V.N. Shlyaptsev, J. Nilsen, and J.R. Hunter, “Interferometric studies of laser-created plasmas using compact soft x-ray lasers,” SPIE Conference on Soft X-Ray Lasers and Applications V, E.E. Fill, S. Suckewer, eds., Proc. SPIE **5197**, 143, (2003).
  60. R.F. Smith, J. Dunn, J. Filevich, S. Moon, J. Nilsen, R. Keenan, V.N. Shlyaptsev, **J.J. Rocca**, J.R. Hunter, R. Shepherd, R. Booth, and M.C. Marconi, “Improved energy coupling into the gain region of the Ni-like Pd transient collisional x-ray laser,” SPIE Conference on Soft X-Ray Lasers and Applications V, E.E. Fill, S. Suckewer, eds., Proc. SPIE **5197**, 155, (2003).
  61. Ph. Zeitoun, Ph. Balcou, S. Bucourt, D. Benredjem, F. Delmotte, G. Dovillaire, D. Douillet, J. Dunn, G. Faivre, M. Fajardo, K.A. Goldberg, M. Idir, S. Hubert, J.R. Hunter, S. Jacquemot, S. Kazamias, S. le Pape, X. Levecq, C.L.S. Lewis, R. Marmoret, P. Mercere, A.S. Morlens, P.P. Naulleau, C. Remond, **J.J. Rocca**, S. Sebban, R.F. Smith, M.F. Ravet, P. Troussel, C. Valentin, and L. Vanbostal, “New Techniques for the measurement of X-ray beam or X-ray optics Quality,” SPIE Conference on Soft X-Ray Lasers and Applications V, E.E. Fill, S. Suckewer, eds., Proc. SPIE **5197**, 194, (2003).
  62. **J.J. Rocca**, M.C. Marconi, J. Filevich, E.C. Hammarsten, E. Jankowska, B. Luther, Y. Wang, M. Grisham, G. Vaschenko, C.S. Menoni, S.J. Moon, and V.N. Shlyaptsev, “Small Scale soft x-ray lasers excited by fast discharges and applications,” 34<sup>th</sup> Meeting of the Division of Atomic, Molecular and Optical Physics (DAMOP), Bulletin of the American Physical Society **48**, 73, (2003).
  63. **J.J. Rocca**, “Applications of Very Compact Soft X-Ray Lasers,” Progress in Quantum Electronics, Snowbird, UT, Jan. 6-9, (2003).
  64. **J.J. Rocca**, J. Filevich, E.C. Hammarsten, E. Jankowska, M.C. Marconi, B. Luther, A. Rahman, V.N. Shlyaptsev, S.J. Moon, B. Szapiro, and M. Grisham, “Extremely compact capillary discharge-based soft x-ray lasers and their application to dense plasma diagnostics,” 44<sup>th</sup> Annual Meeting of the Division of Plasma Physics, Bulletin of the American Physical Society **47**, 138, (2002).
  65. **J.J. Rocca**, J. Filevich, E.C. Hammarsten, E. Jankowska, B.R. Benware, M.C. Marconi, B. Luther, A. Vinogradov, I. Artiukov, S. Moon, and V.N. Shlyaptsev, “Extremely Compact Soft X-Ray Lasers Based on Capillary Discharges,” 24<sup>th</sup> International Free Electron Laser Conference & 9<sup>th</sup> FEL users workshop, Argonne, IL, Sept 9-13, (2002).
  66. V.N. Shlyaptsev, J. Dunn, R.F. Smith, S.J. Moon, K.B. Fournier, J. Nielsen, A.L. Osterheld, J. Kuba, R. London, A.J. Wootton, R.W. Lee, **J.J. Rocca**, A. Rahman, E. Hammarsten, J. Filevich, E. Jankowska, M.C. Marconi, N. Forniaciari, D. Buchenauer, H.A. Bender, S. Karim, M. Kanouff, J. Dimkoff, G. Kubiak, G. Shimkaveg, and W.T. Silfvast, “Exploring the Potential of a Table-Top X-Ray Lasers and Capillary Discharges for Applications,” 8<sup>th</sup> International Conference on X-Ray Lasers, Proc. AIP **641**, 528, (2002).
  67. P.V. Nickles, K.A. Janulewicz, A. Lucianetti, G. Priebe, A. Zigler, **J.J. Rocca**, and W. Sandner, “X-Ray laser program at MBI,” 8<sup>th</sup> International Conference on X-Ray Lasers, Proc. AIP **641**, 58, (2002).

68. **J.J. Rocca**, B. Luther, M.C. Marconi, T. Whiteaker, D.A. Braley, J. Filevich, E.C. Hammarsten, A. Rahman, B.T. Szapiro, Y. Wang, E. Jankowska, M. Grisham, V.N. Shlyaptsev, and S. Moon, "Extremely compact capillary discharge-based soft x-ray laser development and application to dense plasma diagnostics," 8<sup>th</sup> International Conference on X-Ray Lasers, Proc. AIP **641**, 125, (2002).
69. J. Dunn, R.F. Smith, J. Nielsen, A.J. Nelson, T.W. Van Buuren, S.J. Moon, J.R. Hunter, J. Filevich, **J.J. Rocca**, M.C. Marconi, and V.N. Shlyaptsev, "A picosecond 14.7 nm x-ray laser for probing matter undergoing rapid changes," 8<sup>th</sup> International Conference on X-Ray Laser, Proc. AIP **641**, 481, (2002).
70. **J.J. Rocca**, "Extremely compact Soft X-Ray Lasers Based on Capillary Discharges and their Applications to Dense Plasma Diagnostics," APS Four Corners Annual Meeting, University of Utah, Salt Lake City, UT, Oct., (2002).
71. **J.J. Rocca**, B. Luther and V.N. Shlyaptsev, "EUV lasers and sources based on capillary discharges," Optical Society of America Annual Meeting, Long Beach, CA, Oct., (2001).**J.J. Rocca**, B.R. Benware, J. Filevich, M. Frati, M. Marconi, M. Seminario, H.L. Mancini, E. Hammersten, E. Jankowska, B. Luther, I. Artioukov, A. Vinogradov, F.G. Tomasel, and V.N. Shlyaptsev, "Advances in Compact Discharge-Pumped Soft X-Ray Lasers and Applications," Lasers and Electro-Optics, 2001, CLEO '01, Proc. CLEO Technical Digest '01, 23, (2001).**J.J. Rocca**, B. Luther, E. Jankowska, E. Hammerstad, S. Sakadzik, S. Raman, M. Seminario, Y.W. Liu, D.T. Attwood, M. Frati, H. Mancini, J. Filevich, K. Kanisay, M.C. Marconi, B.R. Benware, J.L.A. Chilla, A. Vinogradov, I. Artioukov, V. Kondratenko, Y.L. Unspenskii, F.G. Tomasel, and V.N. Shlyaptsev, "Recent Progress in the Development and Applications of Discharge Pumped Soft X-Ray Lasers," 31st Winter Colloquium on the Physics of Quantum Electronics, Snowbird, UT, Jan. 6-10, (2001).**J.J. Rocca**, B.R. Benware, J. Filevich, M. Frati, M.C. Marconi, M. Seminario, H.L. Mancini, E. Hammarsten, E. Jankowska, B. Luther, D. Braley, I.A. Artiukov, A. Vinogradov, and V.N. Shlyaptsev, "Spatially Coherent Tabletop Soft X-Ray Laser Sources with Milliwatt Average Power," IEEE summer topicals, 3, (2001).
75. **J.J. Rocca**, M. Seminario, M. Frati, H. Mancini, J. Filevich, K. Kanizay, M.C. Marconi, B.R. Benware, J.L.A. Chilla, A. Vinogradov, I. Artioukov, V. Kondratenko, Y.A. Unspenskii, F.G. Tomasel, and V.N. Shlyaptsev, "Discharge-pumped table-top soft x-ray lasers reach new wavelengths and applications," International Conference LASERS 2000, Albuquerque, NM, Nov. (2000).
76. Y. Liu, M. Seminario, F.G. Tomasel, C. Chang, **J.J. Rocca**, and D.T. Attwood, "Observation of high average power soft x-ray laser beam approaching full spatial coherence," IEEE-LEOS 2000 Annual Meeting, Proc. IEEE **2**, 633, (2000).
77. **J.J. Rocca**, M. Seminario, M. Frati, B.R. Benware, H.L. Mancini, J. Filevich, M.C. Marconi, K. Kanizay, A. Ozols, I. Artioukov, A. Vinogradov, Y.A. Unspenskii, F.G. Tomasel, and V.N. Shlyaptsev, "Applications of high repetition rate tabletop soft x-ray lasers become a reality in several fields," 7<sup>th</sup> International Conference on X-Ray Lasers, Saint-Malo, France, June 18-23, (2000).
78. **J.J. Rocca**, J. Filevich, M.C. Marconi, A. Ozols, K. Kanizay, B.R. Benware, J.L.A. Chilla, I.A. Artioukov, Y.S. Kasjanov, V.V. Kondratenko, and A.V. Vinogradov, "Laser ablation and plasma interferometry with a tabletop soft x-ray laser," High Power Laser Ablation 2000, C.R. Phipps, eds., Proc. SPIE **4065**, 173, (2000).
79. **J.J. Rocca**, M.C. Marconi, J. Filevich, K. Kanizay, C.H. Moreno, J.L.A. Chilla, R.J. Berglund, V.N. Shlyaptsev, Y.A. Unspenskii, A.V. Vinogradov, and Y.P. Pershin, "Plasma Diagnostics with a tabletop soft x-ray laser," International Forum on Advanced High-Power Lasers and Applications, K. Mima, G.L. Kulcinski, W.J. Hogan, eds., Proc. SPIE **3886**, 266, (2000).



80. V.N. Shlyaptsev, J. Dunn, A.L. Osterheld, J. Nielsen, Y. Li, K.B. Fournier, **J.J. Rocca** and P.V. Nickles, "Modeling of Transient X-ray Lasers: Comparison with Experiments," Lasers and Electro-Optics Society 1999 12th Annual Meeting. LEOS '99 IEEE, Proc. IEEE-LEOS '99 Meeting, **1**, 113, (1999).
81. **J.J. Rocca**, "Demonstration of a high average power table-top soft x-ray laser," 29<sup>th</sup> Winter Colloquium on the Physics of Quantum Electronics, Snowbird, UT, Jan. 3-6, (1999).
82. **J.J. Rocca**, C.H. Moreno, B.R. Benware, C.D. Macchietto, M.C. Marconi, V.N. Shlyaptsev, F.G. Tomasel, K. Kanizay, J.J. Gonzalez and M. Frati, "New results in the development of table-top capillary discharge soft x-ray lasers: demonstration of high average power and realization of the first application," X-Ray lasers 1998 Institute of Physics Conference Series, Y. Kato, eds., Proc.6<sup>th</sup> International Conference on X-ray Lasers **159**, 9, (1999).
83. A.L. Osterheld, V.N. Shlyaptsev, J. Dunn, **J.J. Rocca**, M.C. Marconi, and C.H. Moreno, "Modeling of laser produced plasmas and z-pinch x-ray lasers," X-Ray lasers 1998 Institute of Physics Conference Series, Y. Kato, eds., Proc.6<sup>th</sup> International Conference on X-ray Lasers **159**, 353, (1999).
84. P.V. Nickles, M.P. Kalachnikov, K.A. Janulewicz, P.J. Warwick, W. Sandner, V.N. Shlyaptsev, C. Danson, G.J. Pert, C. Lewis, A. Klishnick, and **J.J. Rocca**, "Progress in transient inversion x-ray lasers," X-Ray lasers 1998 Institute of Physics Conference Series, (1999).
85. J. Gonzalez, M. Frati, **J.J. Rocca**, and V. Shlyaptsev, "First Experimental results of a very high power density capillary discharge plasma," X-Ray lasers 1998 Institute of Physics Conference Series, Y. Kato, eds., Proc.6<sup>th</sup> International Conference on X-ray Lasers **159**, 163, (1999).
86. H.A. Bender, S. Grantham, V. Shlyaptsev, **J.J. Rocca**, M. Richardson, and W. Silvast, "High resolution temporal & spatial mapping of the electron density in a capillary discharge pumped soft x-ray laser amplifier using sub-ps optical interferometry," X-Ray lasers 1998 Institute of Physics Conference Series, Y. Kato, eds., Proc.6<sup>th</sup> International Conference on X-ray Lasers **159**, 167, (1999).
87. **J.J. Rocca**, "Capillary Discharges," VIII Latin-American Workshop on Plasma Physics, Tandil, Argentina, Nov. 23-27, (1998).
88. **J.J. Rocca**, C.H. Moreno, B.R. Benware, M.C. Marconi, V.N. Shlyaptsev, J.J. Gonzalez, M. Frati, F.G. Tomasel, and J.L.A. Chilla, "Table-Top Discharge Pumped Soft X-Ray Lasers," CLEO /Europe-EQEC 98, Proc. CLEO/EQEC '98, 17.00 QThL1, 238, (1998).
89. **J.J. Rocca**, C.H. Moreno, B.R. Benware, M.C. Marconi, V.N. Shlyaptsev, C. Macchietto, F.G. Tomasel, J.J. Gonzalez, M. Frati, and J.L.A. Chilla, "Table-top Soft X-Ray Lasers by Fast Discharge Excitation," High power laser Ablation, C.R. Phipps, eds., Proc. SPIE **3343**, 138, (1998).
90. **J.J. Rocca**, M.C. Marconi, C.H. Moreno, V. Shlyaptsev, B. Benware, F.G. Tomasel, J. Chilla, and J.J. Gonzalez, "Recent Progress in Capillary Discharge Pumped Table-Top Soft X-Ray Lasers," 28<sup>th</sup> Winter Colloquium on the Physics of Quantum Electronics, Snowbird, UT, Jan. 4-7, (1998).
91. **J.J. Rocca**, C.H. Moreno, B.R. Benware, M.C. Marconi, V.N. Shlyaptsev, J.J. Gonzalez, M. Frati, F.G. Tomasel, and J.A. Chilla, "Discharge Pumped Soft X-Ray Lasers," (**Plenary Talk**), Int. Conf. LASERS'97, New Orleans, Dec., (1997).
92. **J.J. Rocca**, F.G. Tomasel, C.H. Moreno, V.N. Shlyaptsev, M.C. Marconi, B.R. Benware, J.J. Gonzalez, J.L.A. Chilla, and C.D. Macchietto, "Discharge-Pumped Table-Top Soft X-Ray Lasers," International Conference on Phenomena on Ionized Gases, ICPIG XXIII, Toulouse, France, July 17-22, (1997).

93. V.N. Shlyaptsev, **J.J. Rocca**, M.P. Kalashnikov, P. Nickels, W. Sandner, A.L. Osterheld, J. Dunn, and D.E. Eder, "Modeling of Table-Top Transient Inversion and Capillary X-Ray Lasers," *Soft X-Ray Lasers and Applications II*, **J.J. Rocca**, L.B. Da Silva, eds., Proc. SPIE **3156**, 193, (1997).
94. **J.J. Rocca**, F.G. Tomasel, M.C. Marconi, J.L.A. Chilla, C.H. Moreno, B.R. Benware, V.N. Shlyaptsev, J.J. Gonzalez, and C.D. Machietto, "Lasing in Ne-like S and Other New Developments in Capillary Discharge Ultrashort Wavelength Lasers," *Soft X-Ray Lasers and Applications II*, **J.J. Rocca**, L.B. Da Silva, eds., Proc. SPIE **3156**, 164, (1997).
95. **J.J. Rocca**, F.G. Tomasel, J.L.A. Chilla, M.C. Marconi, V.N. Shlyaptsev, C.H. Moreno, B.R. Benware, and J.J. Gonzalez, "Saturated Table-Top Soft X-Ray Lasers by Discharge Excitation," (**Key-Note Talk**), *Applications of High Field and Short Wavelength Sources 97*, L. DiMauro, M. Murnanae, A. L'Huillier, eds., Proc. HFSW, 29, (1997).
96. **J.J. Rocca**, F.G. Tomasel, J.L.A. Chilla, M.C. Marconi, and V. Shlyaptsev, "New Developments in Discharge Pumped Table-Top Soft X-Ray Lasers," *International Conference on Soft X-Rays in the Next Century*, Park City, UT, Jan., (1997).
97. **J.J. Rocca**, D.P. Clark, J.L.A. Chilla, M.C. Marconi, F.G. Tomasel, and V. Shlyaptsev, "Achievement of the Saturation Limit in a discharge pumped table-top soft x-ray amplifier," *LASERS'96*, Portland, OR, Dec., (1996).
98. **J.J. Rocca**, "Capillary Discharge Pumped Table-Top Soft X-Ray Lasers," *X-Tech 96 Workshop*, Berlin-Spandau, Germany, Sept. 29- Oct. 2, (1996).
99. **J.J. Rocca**, D. Clark, F.G. Tomasel, V. Shlyaptsev, B.R. Benware, C.H. Moreno, D. Burt, and J.J. Gonzales, "Advances in Discharge Pumped Soft X-Ray Lasers: From Gain Observation to Achievement of the Saturation Limit and Energy Extraction," *X-Ray Lasers 1996 Institute of Physics Conference Series*, S. Svanberg, and C.G. Wahlstrom, eds., Proc. of the 5<sup>th</sup> International Conference on X-Ray Lasers **151**, 176, (1996).
100. H.A. Bender, **J.J. Rocca**, and W. Silfvast, "Capillary discharge soft x-ray amplifier for use in amplifying harmonic radiation," *X-Ray Lasers 1996 Institute of Physics Conference Series*, S. Svanberg, and C.G. Wahlstrom, eds., Proc. of the 5<sup>th</sup> International Conference on X-Ray Lasers **151**, 184, (1996).
101. J. Chilla, **J.J. Rocca**, O. Martinez, and M. Marconi, "Interferometer for single-shot soft x-ray laser linewidth measurements," *X-Ray Lasers 1996 Institute of Physics Conference Series*, S. Svanberg, and C.G. Wahlstrom, eds., Proc. of the 5<sup>th</sup> International Conference on X-Ray Lasers **151**, 361, (1996).
102. V.N. Shlyaptsev, **J.J. Rocca**, P.V. Nickles, M. P. Kalashnikov, and A.L. Osterheld, "Theoretical Aspects of Efficient Downsized X-Ray Lasers," *X-Ray Lasers 1996 Institute of Physics Conference Series*, S. Svanberg, and C.G. Wahlstrom, eds., Proc. of the 5<sup>th</sup> International Conference on X-Ray Lasers **151**, 215, (1996).
103. **J.J. Rocca**, "Discharge Pumped Table-Top Soft X-Ray Laser," *1996 Annual Meeting of the Division of Atomic, Molecular and Optical Physics Meeting*, Ann Arbor, MI, May 15-18, (1996).
104. V.N. Shlyaptsev, **J.J. Rocca**, P.V. Nickles, M.P. Kalashnikov, and A.L. Osterheld, "Theoretical Aspects of Efficient Downsized X-Ray Lasers," *1996 Annual Meeting of the Division of Atomic, Molecular and Optical Physics Meeting*, Ann Arbor, MI, May 15-18, (1996).
105. **J.J. Rocca**, "Demonstration of a Discharge Pumped Table-Top Soft X-Ray Laser," (**Plenary Talk**), *German Physical Society, Atomic, Molecular and Plasma Physics Annual Meeting*, Rostock, Germany, March 18-21, (1996).

106. **J.J. Rocca**, M.C. Marconi, J.L.A. Chilla, F.G. Tomasel, V.A. Shlyaptsev, and J.J. Gonzalez, "Saturation behavior of a discharge pumped soft x-ray amplifier," IEEE Lasers and Electro-Optics Society 8th Annual Meeting, Proc. LEOS'95 **1**, 312, (1995).
107. **J.J. Rocca**, "Discharge Pumped Soft X-Ray Lasers," (**Plenary Talk**), Argentinean Physical Society Annual Meeting, Bariloche, Argentina, Oct., (1995).
108. **J.J. Rocca**, F.G. Tomasel, M.C. Marconi, V.N. Shlyaptsev, J.L.A. Chilla, and D.G. Clark, "Discharge pumped soft x-ray lasers," 1995 Annual Meeting of the Optical Society of America, Portland, OR, Sept., (1995).
109. **J.J. Rocca**, M.C. Marconi, F.G. Tomasel, V.N. Shlyaptsev, J.L. Chilla, and D.G. Clark, "Towards saturation of a discharge pumped soft x-ray amplifier," Soft X-Ray Lasers and Applications, Proc. SPIE **2520**, 201, (1995).
110. V. Shlyaptsev, **J.J. Rocca**, and A.L. Osterheld, "Dynamics of a capillary discharge soft x ray laser," Soft X-Ray Lasers and Applications, **J.J. Rocca**, P.L. Hagelstein, eds., Proc. SPIE **2520**, 365, (1995).
111. **J.J. Rocca**, F.G. Tomasel, M.C. Marconi, V.N. Shlyaptsev, D. Hartshorn and J.L. Chilla, "Realization of a Discharge-Pumped Soft X-Ray Laser," CLEO'95, Baltimore, MD, May, (1995).
112. **J.J. Rocca**, F.G. Tomasel, M.C. Marconi, V.N. Shlyaptsev, D. Hartshorn and J.L. Chilla, "Demonstration of Soft X-Ray Lasers in a Discharge Created Plasma," C. Goldman, eds., Proc. International Conf. LASERS '94, 14, (1994).
113. **J.J. Rocca**, F.G. Tomasel, M.C. Marconi, V.N. Shlyaptsev, J.L.A. Chilla, B.T. Szapiro, and G. Giudice, "Discharge-Pumped Soft X-Ray Laser in Ne-like Ar," Meeting of the Division of Plasma Physics of the American Physical Society, Proc. Physics of Plasmas **2**, 2547, (1994).
114. **J.J. Rocca**, V.N. Shlyaptsev, F.G. Tomasel, O.D. Cortazar, D. Hartshorn, and J.L.A. Chilla, "Demonstration of a Discharge Pumped Table Top Soft X-Ray Laser," IEEE LEOS 94, 7<sup>th</sup> Annual Meeting, Proc. IEEE, 293, (1994).
115. **J.J. Rocca**, F.G. Tomasel, V.N. Shlyaptsev, O.D. Cortazar, J.L.A. Chilla, and D. Hartshorn, "X-Ray Laser based on Capillary Discharges," 47th Gaseous Electronic Conference, Gaithersburg, MD, Oct. 18-21, (1994).
116. **J.J. Rocca**, V.N. Shlyaptsev, F.G. Tomasel, O.D. Cortazar, and D. Hartshorn, "Demonstration of a Discharge Driven Soft X-Ray Laser," International Conference on Short Wavelength Radiation and Applications, Zvenigorov, Russia, Aug 29- Sept 2, (1994).
117. **J.J. Rocca**, F.G. Tomasel, V.N. Shlyaptsev, O.D. Cortazar, J.L.A. Chilla, and G. Giudici, "Soft X-ray amplification in a capillary discharge plasma," 4<sup>th</sup> International Colloquium on X-Ray Lasers, Proc. AIP **332**, 359, (1994).
118. **J.J. Rocca**, O.D. Cortazar, B. Szapiro, F.G. Tomasel, and D. Hartshorn, "Study of Fast capillary Discharge Plasma Columns for Soft X-Ray Amplifiers," SPIE conference on Ultrashort Wavelength Lasers II, S. Suckewer, eds., Proc. SPIE **2012**, 67, (1994).
119. **J.J. Rocca**, O.D. Cortazar, F.G. Tomasel, B.T. Szapiro, and M.C. Marconi, "Efficient excitation of Ne-like Calcium and Titanium Ions for Collisional Excited Soft X-Ray Lasers in a Fast Capillary Discharge," IEEE Lasers and Electro-Optics Society 1993 Annual Meeting, LEOS'93, San Jose, CA, Nov.15-18, (1993).
120. **J.J. Rocca**, B.T. Szapiro, O.D. Cortazar, F.G. Tomasel, J. Hung, J. Meyer, and K. Floyd, "Towards small scale soft x-ray lasers excited by fast capillary discharges," IEEE Lasers and Electro-Optics Society 1992 Annual Meeting, Proc. LEOS'92, 211, (1992).

121. **J.J. Rocca**, "Soft x-ray diagnostics of highly ionized plasmas," 1992 Symposium of the Rocky Mountain Chapter of the American Vacuum Society, Denver, CO, Sept., (1992).
122. **J.J. Rocca**, B. Szapiro, D. Cortazar, F.G. Tomasel, M. Marconi, J. Hung, and K. Floyd, "Fast discharge excitation of small-scale soft x-ray lasers," Institute of Physics Conference Series **125**, 427, (1992).
123. **J.J. Rocca**, M.C. Marconi, B. Szapiro, K. Richardson, J. Schmerge, and J. Meyer, "Compact Capillary Discharges: The Possible New Generation of Soft X-Ray Lasers," Sixth Interdisciplinary Laser Science Conference, Minneapolis, MN, Sept. 16-19, (1990).
124. **J.J. Rocca**, "On CW Electron Beam Excited Ion Lasers and the Prospect for Pulsed Capillary Discharges as Deep Ultraviolet Laser Source," Conference Future Prospects and Applications for VUV Lasers, Engineering Foundation, Santa Barbara, CA, March, (1990).
125. **J.J. Rocca**, M.C. Marconi, J.F. Schmerge, and M. Villagran, "Progress towards Deep UV Recombination Lasers in Capillary Discharges," IEEE/LEOS, Orlando, FL, Oct., (1989).
126. **J.J. Rocca**, B. Szapiro, and C. Murray, "Electron Beam Generation in High Voltage Glow Discharges," 1989 IEEE International Conference on Plasma Science, Proc. IEEE, 92, (1989).
127. **J.J. Rocca**, M.C. Marconi, D. Beethe, and M. Villagran, "XUV Recombination Lasers in capillary discharges," LASERS 88, Lake Tahoe, NV, Dec 4-9, (1988).
128. **J.J. Rocca**, "Short Wavelength Lasers in Nonequilibrium Discharges," Future Prospects and Applications for UV and VUV Lasers, Santa Barbara, CA, Feb 22-27, (1987).
129. **J.J. Rocca**, "Electron Beam Pumped Recombination Lasers," Second Latin American Meeting on Lasers and Applications, Niteroi, Brazil, July, (1986).
130. K. Emery, C.A. Moore, L.R. Thompson, **J.J. Rocca**, and G.J. Collins, "Beam Assisted CVD of Microelectronic Films," Materials Research Society Annual Meeting, Boston, MA, Nov., (1983).
131. **J.J. Rocca**, J.D. Meyer, Z. Yu, G.J. Fetzer and G.J. Collins, "Advances of Electron Beam pumped cw ion lasers," CLEO 1983, Baltimore, MD, May, (1983).

#### CONTRIBUTED CONFERENCE ABSTRACTS AND PROCEEDINGS

1. C.S. Menoni, S. Carbajo, F. Brizuela, A. Sakdinawat, W. Chao, E.H. Anderson, A.V. Vinogradov, I.A. Artioukov, D.T. Attwood, M.C. Marconi, and **J.J. Rocca**, "Movies of nanoscale dynamics by extreme ultraviolet microscopy," 41<sup>st</sup> Progress in Quantum Electronics Symposium, Snowbird, UT, Jan. 2-6, (2011).
2. J. Grava, D.P. Ryan, M.A. Purvis, J. Filevich, V.N. Shlyaptsev, S.J. Moon, J. Dunn, and **J.J. Rocca**, "Soft X-Ray Laser Interferometry Study of Dense Plasma Jet Collimation," The 23rd Annual Meeting of the IEEE Photonics Society Denver, CO, November 7 – 11, (2010).
3. D.H. Martz, D. Alessi, B.M. Luther, Y. Wang, M. Berrill, D. Kemp, D. Patel, C.S. Menoni and **J.J. Rocca**, "Table-top Soft X-ray Laser Operating at 13.9 nm with Increased Average Power," The 23rd Annual Meeting of the IEEE Photonics Society Denver, CO, November 7 – 11, (2010).
4. D. Alessi, M. Berrill, Y. Wang, S. Domingue, D.H. Martz, B.M. Luther, M. Limin, O. Guilbaud, A. Klisnick, and **J.J. Rocca**, "Beam Characteristics of an Injection-Seeded Solid-Target Plasma Soft X-Ray Laser," The 23rd Annual Meeting of the IEEE Photonics Society Denver, CO, November 7 – 11, (2010).
5. S. Carbajo, F. Brizuela, D.H. Martz, D. Alessi, Y. Wang, M.C. Marconi, **J.J. Rocca**, C.S. Menoni, A. Sakdinawat, E.H. Anderson, K.A. Goldberg, D. Attwood, and B. La Fontaine, "Laser Based

- Aerial Microscope for At-Wavelength Characterization of Extreme Ultraviolet Lithography Masks,” The 23rd Annual Meeting of the IEEE Photonics Society Denver, CO, November 7 – 11, (2010).
6. D. Ryan, J. Grava, M. Purvis, J. Filevich, V. Shlyaptsev, and **J. Rocca**, “Soft x-ray laser interferometry of dense plasma jets collimated by radiation cooling,” Annual Meeting of the Four Corners Section of the APS, Ogden, Utah, Oct. 15 – 16, (2010). Proceedings to be published in the Bulletin of the American Physical Society Volume 55, Number 9.
  7. L. Urbanski, M. Marconi, **J. Rocca**, L. Meng, and A. Klisnick, “Linewidth measurement of table-top EUV laser,” Annual Meeting of the Four Corners Section of the APS, Ogden, Utah, Oct. 15 – 16, (2010). Proceedings to be published in the Bulletin of the American Physical Society Volume 55, Number 9.
  8. S. Carbajo, F. Brizuela, A. Sakdinawat, W. Chao, E.H. Anderson, A.V. Vinogradov, I.A. Artioukov, D.T. Attwood, M.C. Marconi, **J.J. Rocca**, and C.S. Menoni, “Stop-motion nanoscale imaging with EUV laser light,” X-Ray Microscopy 2010, Chicago, IL, Aug. 15-20, (2010).
  9. F. Brizuela, S. Carbajo, D. Alessi, Y. Wang, D. Martz, A. Sakdinawat, K. Goldberg, D. Attwood, M. Marconi, **J. Rocca**, and C. Menoni, “Full-field microscope for EUVL mask characterization”, X-Ray Microscopy 2010, Chicago, IL, Aug. 15-20, (2010).
  10. **J.J. Rocca**, B.M. Luther, D. Alessi, Y. Wang, D.H. Martz, F. Furch, B. Reagan, M. Berrill, C.S. Menoni, “Fully-coherent soft x-ray lasers on a table-top,” 19<sup>th</sup> International Laser Physics Workshop, Foz De Iguazu, Brazil, July 5 – 9, (2010).
  11. C.S. Menoni, F. Brizuela, S. Carbajo, Y. Wang, F. Pedaci, B.M. Luther, A. Sakdinawat, W. Chao, K. Goldberg, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, A.G. Ponomareko, V.V. Kondratenko, M.C. Marconi, and **J.J. Rocca**, “Nanoscale microscopy with table-top extreme ultraviolet lasers,” 19<sup>th</sup> International Laser Physics Workshop, Foz De Iguazu, Brazil, July 5 – 9, (2010).
  12. F. Brizuela, S. Carbajo, D. Martz, D. Alessi, Y. Wang, B. Luther, A. Sakdinawat, W. Chao, Y. Liu, K. Goldberg, D. Attwood, B. LaFontaine, **J.J. Rocca**, C. Menoni, “Table-top Microscope for the Actinic Aerial Imaging Inspection of Extreme Ultraviolet Lithography Masks,” 54th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication (EIPBN), Anchorage, Alaska, June 1 – 4, (2010).
  13. L.M. Meng, O. Guilbaud, Y. Wang, D. Alessi, S. Domingue, B. Luther, **J.J. Rocca** and A. Klisnick, “Measurement of the temporal coherence of a seeded GRIP transient Mo soft X-ray laser,” 12<sup>th</sup> International Conference on X-Ray Lasers, Gwangju, Korea, May 30 – June 4, (2010).
  14. F. Dong, E.R. Bernstein, and **J.J. Rocca**, “Single-Photon Ionization Soft X-Ray Laser Mass Spectrometry of Potential Hydrogen Storage Materials,” 12<sup>th</sup> International Conference on X-Ray Lasers, Gwangju, Korea, May 30 – June 4, (2010).
  15. J. Grava, M.A. Purvis, J. Filevich, D.P. Ryan, S.J. Moon, J. Dunn, V.N. Shlyaptsev, and **J.J. Rocca**, “Soft x-ray laser interferometry of dense plasma jets collimated by radiation cooling,” 12<sup>th</sup> International Conference on X-Ray Lasers, Gwangju, Korea, May 30 – June 4, (2010).
  16. C.S. Menoni, F. Brizuela, S. Carbajo, Y. Wang, D. Alessi, D.H. Martz, B. Luther, M.C. Marconi, **J.J. Rocca**, A. Sakdinawat, W. Chao, Y.W. Liu, E.H. Anderson, K.A. Goldberg, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, and B. LaFontaine, “Reflection microscope for actinic mask inspection and other progress in soft x-ray laser nano-imaging,” 12<sup>th</sup> International Conference on X-Ray Lasers, Gwangju, Korea, May 30 – June 4, (2010).

17. D.A. Alessi, D.H. Martz, B.M. Luther, Y. Wang, M.A. Berrill, D.J. Kemp, D. Patel, C.S. Menoni, and **J.J. Rocca**, “High Energy 13.9 nm Table-Top Soft X-Ray Laser Operating at 2.5 Hz Repetition Rate,” Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2010, Technical Digest (Optical Society of America, Washington, DC, 2009), San Jose, CA, (2010).
18. Y. Wang, D. Alessi, D. Martz, M. Berrill, B. Luther, and **J.J. Rocca**, “1 Hz Operation of a Gain-Saturated 10.9 nm Table-Top Laser,” Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2010, Technical Digest (Optical Society of America, Washington, DC, 2009), San Jose, CA, (2010).
19. D. H. Martz, H.T. Nguyen, D. Patel, J.A. Britten, D. Alessi, E. Krous, Y. Wang, M. Larotonda, J. George, B. Knollenberg, B.M. Luther, **J.J. Rocca**, and C.S. Menoni, “Large Area High Efficiency Broad Bandwidth 800 nm Dielectric Gratings for High Energy Laser Pulse Compression,” Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2010, Technical Digest (Optical Society of America, Washington, DC, 2009), San Jose, CA, (2010).
20. F. Brizuela, S. Carbajo, A. Sakdinawat, Y. Wang, D. Alessi, D. Martz, B. Luther, K.A. Goldberg, D.T. Attwood, B. La Fontaine, **J. Rocca**, and C. Menoni, “Table-top Extreme Ultraviolet Laser Aerial Imaging of Lithographic Masks,” Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2010, Technical Digest (Optical Society of America, Washington, DC, 2009), San Jose, CA, (2010).
21. F. Brizuela, S. Carbajo, A.E. Sakdinawat, Y. Wang, D. Alessi, B.M. Luther, W. Chao, Y. Liu, K.A. Goldberg, P.P. Naulleau, E.H. Anderson, D.T. Attwood, Jr., M.C. Marconi, **J.J. Rocca**, and C.S. Menoni, “Improved performance of a table-top actinic full-field microscope with EUV laser illumination,” Advanced Lithography, San Jose, CA, Feb 23 – 25, (2010).
22. **J.J. Rocca**, “Extreme Ultraviolet Lasers,” EUV ERC Research Symposium, SEMATECH, Albany NY, February 2010.
23. T. Popmintchev, M.-C. Chen, M. Gerrity, P. Arpin, A. Bahabad, D. Popmintchev, H. Kapteyn, M. Murnane, M. Grisham, **J. Rocca**, I. Christov, E. Gullikson, F. Salmassi, Y. Liu, O. Cohen, “Coherent Ultrafast EUV Beams from FS Lasers,” EUV ERC Research Symposium, SEMATECH, Albany NY, February 2010.
24. B.A. Reagan, F. J. Furch, B.M. Luther, A.H. Curtis, S.P. Meehan, **J.J. Rocca**, “Demonstration of a 1 J Diode-Pumped Yb:YAG Chirped Pulse Amplification Laser System,” Advanced Solid-State Photonics (ASSP), San diego, CA, Jan. 31–Feb. 3, (2010).
25. M. Berrill and **J.J. Rocca**, “Two Dimensional Computer Modeling of Plasmas Using Adaptive Mesh Refinement,” 51st Annual Meeting of the APS Division of Plasma Physics Atlanta, GA, Nov. 2–6, (2009).
26. M. Purvis, J. Grava, J. Filevich, D. Ryan, M. Marconi, V. Shlyaptsev, **J. Rocca**, S. Moon, and J. Dunn, “Radiation cooling of dense laboratory plasma jets studied using soft x-ray laser interferometry and simulations,” 51st Annual Meeting of the APS Division of Plasma Physics Atlanta, GA, Nov. 2–6, (2009).
27. D. Alessi, M. Berrill, Y. Wang, S. Domingue, D. Martz, D. Kemp, B. Luther, and **J. Rocca**, “Generation of Phase-Coherent Soft X-Ray Laser Beams by Seeding Plasma Amplifiers,” 51st Annual Meeting of the APS Division of Plasma Physics Atlanta, GA, Nov. 2–6, (2009).
28. R. Shepherd, H. Chen, S. Feldman, G. Dyer, S. Chen, J. Fuchs, M. Gauthier, P. Audebert, T. Ditmire, P. Beiersdorfer, M. Purvis, A. Hazi, R. London, M. Murillo, L. Benedict, J. Dunn, J. Glosi, S. Hau-Riege, B. Langdon, R. More, **J. Rocca**, N. Rohringer, F. Stretitz, J. Weisheit, and F.

- Graziani, "Experimental measure of proton energy loss in short pulse laser generated, proton heated carbon," 51st Annual Meeting of the APS Division of Plasma Physics Atlanta, GA, Nov. 2–6, (2009).
29. S. Carbajo, F. Brizuela, Y. Wang, C.A. Brewer, F. Pedaci, W. Chao, E.H. Anderson, Y. Liu, K.A. Goldberg, P. Naulleau, P. Wachulak, M.C. Marconi, D.T. Attwood, **J.J. Rocca**, and C.S. Menoni, "Microscopy of extreme ultraviolet lithography masks with 13.2 nm tabletop laser illumination," Four Corners Section of the APS: Annual Meeting, Colorado School of Mines, Golden, CO, Oct. 23-24, (2009).
  30. E. Krous, P. Langston, D. Patel, F. Furch, B. Reagan, **J. Rocca**, C. Menoni, A. Markosyan, R. Route, M. Fejer, L. Emmert, D. Nguyen, and W. Rudolph, "Growth and characterization of transition metal oxide thin films by dual ion beam sputtering," Four Corners Section of the APS: Annual Meeting, Colorado School of Mines, Golden, CO, Oct. 23-24, (2009).
  31. D. Martz, D. Alessi, Y. Wang, B. Luther, M. Berrill, S. Domingue, D. Kemp, and **J. Rocca**, "Demonstration of a high average power table-top soft x-ray laser at 13.9 nm," Four Corners Section of the APS: Annual Meeting, Colorado School of Mines, Golden, CO, Oct. 23-24, (2009).
  32. F. Furch, B. Reagan, B. Luther, A. Curtis, S. Meehan, and **J. Rocca**, "Demonstration of an all-diode-pumped soft x-ray laser," Four Corners Section of the APS: Annual Meeting, Colorado School of Mines, Golden, CO, Oct. 23-24, (2009).
  33. D. Ryan, M. Purvis, J. Grava, J. Filevich, and **J. Rocca**, "Soft x-ray interferometry study of radiation cooling and jet collimation in dense laboratory plasmas," Four Corners Section of the APS: Annual Meeting, Colorado School of Mines, Golden, CO, Oct. 23-24, (2009).
  34. L. Urbanski, P. Wachulak, A. Isoyan, F. Jian, Y.-C. Cheng, **J. Rocca**, C. Menoni, F. Cerrina, and M. Marconi, "Talbot nano-patterning with a table-top soft X-ray laser," Four Corners Section of the APS: Annual Meeting, Colorado School of Mines, Golden, CO, Oct. 23-24, (2009).
  35. C. Menoni, F. Brizuela, Y. Wang, D. Alessi, S. Carbajo, B. Luther, A. Sakdinawat, W. Chao, Y. Liu, E. Anderson, K. Goldberg, D. Attwood, M. Marconi, and **J. Rocca**, "First At-Wavelength Defect Characterization of EUV Lithography Reticles Using a Table-Top Laser," 2009 International Symposium on Extreme Ultraviolet Lithography, Prague, Czech Republic, Oct. 18 – 21, (2009).
  36. L. Urbanski, P.W. Wachulak, A. Isoyan, F. Jian, Y.-C. Cheng, **J.J. Rocca**, C.S. Menoni, M.C. Marconi, and F. Cerrina, "Table Top Schemes for Nano-Patterning with Extreme Ultraviolet Lasers," Frontiers in Optics, San Jose, CA, Oct. 11 – 15, (2009).
  37. F.J. Furch, B.A. Reagan, B.M. Luther, A.H. Curtis, S.P. Meehan, and **J.J. Rocca**, "Demonstration of an All-Diode-Pumped Soft X-Ray Laser," Frontiers in Optics, San Jose, CA, Oct. 11 – 15, (2009).
  38. C.S. Menoni, F. Brizuela, Y. Wang, C. Brewer, F. Pedaci, W. Chao, E.H. Anderson, Y. Liu, K. Goldberg, P. Naulleau, P. Wachulak, M.C. Marconi, D. Attwood, and **J.J. Rocca**, "Table-Top Microscope for At-Wavelength Inspection of Extreme Ultraviolet Lithography Mask," IEEE LEOS Annual Meeting, Antalya, Turkey, Oct. 2 – 7, (2009).
  39. M.C. Marconi, L. Urbanski, P. Wachulak, A. Isoyan, F. Jian, Y.-C. Cheng, **J.J. Rocca**, C.S. Menoni, and F. Cerrina, "Table Top Ultraviolet Lasers Enable New Nano-Patterning Schemes," IEEE LEOS Annual Meeting, Antalya, Turkey, Oct. 2 – 7, (2009).
  40. M. Marconi, P. Wachulak, L. Urbanski, C.S. Menoni, and **J.J. Rocca**, "Nano-imaging and nano-patterning with compact EUV lasers: new opportunities in nanotechnology with a table top system," 17<sup>th</sup> International Conference on Advanced Laser Technologies, Antalya, Turkey, Sept. 26 – Oct. 1, (2009).

41. E.M. Krous, P. Langston, D. Patel, A. Markosyan, L.A. Emmert, F. Furch, B.A. Reagan, **J.J. Rocca**, R. Route, M.M. Fejer, W. Rudolph, M. Shinn, and C.S. Menoni, "Optimization of scandia thin films for high power laser coating applications," SPIE Laser Damage 2009, Boulder, CO, Sept. 21 – 23, (2009).
42. C.S. Menoni, M.R. McNeil, **J.J. Rocca**, J. Filevich, D. Fang, E.R. Bernstein, and D.C. Crick, "Extreme Ultraviolet Laser Ablation Spectrometry (EUV-LAMS): probing composition at the sub-cell level with nanometer scale resolution, RMRCE Meeting, Logan, UT, Sept., (2009).
43. **J.J. Rocca**, "High average power table-top soft x-ray lasers at 13.9 nm wavelength and below," Ultrafast Optics VII High Field Short Wavelength XIII Conference, Arcachon, France, Aug. 31-Sept. 4, (2009), Proceedings to be published.
44. F. Dong, S. Heinbuch, **J.J. Rocca**, and E.R. Bernstein, "Studies of Neutral  $Al_mC_n$  Clusters Employing a Table-Top Soft X-Ray Laser," Soft X-Ray Lasers and Applications VIII SPIE Optics and Photonics, San Diego, CA, Aug. 4-9, J. Dunn and G.J. Tallents, eds., Proc. **7451**, 74510Q, (2009).
45. **J.J. Rocca**, "Compact Soft X-ray Lasers: a Doorway to Coherent Soft X-ray Science on a Table-top," Soft X-Ray Lasers and Applications VIII SPIE Optics and Photonics, San Diego, CA, Aug. 4-9, (2009).
46. E.M. Krous, D. Patel, A. Markosyan, L.A. Emmert, B. Langdon, P. Langston, F.J. Furch, **J.J. Rocca**, R. Route, M.M. Fejer, W. Rudolph, M.D. Shinn, and C.S. Menoni, "Tailoring of process parameters to optimize optical and structural properties of  $SiO_2/HfO_2$  multilayers," Soft X-Ray Lasers and Applications VIII SPIE Optics and Photonics, San Diego, CA, Aug. 4-9, (2009).
47. H. Bravo, B. Szapiro, P. Wachulak, M.C. Marconi, W. Chao, E. Anderson, D.T. Attwood, C.S. Menoni, and **J.J. Rocca**, "Nanometer scale machining with soft X-ray lasers," Soft X-Ray Lasers and Applications VIII SPIE Optics and Photonics, San Diego, CA, Aug. 4-9, (2009).
48. E.R. Bernstein, **J.J. Rocca**, F. Dong, and S.C. Heinbuch, "Soft x-ray laser ionization mass spectrometry of aluminum carbide, a potential hydrogen storage material," Soft X-Ray Lasers and Applications VIII SPIE Optics and Photonics, San Diego, CA, Aug. 4-9, (2009).
49. L. Vysin, T. Burian, J. Chalupsky, M. Grisham, V. Hajkova, S. Heinbuch, K. Jakubczak, D. Martz, T. Mocek, P. Pira, J. Polan, **J.J. Rocca**, B. Rus, J. Sobota, and L. Juha, "Characterization of focused beam of desktop 10-Hz capillary-discharge 46.9-nm laser," Soft X-Ray Lasers and Applications VIII SPIE Optics and Photonics, San Diego, CA, Aug. 4-9, Proc. SPIE **7361**, 73610O (2009).
50. V.N. Shlyaptsev, **J.J. Rocca**, M. Grisham, G. Avaria, F. Tomasel, and A. Noy, "Prospective schemes for next generation X-ray lasers," Soft X-Ray Lasers and Applications VIII SPIE Optics and Photonics, San Diego, CA, Aug. 4-9, J. Dunn and G.J. Tallents, eds., Proc. **7451**, 745103, (2009).
51. M.C. Marconi, P.W. Wachulak, L. Urbanski, A. Isoyan, F. Jiang, Y.C. Cheng, **J.J. Rocca**, C.S. Menoni, and F. Cerrina, "Tabletop soft x-ray lithography," Soft X-Ray Lasers and Applications VIII SPIE Optics and Photonics, San Diego, CA, Aug. 4-9, J. Dunn and G.J. Tallents, eds., Proc. **7451**, 74510J, (2009).
52. H. Bravo, B. Szapiro, P. Wachulak, M.C. Marconi, W. Chao, E. Anderson, D.T. Attwood, C.S. Menoni, and **J.J. Rocca**, "Nanometer-Scale Machining by Laser Ablation with a Focused Extreme Ultraviolet Laser Beam," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2009, Technical Digest (Optical Society of America, Washington, DC, 2009), Baltimore, MD, JTuD40, (2009).
53. M. Murnane, D. Attwood, and **J.J. Rocca**, "Ultrafast Optics: Nanoscale Microscopy, Metrology and Patterning Using Compact and Large Scale Soft X-Ray Sources," Conference on Lasers and



Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2009, Technical Digest (Optical Society of America, Washington, DC, 2009), Baltimore, MD, SC247, (2009).

54. Y. Wang, M.Berrill, F. Pedaci, M.M. Shakya, S. Gilbertson, Z. Chang, E. Granados, B. Luther, M.a. Larotonda, D. Alessi, and **J. Rocca**, "Generation of a 1 Picosecond Soft X-Ray Laser Pulses from an Injection-Seeded Plasma Amplifier," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2009, Technical Digest (Optical Society of America, Washington, DC, 2009), Baltimore, MD, JWD5, (2009).
55. F. Brizuela, Y. Wang, C.A. Brewer, F. Pedaci, W. Chao, E.H. Anderson, Y. Liu, K.A. Goldberg, P.Naulleau, P. Wachulak, M.C. Marconi, D.T. Attwood, **J.J. Rocca**, and C.S. Menoni, "13.2 nm Table-Top Inspection Microscope for Extreme Ultraviolet Lithography Mask Defect Characterization," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2009, Technical Digest (Optical Society of America, Washington, DC, 2009), Baltimore, MD, JFA5, (2009).
56. A. Isoyan, F. Jian, Y.-C. Cheng, P. Wachulak, L. Urbanski, **J. Rocca**, C. Menoni, M.C. Marconi, and F. Cerrina, "Coherent Imaging Nano-Patterning with Extreme Ultraviolet Laser Illumination," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2009, Technical Digest (Optical Society of America, Washington, DC, 2009), Baltimore, MD, JFA7, (2009)
57. M.A. Purvis, J.Filevich, J.Grava, D.P.Ryan, J.Dunn, S.J.Moon, V.N.Shlyaptsev, and **J.J. Rocca**, "Collimation of dense laboratory plasma jets studied with soft x-ray laser interferometry," second International Conference on High Energy Density Physics (ICHED), May 19-22, 2009, Austin, TX.
58. J. Filevich, M.A.Purvis, J.Grava, D.P.Ryan, J.Dunn, S.J.Moon, V.N.Shlyaptsev, and **J.J. Rocca**, "Bow Shocks Formed by the Collision of Plasmas in Laser-Irradiated Cylindrical Cavities," second International Conference on High Energy Density Physics (ICHED), May 19-22, 2009, Austin, TX.
59. P.W. Wachulak, A. Bartnik, C.S. Menoni, **J.J. Rocca**, H. Fiedorowicz, and M.C. Marconi, "Imaging and patterning on nano-meter scale using coherent EUV light," XLIV Zakopane School of Physics, Breaking Frontiers: Submicron Structures in Physics and Biology, Zakopane, Poland, May 18-23, (2009).
60. P.W. Wachulak, R.A. Bartels, A. Bartnik, C.S. Menoni, **J.J. Rocca**, H. Fiedorowicz, and M.C. Marconi, "Imaging and patterning on nano-meter scale using coherent EUV light," COST MP0601 WG & MC Meetings, Salamanca, Spain, May 14-15, (2009).
61. A. Isoyan, F. Jiang, Y.-C. Cheng, P.W. Wachulak, L. Urbanski, C.S. Menoni, **J.J. Rocca**, M.C. Marconi, and F. Cerrina, "Self-Imaging Of Complex Structures With A Table-Top EUV Laser," International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication. Marco Island, FL, May, (2009).
62. J. Filevich, M. Purvis, J. Grava, D.P. Ryan, J.Dunn, S.J. Moon, V.N. Shlyaptsev, and **J.J. Rocca**, "Shocks Formed by the Collision of Plasmas in Laser-Irradiated Cylindrical Cavities," 16th International Conference on Atomic Processes In Plasmas, APIP, Monterey, CA, March 22 – 26, (2009).
63. P.W. Wachulak, M.G. Capeluto, C.S. Menoni, **J.J. Rocca**, and M.C. Marconi, "Sub-100nm nanopatterning using extreme ultraviolet laser," SECON 2009, Warsaw, Poland, March, (2009).
64. L. Vysin, T. Burian, J. Chalupsky, M. Grisham, V. Hajkova, S. Heinbuch, K. Jakubczak, D. Martz, T. Mocek, P. Pira, J. Polan, **J.J. Rocca**, B. Rus, J. Sobota, and L. Juha, "Characterization of focused beam of desktop 10-Hz capillary-discharge 46.9-nm laser," Proc. SPIE **7361**, 73610O (2009).

65. P.W. Wachulak, M.C. Marconi, R.A. Bartels, C.S. Menoni, and **J.J. Rocca**, “Sub-50nm extreme ultraviolet holographic imaging,” *Proc. SPIE* **7358**, 735806, (2009).
66. A. Isoyan, F. Jiang, Y.-C. Cheng, P. Wachulak, L. Urbanski, **J. Rocca**, C. Menoni, M. Marconi, and F. Cerrina, “Extreme ultraviolet holographic lithography with a table-top laser,” *Alternative Lithographic Technologies*, F.M. Schellenberg and B.M.L. Fontaine, eds., *SPIE Proc.* **7271**, 72713<sup>o</sup> (2009).
67. F. Brizuela, Y. Wang, C.A. Brewer, F. Pedaci, W. Chao, E.H. Anderson, Y. Liu, K.A. Goldberg, P.P. Naulleau, P.W. Wachulak, M.C. Marconi, D.T. Attwood, **J.J. Rocca**, and C.S. Menoni, “Inspection 13.2-nm table-top full-field microscope,” *Alternative Lithographic Technologies*, San Jose, CA, USA: *SPIE Proc.* **7271**, 72713F-7 (2009).
68. A. Isoyan, F. Jiang, Y.-C. Cheng, P.W. Wachulak, L. Urbanski, **J.J. Rocca**, M.C. Marconi, and F. Cerrina, “Extreme-ultraviolet holographic lithography with a table-top laser source,” *SPIE Advanced Lithography*, San Jose, CA, Feb. 23 – 26, (2009).
69. C.S. Menoni, F. Brizuela, C. Brewer, Y. Wang, F. Pedaci, B. Luther, M.C. Marconi, **J.J. Rocca**, W. Chao, E.H. Anderson, K. Goldberg, Y.W. Liu, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, A.G. Ponomareko, and V.V. Kondratenko, “Nanometer Scale Imaging with Extreme Ultraviolet Lasers,” 39<sup>th</sup> Progress in Quantum Electronics Symposium, Snowbird, UT, Jan. 4-8, (2009).
70. F. Brizuela, C. Brewer, D. Martz, M.C. Marconi, **J.J. Rocca**, C.S. Menoni, W. Chao, E.H. Anderson, D. Attwood, A.V. Vinogradov, I.A. Artyukov, A.G. Ponomarenko, and V.V. Kondratenko, “Single-shot Extreme Ultraviolet Microscopy with 54 nm Resolution using a Desktop-size Capillary Discharge Laser,” 21st Annual Meeting of the IEEE Lasers and Electro-Optics Society, Nov. 9-13 LEOS 2008, *IEEE* **362**, TuAA5, (2008).
71. M.C. Marconi, P. Wachulak, F. Brizuela, C. Brewer, R.A. Bartels, C.S. Menoni and **J.J. Rocca**, “Spatial Resolution and Feature Size Determination in Extreme Ultraviolet Microscope Images,” 21st Annual Meeting of the IEEE Lasers and Electro-Optics Society, Nov. 9-13 LEOS 2008, *IEEE* **828**, ThR2, (2008).
72. M. Purvis, J. Grava, J. Filevich, **J. Rocca**, J. Dunn, S. Moon, and V. Shlyaptsev, “Collimation of laboratory plasma jets studied with soft x-ray laser interferometry,” 50<sup>th</sup> Annual Meeting of the Division of Plasma Physics, Dallas, TX, Nov. 17-21, (2008), *Bulletin of the American Physical Society*, **25**, Number 14, BO4.00011, (2008).
73. M. Berrill, F. Brizuela, B. Langdon, H. Bravo, C. Menoni, and **J.J. Rocca**, “Photoionized Plasmas Created by Soft X-Ray Laser Irradiation of Solid Targets,” 50<sup>th</sup> Annual Meeting of the Division of Plasma Physics, Dallas, TX, Nov. 17-21, (2008), *Bulletin of the American Physical Society*, Vol. 25, Number 14, UO4.00011, (2008).
74. J. Grava, M.A. Purvis, J. Filevich, M.C. Marconi, V.N. Shlyaptsev, **J.J. Rocca**, J. Dunn, and S.J. Moon, “Dynamics of laser-created laboratory plasmas with soft x-ray laser interferometry,” 13<sup>th</sup> International Workshop on Radiative Properties of Hot Dense Matter, Santa Barbara, CA, Nov. 10 – 14, (2008). Proceedings to be published in the *Journal of Quantitative Spectroscopy and Radiative Transfer*, (2008).
75. F. Brizuela, C. Brewer, D. Martz, M.C. Marconi, **J.J. Rocca**, C.S. Menoni, W. Chao, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, A.G. Ponomareko, and V.V. Kondratenko, “Single-shot Extreme Ultraviolet Microscopy with 54 nm Resolution using a Desktop size Capillary Discharge Laser,” *IEEE Lasers and Electro-Optics Society Annual Meeting*, Newport Beach, CA, Oct. 13-16, (2008).
76. M. Marconi, P. Wachulak, C. Brewer, F. Brizuela, R. Bartels, C.S. Menoni, **J. Rocca**, E. Anderson, and W. Chao, “Analysis of Resolution and Feature Size in Extreme Ultraviolet Microscopy

- Images,” 21<sup>st</sup> IEEE Lasers and Electro-Optics Society Annual Meeting, Newport Beach, CA, Oct. 9-13, (2008). DOI: 10.1109/LEOS.2008.4688877.
77. F. Brizuela, Y. Wang, F. Pedaci, C.A. Brewer, P. Wachulak, W. Chao, Y. Liu, K. Goldberg, P. Naulleau, E.H. Anderson, D.T. Attwood, M.C. Marconi, **J.J. Rocca**, and C.S. Menoni, “High resolution 13.2 nm reflection microscopy on a table top,” SEMATECH 2008 International EUVL Symposium, Lake Tahoe, NV, Sept. 29- Oct. 1, (2008).
  78. D. Patel, P. Langston, A. Markosyan, E.M. Krous, B. Langdon, F. Furch, B. Reagan, R. Route, M.M. Fejer, **J.J. Rocca**, and C.S. Menoni, “SiO<sub>2</sub>/HfO<sub>2</sub> multilayers: impact of process parameters and stack geometry on the optical and structural properties,” SPIE Boulder Damage Symposium, SPIE Boulder Damage Symposium, G.J. Exarhos; D. Ristau; M.J. Soileau; C.J. Stolz, eds., Proc. Laser-Induced Damage in Optical Materials SPIE **7132**, 71320L, (2008).
  79. C.S. Menoni, M.C. Marconi, and **J.J. Rocca**, “Bright beams of extreme ultraviolet light an enabling tool for nanoscale imaging and patterning,” International Conference on Microwave Magnetics, Fort Collins, CO, Sept. 12-14, (2008).
  80. C.S. Menoni, F. Brizuela, C. Brewer, Y. Wang, D. Alessi, P. Wachulak, B.M. Luther, M.C. Marconi, **J.J. Rocca**, W. Chao, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, Y.P. Pershyn, and V.V. Kondratenko, “Full Field Imaging With Extreme Ultraviolet Lasers At Near Wavelength Resolution,” International Conference on Nonlinear Near Field Optics, Buenos Aires, Argentina, Sept. 6, (2008).
  81. P.W. Wachulak, M.C. Marconi, R. Bartels, C.S. Menoni, and **J.J. Rocca**, “Soft X ray Holography with wavelength resolution,” X-Ray Lasers 2008, Belfast, UK, Proceedings of the 11th International Conference on X-Ray Lasers, August 2008, Springer Netherlands, **130**, 357, (2009).
  82. M. Berrill, F. Brizuela, B. Langdon, H. Bravo, C.S. Menoni, and **J.J. Rocca**, “Warm Photoionized Plasmas Created by Soft X-Ray Laser Irradiation of Solid Targets,” X-Ray Lasers 2008, Belfast, UK, Proceedings of the 11th International Conference on X-Ray Lasers, August 2008, Springer Netherlands, **130**, 381, (2009).
  83. M.C. Marconi, P.W. Wachulak, C. Brewer, F. Brizuela, R. Bartels, C.S. Menoni, **J.J. Rocca**, E. Anderson, and W. Chao, “Resolution and Feature Size Assessments in Soft X ray Microscopy Images,” X-Ray Lasers 2008, Belfast, UK, Proceedings of the 11th International Conference on X-Ray Lasers, August 2008, Springer Netherlands, **130**, 483, (2009).
  84. S. Heinbuch, F. Dong, E.R. Bernstein, and **J.J. Rocca**, “Gas Phase Study of The Reactivity of Optical Coating Materials with Hydrocarbons Using a Compact Soft X-Ray Laser,” X-Ray Lasers 2008, Belfast, UK, Proceedings of the 11th International Conference on X-Ray Lasers, August 2008, Springer Netherlands, **130**, 439, (2009).
  85. S. Heinbuch, F. Dong, E.R. Bernstein, and **J.J. Rocca**, “Gas Phase Studies of Catalytic Processes Involving Vmon Clusters and their Reaction with Alcohols, Alkenes, Nox, and Nh<sub>3</sub> Using a Desk-Top Size Soft X-Ray Laser,” X-Ray Lasers 2008, Belfast, UK, Proceedings of the 11th International Conference on X-Ray Lasers, August 2008, Springer Netherlands, **130**, 441, (2009).
  86. R.L. Sandberg, P.W. Wachulak, D.A. Raymondson, A. Paul, A.E. Sakdinawat, B. Amirbekian, E. Lee, Y. Liu, C. La-O-Vorakiat, C. Song, M.C. Marconi, C.S. Menoni, M.M. Murnane, **J.J. Rocca**, H.C. Kapteyn, J. Miao, “Lensless Imaging Using Table-Top Soft X-Ray Lasers and High Harmonics Sources Reaching 70 nm Resolution,” X-Ray Lasers 2008, Belfast, UK, Proceedings of the 11th International Conference on X-Ray Lasers, August 2008, Springer Netherlands, **130**, 433, (2009).
  87. P.W. Wachulak, M.C. Marconi, W. Rockward, D. Hill, E.H. Anderson, C.S. Menoni, and **J.J. Rocca**, “Interferometric Lithography with a Desk Top size Soft X ray laser,” X-Ray Lasers 2008,

- Belfast, UK, Proceedings of the 11th International Conference on X-Ray Lasers, August 2008, Springer Netherlands, **130**, 495, (2009).
88. F. Brizuela, P.W. Wachulak, C.A. Brewer, C. S. Menoni, W. Chao, E.H. Anderson, R.A. Bartels, **J.J. Rocca**, and M.C. Marconi, "Simultaneous determination by correlation of feature size and spatial resolution in EUV images of patterned nanostructures," 9<sup>th</sup> International Conference on X-Ray Microscopy - XRM2008, Zürich, Switzerland, July 21 - 25, (2008).
  89. F. Brizuela, C.A. Brewer, S. Fernandez, D. Martz, M. Marconi, W. Chao, E.H. Anderson, A.V. Vinogradov, I.A. Artyukov, A.G. Ponomareko, V.V. Kondrantenko, D.T. Attwood, K.A. Bertness, N.A. Sanford, **J.J. Rocca**, C.S. Menoni, "High resolution full-field imaging of nanostructures using compact extreme ultraviolet lasers," 9<sup>th</sup> International Conference on X-Ray Microscopy - XRM2008, Zürich, Switzerland, July 21 - 25, (2008), Journal of Physics: Conference Series **186**, 012026, (2009).
  90. R.L. Sandberg, D.A. Raymondson, W.F. Schlotter, K. Raines, C. La-O-Vorakiat, A. Paul, M.M. Murnane, H.C. Kapteyn, and J. Miao, "Near diffraction limited coherent diffractive imaging with tabletop soft x-ray sources," 9<sup>th</sup> International Conference on X-Ray Microscopy - XRM2008, Zürich, Switzerland, July 21 - 25, (2008), Journal of Physics: Conference Series, **186**, 012058 (2009).
  91. R.L. Sandberg, C. Song, P.W. Wachulak, D.A. Raymondson, A. Paul, A.E. Sakdinawat, C. La-O-Vorakiat, W.F. Schlotter, M.C. Marconi, C.S. Menoni, M.M. Murnane, **J.J. Rocca**, H.C. Kapteyn, and J. Miao, "Lensless Imaging at 70nm Resolution using Tabletop Coherent Soft X-rays," 16th International Conference on Ultrafast Phenomena, Stresa, Italy, June 2008, MONIa.3, (2008).
  92. C. Brewer, F. Brizuela, D. Martz, P. Wachulak, S. Fernández Jiménez, **M. Marconi**, J. Rocca, C. Menoni, W. Chao, E. Anderson, D. Attwood, A. Vinogradov, I. Artioukov, A. Ponomareko, and V. Kondratenko, "50 nm Resolution Extreme Ultraviolet Imaging with a Desktop-size Laser," International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication. Portland, OR, May 26-May 31, (2008).
  93. M.C. Marconi, P.W. Wachulak, W. Rockward, D. Hill, E. Anderson, C.S. Menoni, and **J.J. Rocca**, "Ultra compact interferometric lithography system realized with a desk-top extreme ultraviolet laser," International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication. Portland, OR, May 26-May 31, (2008).
  94. R.L. Sandberg, D.A. Raymondson, A. Paul, C. La-O-Vorakiat, M.M. Murnane, H.C. Kapteyn, C. Song, B. Amirbekain, E. Lee, J. Miao, P.W. Wachulak, M.C. Marconi, C.S. Menoni, **J.J. Rocca**, A.E. Sakdinawat, and W.F. Schlotter, "70 nm Lensless Imaging using Tabletop Extreme Ultraviolet Sources," EIPBN 2008: The 52nd International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication, Portland, OR, May 26-31, (2008).
  95. T. Popmintchev, M.C. Chen, O. Cohen, M.E. Grisham, **J.J. Rocca**, M.M. Murnane, and H.C. Kapteyn, "Extended Phase-Matching of High-Order Harmonics Driven by Mid-Infrared Light," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008, Technical Digest (Optical Society of America, Washington, DC, 2008), San Jose, CA, CPDA9, (2008).
  96. D. Attwood, **J.J. Rocca**, M. Murnane, and H. Kapteyn, "Ultrafast Optics: Nanoscale Microscopy, Metrology and Patterning Using Compact and Large Scale Soft X-Ray Sources," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008, Technical Digest (Optical Society of America, Washington, DC, 2008), San Jose, CA, SC247, (2008).
  97. P.W. Wachulak, M.C. Marconi, W. Rockward, D. Hill, E.H. Anderson, C.S. Menoni, and **J.J. Rocca**, "Extreme Ultraviolet Interferometric Lithography with a Desk-Top System," Conference on

- Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008, Technical Digest (Optical Society of America, Washington, DC, 2008), San Jose, CA, CMX5, (2008).
98. P.W. Wachulak, M.C. Marconi, R. Bartels, C.S. Menoni, and **J.J. Rocca**, "Extreme Ultraviolet Holography with Wavelength Resolution," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008, Technical Digest (Optical Society of America, Washington, DC, 2008), San Jose, CA, CMX5, (2008).
  99. R.L. Sandberg, C. Song, P.W. Wachulak, D.A. Raymondson, A. Paul, B. Amirbekian, A.E. Sakdinawat, E. Lee, C. La-O-Vorakiat, M.C. Marconi, C.S. Menoni, M.M. Murnane, **J.J. Rocca**, H.C. Kapteyn, and J. Miao, "70 nm Lensless Diffractive Microscopy Using Tabletop Soft X-Ray Sources," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008, Technical Digest (Optical Society of America, Washington, DC, 2008), San Jose, CA, CMCC5, (2008).
  100. Y. Wang, F. Pedaci, M. Berrill, B. Luther, E. Granados, D. Alessi, and **J.J. Rocca**, "Phase Coherent, Injection-Seeded Table-Top Soft X-Ray Lasers at Wavelengths down to 13.9 nm," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008, Technical Digest (Optical Society of America, Washington, DC, 2008), San Jose, CA, CMCC6, (2008).
  101. F. Brizuela, C.A. Brewer, D. Martz, M.C. Marconi, **J.J. Rocca**, C.S. Menoni, W. Chao, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, A.G. Ponomareko, and V.V. Kondratenko, "Near-Wavelength Resolution Extreme Ultraviolet Imaging with a Desktop-Size Laser," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008, Technical Digest (Optical Society of America, Washington, DC, 2008), San Jose, CA, CMCC7, (2008).
  102. S.C. Heinbuch, F. Dong, **J. Rocca**, and E. Bernstein, "Gas Phase Study of the Reactivity of Optical Coating Materials with Hydrocarbons Using a Compact EUV Laser," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008, Technical Digest (Optical Society of America, Washington, DC, 2008), San Jose, CA, JTUA13, (2008).
  103. M.C. Marconi, P.W. Wachulak, C.A. Brewer, F. Brizuela, R. Bartels, C.S. Menoni, **J.J. Rocca**, E.H. Anderson, and W. Chao, "Analysis of Resolution and Feature Size in Extreme Ultraviolet Microscopy Images," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008, Technical Digest (Optical Society of America, Washington, DC, 2008), San Jose, CA, JWA80, (2008).
  104. M. Berrill, F. Brizuela, B. Langdon, H. Bravo, C. Menoni, and **J.J. Rocca**, "Photoionized Plasmas Created by Soft X-Ray Laser Irradiation of Solid Targets," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008, Technical Digest (Optical Society of America, Washington, DC, 2008), San Jose, CA, JWB5, (2008).
  105. S. Heinbuch, F. Dong, **J.J. Rocca**, and E.R. Bernstein, "Gas phase study of the reactivity of optical coating materials with hydrocarbons using a desk-top size EUV laser," SPIE Advanced Lithography, Emerging Lithographic Technologies XII, Frank M. Schellenberg, eds., Proc. SPIE **6921**, 69213F (2008).
  106. M.C. Marconi, P.W. Wachulak, R.A. Bartels, C.S. Menoni, and **J.J. Rocca**, "Holographic nano-imaging realized with compact extreme ultraviolet lasers," LEOS 2007 Annual Conference, Lake Buena Vista, FL, Oct. 21- 25, (2007).

107. **J.J. Rocca**, M.C. Marconi, C.S. Menoni, P.W. Wachulak, B. Luther, F. Brizuela, C.A. Brewer, Y. Wang, D. Alessi, M. Berrill, D.H. Martz, S. Heinbuch, M. Grisham, W. Chao, E.H. Anderson, and D.T. Attwood, "Compact soft x-ray lasers for imaging, material processing, and characterization at the nanoscale," Proc. 32nd IEEE/CPMT Intl. Electronic Manufacturing Technology Symp. (IEMT 2007), Piscataway, NJ: IEEE Press, pp. 101-102, (2007).
108. M.C. Marconi, P.W. Wachulak, M.G. Capeluto, D. Patel, C.S. Menoni, and **J.J. Rocca**, "Nanopillars and arrays of nanoholes fabricated by extreme ultraviolet interferometric laser lithography," LEOS 2007 Annual Conference, Lake Buena Vista, FL, Oct. 21- 25, (2007).
109. K.-J. Hsiao, J.M. Blanco Rodriguez, J.T. Jensen, D. Patel, D. Alessi, E. Granados Mateo, Y. Wang, **J.J. Rocca**, C.S. Menoni, P. Langston, and A. Ogloza, "Influence of process conditions on the optical properties HfO<sub>2</sub>/SiO<sub>2</sub> thin films for high power laser coatings," Frontiers in Optics, San Jose, CA, Sept. 16-20, (2007).
110. M.E. Grisham, T. Popmintchev, B.A. Reagan, D.M. Gaudiosi, M. Berrill, O. Cohen, **J.J. Rocca**, M.M. Murnane, and H.C. Kapteyn, "Enhanced High Harmonic Generation from Ions in a Capillary Discharge," UFO-HFSW Conference, Santa Fe, NM, Sept. 2-7, (2007).
111. C.S. Menoni, F. Brizuela, C. Brewer, G. Vaschenko, M.C. Marconi, **J.J. Rocca**, W. Chao, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, Y.P. Pershyn, and V.V. Kondratenko, "70 nm Spatial Resolution Microscope using Desktop-size Extreme Ultraviolet Laser illumination," UFO-HFSW conference, Santa Fe, NM, Sept. 2-7, (2007).
112. M. Berrill, F. Brizuela, B. Langdon, H. Bravo, C. Menoni, A. Vinogradov, I. Artioukov, Yu.P. Pershing, V. Kondratenko, and **J.J. Rocca**, "Photoionized plasmas created by soft x-ray laser irradiation of solid targets," UFO-HFSW conference, Santa Fe, NM, Sept. 2-7, (2007).
113. P.W. Wachulak, M.G. Capeluto, D. Patel, M.C. Marconi, C.S. Menoni, and **J.J. Rocca**, "Fabrication of arrays of sub-100 nm pillars and holes with table top soft x-ray laser," UFO-HFSW conference, Santa Fe, NM, Sept. 2-7, (2007).
114. J. Grava, M.A. Purvis, J. Filevich, M.C. Marconi, J. Dunn, S.J. Moon, V.N. Shlyaptsev, E. Jankowska, and **J.J. Rocca**, "Dynamics of colliding laser-created plasma studied with soft x-ray laser interferometry," UFO-HFSW conference, Santa Fe, NM, Sept. 2-7, (2007).
115. S. Heinbuch, F. Dong, E.R. Bernstein, and **J.J. Rocca**, "Gas Phase of the reactivity of optical coating materials with hydrocarbons using a desk-top size EUV laser," UFO-HFSW conference, Santa Fe, NM, Sept. 2-7, (2007).
116. M.C. Marconi, P.W. Wachulak, R.A. Bartels, C.S. Menoni, and **J.J. Rocca**, "Nano-holography with table top soft x-ray lasers," UFO-HFSW conference, Santa Fe, NM, Sept. 2-7, (2007).
117. R. Sandberg, A. Paul, D. Raymondson, M. Murnane, H. Kapteyn, P. Wachulak, M.C. Marconi, C.S. Menoni, **J.J. Rocca**, C. Song, J. Miao, and A. Sakdinawat, "Lensless imaging using table top EUV sources," UFO-HFSW conference, Santa Fe, NM, Sept. 2-7, (2007).
118. B. Langdon, D. Patel, E. Krous, **J.J. Rocca**, C.S. Menoni, F. Tomasel, S. Kholi, P.R. McCurdy, P. Langston, and A. Ogloza, "Influence of process conditions on the optical properties HfO<sub>2</sub>/SiO<sub>2</sub> thin films for high power laser coatings," Conference on Soft X-Ray Lasers and Applications VII, Proc. SPIE **6720**, 67200X (2007).
119. F. Brizuela, H. Bravo, M.A. Berrill, B. Langdon, G.O. Vaschenko, C.S. Menoni, **J.J. Rocca**, O.E. Hemberg, B.H. Frazer, W. Chao, E.H. Anderson, and D.T. Attwood, Jr., "Nanoscale ablation with soft x-ray lasers," Conference on Soft X-Ray Lasers and Applications VII, Proc. SPIE **6702**, 67020L, (2007).

120. M.A. Purvis, J. Grava, J. Filevich, M.C. Marconi, **J.J. Rocca**, J. Dunn, S.J. Moon, J. Nilsen, V.N. Shlyaptsev, and E. Jankowska, "Plasma interactions in laser irradiated semi-cylindrical cavities studied with soft x-ray interferometry using a capillary discharge laser," Conference on Soft X-Ray Lasers and Applications VII, Proc. SPIE **6702**, 670204, (2007).
121. P. Wachulak, D. Patel, M.G. Capeluto, C.S. Menoni, **J.J. Rocca**, and M.C. Marconi, "Interferometric lithography with sub-100-nm resolution using a tabletop 46.9-nm laser," Conference on Soft X-Ray Lasers and Applications VII, Proc. SPIE **6702**, 67020I, (2007).
122. P. Wachulak, R.A. Bartels, M.C. Marconi, C.S. Menoni, and **J.J. Rocca**, "Tabletop EUV holography with sub-200-nm spatial resolution," Conference on Soft X-Ray Lasers and Applications VII, Proc. SPIE **6702**, 67020J, (2007).
123. C.A. Brewer, F. Brizuela, D. Martz, G. Vaschenko, M.C. Marconi, W. Chao, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, Y.P. Pershyn, V.V. Kondratenko, **J.J. Rocca**, and C.S. Menoni, "High spatial resolution full-field microscopy using a desktop-size soft x-ray laser," Conference on Soft X-Ray Lasers and Applications VII, Proc. SPIE **6702**, 67020M (2007).
124. D.L. Voronov, E.N. Zubarev, Y.P. Pershyn, V.A. Sevryukova, V.V. Kondratenko, A.V. Vinogradov, I.A. Artioukov, Y.A. Uspenskiy, M. Grisham, G. Vaschenko, C.S. Menoni, and **J.J. Rocca**, "Structural transformations in Sc/Si multilayers irradiated by EUV lasers," Conference on Soft X-Ray Lasers and Applications VII, Proc. SPIE **6702**, 67020U (2007).
125. R. Sandberg, P. Wachulak, A. Paul, D. Raymondson, C. Song, M. Marconi, C.S. Menoni, **J.J. Rocca**, M. Murnane, H. Kapteyn, and J. Miao, "Lensless Imaging Using Tabletop Extreme-Ultraviolet Sources," Coherence 2007, International Workshop on Phase Retrieval and Coherent Scattering, Berkeley, CA, June 25-28, (2007).
126. P. Wachulak, M.G. Capeluto, M.C. Marconi, C.S. Menoni, and **J.J. Rocca**, "Table top Patterning of Arrays of nano-dots with extreme ultraviolet laser interferometric lithography," International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication, Denver, CO, May 29-June 1, (2007).
127. M.G. Capeluto, P. Wachulak, M.C. Marconi, D. Patel, C.S. Menoni, **J.J. Rocca**, C. Iemmi, E.H. Anderson, W. Chao, and D.T. Attwood, "Printing arrays of nano-holes with EUV Compact lasers," 4th Latin-American Symposium on Scanning Probe Microscopy IV LASPM, Mar del Plata, Argentina, May 2-4, (2007).
128. T. Popmintchev, M.E. Grisham, D.M. Gaudiosi, B.A. Reagan, O. Cohen, M.A. Berrill, M.M. Murnane, H. Kapteyn, and **J.J. Rocca**, "Enhanced High Harmonic Generation in Xe, Kr and Ar Using a Capillary Discharge," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2007, Proc. CLEO '07 Technical Digest, JFA3, (2007).
129. Y. Wang, E. Granados, M.A. Larotonda, M. Berrill, B.M. Luther, D. Patel, C.S. Menoni, and **J.J. Rocca**, "High brightness injection-seeded table-top soft x-ray laser using a dense plasma amplifier," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2007, Proc. CLEO '07 Technical Digest, JFA1, (2007).
130. P.W. Wachulak, M.G. Capeluto, M.C. Marconi, C.S. Menoni, and **J.J. Rocca**, "Arrays of sub-100 nm features fabricated with table top extreme ultraviolet interferometric laser lithography," Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2007, Proc. CLEO '07 Technical Digest, CThCC3, (2007).

131. P.W. Wachulak, R.A. Bartels, M.C. Marconi, C.S. Menoni, and **J.J. Rocca**, “Table top extreme ultraviolet holography,” Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2007, Proc. CLEO '07 Technical Digest, CMX3, (2007).
132. E. Granados, Y. Wang, M.A. Larotonda, M. Berrill, B.M. Luther, D. Patel, C.S. Menoni, and **J.J. Rocca**, “Demonstration of a high brightness injection-seeded soft x-ray laser amplifier using a dense plasma,” Bulletin of the American Physical Society **52**, B32.00002, (2007).
133. T. Popmintchev, D.M. Gaudiosi, O. Cohen, M.M. Murnane, H.C. Kapteyn, M. Grisham, B. Reagan, M. Berrill, **J.J. Rocca**, and B.C. Walker, “High harmonic generation from ions in a capillary discharge,” Bulletin of the American Physical Society **52**, B32.00010, (2007).
134. M. Marconi, P. Wachulak, D. Patel, M.G. Capeluto, C. Menoni, and **J.J. Rocca**, “Sub-100 nm interferometric lithography realized with table top extreme ultraviolet lasers,” Bulletin of the American Physical Society **52**, D43.00010, (2007).
135. J. Grava, M. Purvis, J. Filevich, M. Marconi, **J.J. Rocca**, J. Dunn, S. Moon, V. Shlyaptsev, and E. Jankowska, “Dynamics of dense converging plasmas studied with soft x-ray laser interferometry,” Bulletin of the American Physical Society **52**, K1.00167 (2007).
136. F. Brizuela, C. Brewer, G. Vaschenko, Y. Wang, M. Larotonda, B. Luther, M. Marconi, **J.J. Rocca**, C. Menoni, W. Chao, Y. Liu, E. Anderson, D. Attwood, A. Vinogradov, I. Artioukov, Y. Pershyn, and V. Kondratenko, “Nano-scale resolution full-field microscopy using tabletop extreme ultraviolet lasers,” Bulletin of the American Physical Society **52**, D38.00010 (2007).
137. P.W. Wachulak, M.C. Marconi, R.A. Bartels, C.S. Menoni, and **J.J. Rocca**, “Table Top Extreme Ultraviolet Holography. Present and future capabilities,” Bulletin of the American Physical Society **52**, R1.00120 (2007).
138. F. Dong, S. Heinbuch, **J.J. Rocca**, and E.R. Bernstein, “Formation and distribution of neutral transition metal oxide cluster: single photon ionization at 26.5 eV,” Bulletin of the American Physical Society **52**, V18.00014 (2007).
139. M. Berrill, D. Alessi, and **J.J. Rocca**, “Modeling of a Seeded Table-Top Soft X-Ray Laser Amplifier,” Bulletin of the American Physical Society **52**, K1.00264 (2007).
140. S. Heinbuch, F. Dong, **J.J. Rocca**, and E. Bernstein, “Single photon ionization of hydrogen bonded clusters with a desk-top size soft x-ray laser:  $(\text{HCOOH})_x$  and  $(\text{HCOOH})_y(\text{H}_2\text{O})_z$ ,” Bulletin of the American Physical Society **52**, V18.00013, (2007).
141. H. Bravo, F. Brizuela, G. Vaschenko, C.S. Menoni, **J.J. Rocca**, O. Hemberg, B. Frazer, S. Bloom, W. Chao, E.H. Anderson, and D.T. Attwood, “Sub-100 nm scale ablation by direct focusing of an extreme ultraviolet laser,” Bulletin of the American Physical Society **52**, R1.00157, (2007).
142. **J.J. Rocca**, Y. Wang, B. Luther, M. Berrill, M. Larotonda, D. Alessi, V.N. Shlyaptsev, E. Granados, and C.S. Menoni, “Compact high repetition rate soft x-ray lasers: a doorway to high intensity coherent soft x-ray science on a table-top” Atomic Processes in Plasmas, J.D. Gillaspay, W.L. Wiese, eds., Proc. AIP **926**, 135, (2007).
143. X. Zhang, A.L. Lytle, O. Cohen, D.M. Gaudiosi, T. Popmintchev, A. Paul, M.M. Murnane, H.C. Kapteyn, B. Reagan, M. Grisham, and **J.J. Rocca**, “Attosecond Nonlinear Optics in Plasmas for Coherent X-ray Generation” Atomic Processes in Plasmas, J.D. Gillaspay, J.J. Curry, W.L. Wiese, eds., Proc. AIP **926**, 145, (2007).
144. J. Filevich, J. Grava, M. Purvis, J. Nilsen, J. Dunn, W.R. Johnson, M.C. Marconi, and **J.J. Rocca**, “Bound electron contribution to the index of refraction of multiply ionized plasmas at soft x-ray wavelengths,” Atomic Processes in Plasmas, Gaithersburg, MD, March 19 – 22, (2007).



145. J. Grava, M.A. Purvis, J. Filevich, M.C. Marconi, J. Dunn, S.J. Moon, V.N. Shlyaptsev, E. Jankowska, and **J.J. Rocca**, “Dynamics of converging laser-created plasmas studied with soft x-ray laser interferometry,” Atomic Processes in Plasmas, Gaithersburg, MD, March 19 – 22, (2007).
146. D. Patel, Y. Wang, M. Larotonda, J. Lovewell, J. Jensen, K.J. Hsiao, E. Krous, **J.J. Rocca**, C.S. Menoni, F. Tomasel, S. Kholi, and P. McCurdy, “Assessing the impact of atomic oxygen in the damage threshold and stress of Hafnia films grown by ion beam sputter deposition,” Laser-Induced Damage in Optical Materials: 2006, G.J. Exarhos, A.H. Guenther, K.L. Lewis, D. Ristau, M.J. Soileau, C.J. Stolz, eds., Proc. SPIE **6403**, 640314, (2007).
147. T. Popmintchev, B. Reagan, D.M. Gaudiosi, M. Grisham, M. Berrill, O. Cohen, B.C. Walker, M.M. Murnane, H.C. Kapteyn, and **J.J. Rocca**, “Enhanced high harmonic generation from ions using a capillary discharge,” 15<sup>th</sup> International Conference on Ultrafast Phenomena, P. Corkum, D.M. Jonas, R.J. Dwayne, M. Weiner, and A.M. Weiner, eds., Proc. Ultrafast Phenomena XV **88**, 15, (2007).
148. M.C. Marconi, P.W. Wachulak, M.G. Capeluto, G. Vaschenko, H. Bravo, C.S. Menoni, **J.J. Rocca**, E.H. Anderson, W. Chao, D. Attwood, O. Hemberg, B. Frazer, and S. Bloom, “Nanopatterning and Nanomachining with Table-top Extreme Ultraviolet Lasers,” Proc. Material Research Society, Boston, MA, Nov. 27, (2006).
149. C.S. Menoni, G. Vaschenko, F. Brizuela, C. Brewer, Y. Wang, M.A. Larotonda, B.M. Luther, M.C. Marconi, **J.J. Rocca**, W. Chao, J.A. Liddle, Y. Liu, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, Y.P. Pershyn, and V.V. Kondratenko, “Nano-scale imaging with table-top extreme ultraviolet lasers,” Proc. Material Research Society, Boston, MA, Nov. 27, (2006).
150. Y. Wang, M. Larotonda, E. Granados, B. Luther, D. Alessi, M. Berrill, **J. Rocca**, and V.N. Shlyaptsev, “Generation and characterization of high repetition rate soft x-ray lasers,” IEEE Leos Annual Meeting, Montreal, Quebec, Canada, Oct. 29 – Nov. 2, (2006).
151. F. Dong, S. Heinbuch, **J.J. Rocca**, and E.R. Bernstein, “Distribution and Formation of Hydrogen Bonded and van der Waals Clusters: Single Photon Ionization by 26.5 eV Soft X-ray Laser,” ACS conference, San Francisco, CA, Sept. 8, (2006).
152. P.W. Wachulak, R.A. Bartels, C.S. Menoni, **J.J. Rocca**, and M.C. Marconi, “Holography Using Compact EUV Laser Source,” American Vacuum Society, School of Mines, Golden, CO, Sept., (2006).
153. M.G. Capeluto, P. Wachulak, M.C. Marconi, C.S. Menoni, **J.J. Rocca**, E.H. Anderson, W. Chao, and D.T. Attwood, “Development of a table top Nanopatterning tool with Extreme Ultraviolet laser illumination,” Micro- and Nano- Engineering 2006 Conference Proceedings, Barcelona, Spain, 17-20 Sept., 2006, Proc. Microelectronic Engineering, (2006).
154. M.C. Marconi, P.W. Wachulak, M.G. Capeluto, G. Vaschenko, H. Bravo, C.S. Menoni, **J.J. Rocca**, E.H. Anderson, W. Chao, D. Attwood, O. Hemberg, B. Frazer, and S. Bloom, “Nanopatterning and Nanomachining with Table-top Extreme Ultraviolet Lasers,” Proc. Material Research Society, in press (2006).

155. C.S. Menoni, G.O. Vaschenko, F. Brizuela, C. Brewer, Y. Wang, M.A. Larotonda, B.M. Luther, M.C. Marconi, **J.J. Rocca**, W. Chao, J. Liddle, Y.W. Liu, E.H. Anderson, D. Attwood, A.V. Vinogradov, I.A. Artioukov, Y.P. Pershyn, and V.V. Kondratenko, "Nanometer-scale Resolution Microscopy with Compact Extreme Ultraviolet Lasers," IEEE Leos Annual Meeting, Proc. IEEE, 895, (2006).
156. C.S. Menoni, G.O. Vaschenko, H. Bravo, F. Brizuela, **J.J. Rocca**, W. Chao, E.H. Anderson, D. Attwood, B. Frazer, and S. Bloom, "Nano-scale Ablation with a Compact Extreme Ultraviolet Laser," IEEE Leos Annual Meeting, Proc. IEEE, 935, (2006).
157. **J.J. Rocca**, Y. Wang, M. Larotonda, B. Luther, D. Alessi, M. Berrill, M. Marconi, G. Vaschenko, C. Brewer, F. Brizuela, C.S. Menoni, Y. Liu, W. Chao, E. Anderson, and D. Attwood, "Table-Top EUV Lasers for Metrology," 2006 International Symposium on EUV Lithography, Barcelona, Spain, Oct. 15 – 18, (2006).
158. [javascript:openPopupWindow\('/viewer/viewAbstractPrintFriendly.asp?CKKey=%7bA0795C89-37B5-4A5A-A9B6-EF3287984BC9%7d&SKey=%7bFFD881EA-6A0A-4359-A93A-DF8DC7B14481%7d&MKey=%7bEA8B4632-82B0-4B3F-9B0E-65C94F264A17%7d&AKey=%7b57B06C54-08A9-4FEF-9FDE-02D441047638%7d'500,400\)](http://www.spie.org/PROCEEDINGS/FullText.do?CKKey=%7bA0795C89-37B5-4A5A-A9B6-EF3287984BC9%7d&SKey=%7bFFD881EA-6A0A-4359-A93A-DF8DC7B14481%7d&MKey=%7bEA8B4632-82B0-4B3F-9B0E-65C94F264A17%7d&AKey=%7b57B06C54-08A9-4FEF-9FDE-02D441047638%7d'500,400)F. Brizuela, C. Brewer, G. Vaschenko, Y. Wang, M. Larotonda, B. Luther, M.C. Marconi, **J.J. Rocca**, C.S. Menoni, W. Chao, J. Alexander, A. Liddle, Y. Liu, E.H. Anderson, and D.T. Attwood, "Imaging with Sub-38nm Spatial Resolution Using a Tabletop 13nm Wavelength Laser," Frontiers in Optics 2006, Rochester, NY, Oct. 8 – 12, (2006).
159. F. Brizuela, H. Bravo, G. Vaschenko, C.S. Menoni, **J.J. Rocca**, O. Hemberg, B. Frazer, S. Bloom, W. Chao, E.H. Anderson, and D.T. Attwood, "Ablation of Nanometer-Scale Features Using a Table-Top Soft X-ray Laser," Frontiers in Optics 2006, Rochester, NY, Oct. 8 – 12, (2006).
160. C.S. Menoni, D. Patel, F. Brizuela, Y. Wang, M. Larotonda, K.J. Hsiao, **J.J. Rocca**, H.T. Nguyen, T.C. Carlson, C.R. Hoaglan, J.D. Nissen, M.D. Aasen, J.E. Peterson, and J.A. Britten, "Ion Beam Deposition of (NbTa)2O5/SiO2 Multilayers for High-Efficiency 800 nm Dielectric Gratings for High Average Power Laser Systems," Presented at the Laser-Induced Damage in Optical Materials: 2006, Boulder CO, Sept. 25-27, (2006).
161. H.T. Nguyen, T.C. Carlson, C.R. Hoaglan, J.D. Nissen, M.D. Aasen, J.E. Peterson, J.A. Britten, D. Patel, F. Brizuela, **J.J. Rocca**, and C.S. Menoni, "High-Efficiency 800 nm Multi-Layer Dielectric Gratings for High Average Power Laser Systems," ICUIL 2006, International Conference on Ultrahigh Intensity Lasers Development, Science and Emerging Applications, Cassis, France, Sept. 25 - 29, (2006).
162. M. Grisham, D.M. Gaudiosi, B. Reagan, T. Popmintchev, M. Berrill, O. Cohen, B.C. Walker, M.M. Murnane, H.C. Kapteyn, and **J.J. Rocca**, "Enhanced High Harmonic Generation from Ions using a Capillary Discharge Plasma," 10<sup>th</sup> International Conference on X-Ray Lasers, Berlin, Germany, Aug. 21 – 25, (2006).
163. F. Dong, S. Heinbuch, E. Bernstein, and **J.J. Rocca**, "Mass Spectroscopy of Neutral Metal Oxide Clusters Using a Desktop Soft X-Ray Laser," 10<sup>th</sup> International Conference on X-Ray Lasers, Berlin, Germany, Aug. 21 – 25, (2006).
164. M.G. Capeluto, P. Wachulak, M.C. Marconi, C.S. Menoni, **J.J. Rocca**, E.H. Anderson, W. Chao, and D.T. Attwood, "Table top Nanopatterning using Extreme Ultraviolet lasers," 10<sup>th</sup> International Conference on X-Ray Lasers, Berlin, Germany, Aug. 21 – 25, (2006).
165. P.W. Wachulak, M.C. Marconi, R. Bartels, C.S. Menoni, and **J.J. Rocca**, "Soft X ray holographic imaging with sub-micron resolution," 10<sup>th</sup> International Conference on X-Ray Lasers, Berlin, Germany, Aug. 21 – 25, (2006).

166. J. Grava, M. Purvis, J. Filevich, M.C. Marconi, and **J.J. Rocca**, “Soft X-Ray Laser Interferometry of Colliding Al Plasmas in a Semi-Cylindrical Cavity,” 10<sup>th</sup> International Conference on X-Ray Lasers, Berlin, Germany, Aug. 21 – 25, (2006).
167. S. Heinbuch, F. Dong, E.R. Bernstein, and **J.J. Rocca**, “Single Photon Ionization Mass Spectroscopy of Hydrogen Bonded and van der Waals Cluster Systems Using a Capillary Discharge Soft X-Ray Laser,” 10<sup>th</sup> International Conference on X-Ray Lasers, Berlin, Germany, Aug. 21 – 25, (2006).
168. G. Vaschenko, F. Brizuela, H. Bravo, C.S. Menoni, **J.J. Rocca**, O. Hemberg, B. Frazer, S. Bloom, W. Chao, E.H. Anderson, and D.T. Attwood, “Soft X-Ray Laser Ablation of Nanometer-Scale Features,” 10<sup>th</sup> International Conference on X-Ray Lasers, Berlin, Germany, Aug. 21 – 25, (2006).
169. J. Dunn, S.J. Moon, R.F. Smith, R. Keenan, J.R. Hunter, J. Filevich, **J.J. Rocca**, M.C. Marconi, and V.N. Shlyaptsev, “Hydrodynamic Simulations and Soft X-Ray Laser Interferometric Studies of Energy Transport in Tightly Focused Laser-Heated Aluminum Plasmas,” 10<sup>th</sup> International Conference on X-Ray Lasers, Berlin, Germany, Aug. 21 – 25, (2006).
170. Yu.P. Pershyn, D.L. Voronov, E.N. Zubarev, V.A. Sevryukova, V.V. Kondratenko, G. Vaschenko, M. Grisham, C.S. Menoni, **J.J. Rocca**, A.V. Vinogradov, I.A. Artyukov, and Yu.A. Uspenskii, “Analysis of 46.9-nm Pulsed Laser Radiation After effects in Sc/Si Multilayer Z-Ray Mirrors,” 10<sup>th</sup> International Conference on X-Ray Lasers, Berlin, Germany, Aug. 21 – 25, (2006).
171. B. Luther, Y. Wang, M. Larotonda, D. Alessi, M. Berrill, V. Shlyaptsev, and **J.J. Rocca**, “Saturated 13.2 nm high repetition rate laser in Nickel-like Cd and isoelectric scaling down to 10.9 nm,” CLEO/QELS, Long Beach, CA, May 21-26, 2006; Technical Digest, JThB5, (2006).
172. B. Reagan, D.M. Gaudiosi, T. Popmintchev, M. Grisham, O. Cohen, B.C. Walker, **J.J. Rocca**, M.M. Murnane, and H.C. Kapteyn, “High harmonic generation from ions in a capillary discharge,” CLEO/QELS, Long Beach, CA, May 21-26, 2006; Technical Digest, JThB4, (2006).
173. C. Brewer, G. Vaschenko, F. Brizuela, Y. Wang, M.A. Larotonda, B.M. Luther, M.C. Marconi, **J.J. Rocca**, C.S. Menoni, W. Chao, J.A. Liddle, Y. Liu, E.H. Anderson, and D.T. Attwood, “Sub-38 nm resolution microscopy with a tabletop 13 nm wavelength laser,” CLEO/QELS, Long Beach, CA, May 21-26, 2006; Technical Digest, CME4, (2006).
174. F. Dong, S. Heinbuch, **J.J. Rocca**, and E.R. Bernstein, “Study of Hydrogen-Bonded and Metal-Oxide clusters Using Single Photon Ionization from a Compact Soft X-ray Laser,” CLEO/QELS, Long Beach, CA, May 21-26, 2006; Technical Digest, JFB4, (2006).
175. M.A. Larotonda, Y. Wang, B.M. Luther, D. Alessi, M. Berrill, V.N. Shlyaptsev, and **J.J. Rocca**, “High Repetition rate saturated output lasers in nickel-like ions at wavelength down to 13.2 nm,” 37<sup>th</sup> Annual Division of Atomic, Molecular, and Optical Physics Meeting (DAMOP), Knoxville, TN, May 16-20, (2006).
176. F. Dong, S. Heinbuch, E.R. Bernstein, and **J.J. Rocca**, “Dynamics and Fragmentation of Hydrogen Bonded and van der Waal Clusters upon single-photon ionization from a compact soft x-ray laser,” 37<sup>th</sup> Annual Division of Atomic, Molecular, and Optical Physics Meeting (DAMOP), Knoxville, TN, May 16-20, (2006).
177. D.M. Gaudiosi, B. Reagan, T. Popmintchev, M. Grisham, M. Berrill, O. Cohen, B.C. Walker, M.M. Murnane, H.C. Kapteyn, and **J.J. Rocca**, “High harmonic generation from ions in a capillary discharge,” 37<sup>th</sup> Annual Division of Atomic, Molecular, and Optical Physics Meeting (DAMOP), Knoxville, TN, May 16-20, (2006).
178. I.A. Artiukov, F. Brizuela, G. Vaschenko, C. Brewer, M. Grisham, C.S. Menoni, M.C. Marconi, **J.J. Rocca**, W.L. Chao, J.A. Liddle, E. Anderson, D.T. Attwood, Yu.P. Pershyn, A.G. Ponomarenko, D.L. Voronov, V.V. Kondratenko, R.M. Fechtchenko, Yu.S. Kasianov, Yu.A. Uspenskii, and A.V.

- Vinogradov, "Towards laboratory soft x-ray microscopes based on reflective and diffractive optics and compact x-ray sources," The 8<sup>th</sup> International Conference on the Physics of X-ray Multiplayer Structures (PXRMS 2006), Sapporo, Japan, March 12-16, (2006).
179. G. Vaschenko, F. Brizuela, C. Brewer, M.A. Larotonda, Y. Wang, B.M. Luther, M.C. Marconi, **J.J. Rocca**, C.S. Menoni, W. Chao, E.H. Anderson, Y. Liu, and D. Attwood, "EUV imaging with a 13 nm tabletop laser reaches sub-38 nm spatial resolution," Conference on Microlithography, M.J. Lercel, eds., Proc. SPIE **6151**, 61510X, (2006).
  180. C.S. Menoni, D. Patel, J. Lovewell, H-J- Hsiao, Y. Wang, M. Larotonda, **J.J. Rocca**, F. Tomasel, S. Kholi, P. McCurdy, and M. Shinn, "The role of atomic oxygen in the damage threshold and stress of ion beam sputtered Hafnia coatings for high power Free Electron Lasers," Directed Energy Professional Society, Albuquerque, NM, Oct. 29 – Nov. 2, (2006).
  181. S. Moon, R.F. Smith, J. Dunn, R. Keenan, J. Nilsen, J.R. Hunter, J. Filevich, **J.J. Rocca**, M.C. Marconi, and V.N. Shlyaptsev, "Pressure gradient effects on two-dimensional plasma expansion," The 9<sup>th</sup> International Conference on X-Ray Lasers, Beijing, China, May 24-28, 2004; X-ray Lasers 2004, Proc. Institute of Physics Conference Series Number **186**, 551, (2006).
  182. M.G. Capeluto, G. Vaschenko, M. Grisham, M.C. Marconi, S. Luduena, L. Pietrasanta, Y. Lu, B. Parkinson, C.S. Menoni, and **J.J. Rocca**, "Nanopatterning with a high repetition rate  $\lambda = 46.9$  nm capillary discharge table-top laser," The 9<sup>th</sup> International Conference on X-Ray Lasers, Beijing, China, May 24-28, 2004; X-ray Lasers 2004, Proc. Institute of Physics Conference Series Number **186**, 521, (2006).
  183. J. Filevich, **J.J. Rocca**, M.C. Marconi, J. Nilsen, J. Scofield, S.J. Moon, J. Dunn, R.F. Smith, R. Keenan, and J.R. Hunter, "Evidence of bound electron contribution to soft x-ray laser interferograms of dense plasmas," The 9<sup>th</sup> International Conference on X-Ray Lasers, Beijing, China, May 24-28, 2004; X-ray Lasers 2004, Proc. Institute of Physics Conference Series Number **186**, 525, (2006).
  184. B.M. Luther, Y. Wang, M. Berrill, D. Alessi, M. Marconi, M.A. Larotonda, and **J.J. Rocca**, "Guiding of intense laser beams in highly ionized Ar plasma columns generated by a fast capillary discharge," The 9<sup>th</sup> International Conference on X-Ray Lasers, Beijing, China, May 24-28, 2004; X-ray Lasers 2004, Proc. Institute of Physics Conference Series Number **186**, 183, (2006).
  185. G. Vaschenko, M. Grisham, C.S. Menoni, **J.J. Rocca**, Yu.P. Pershyn, E.N. Zubarev, D.L. Voronov, V.A. Sevryukova, V.V. Kondratenko, A.V. Vinogradov, and I.A. Artioukov, "Damage threshold and damage mechanism of Sc/Si multilayer mirrors exposed to intense nanosecond 46.9 nm laser pulses," The 9<sup>th</sup> International Conference on X-Ray Lasers, Beijing, China, May 24-28, 2004; X-ray Lasers 2004, Proc. Institute of Physics Conference Series Number **186**, 559, (2006).
  186. Y. Wang, B. Luther, F. Pedaci, M. Berrill, F. Brizuela, M.A. Larotonda, M. Marconi, **J.J. Rocca**, and V.N. Shlyaptsev, "Dense capillary discharge plasmas waveguide for a Ni-like Ag soft x-ray," The 9<sup>th</sup> International Conference on X-Ray Lasers, Beijing, China, May 24-28, 2004; X-ray Lasers 2004, Proc. Institute of Physics Conference Series Number **186**, 187, (2006).
  187. A. Rahman, **J.J. Rocca**, and J.-F. Wyart, "Nickel-like Silver Spectrum from a Fast Capillary Discharge Plasma," The 9<sup>th</sup> International Conference on X-Ray Lasers, Beijing, China, May 24-28, 2004; X-ray Lasers 2004, Proc. Institute of Physics Conference Series Number **186**, 643, (2006).
  188. G. Vaschenko, C. Brewer, F. Brizuela, Y. Wang, M.A. Larotonda, B.M. Luther, C.S. Menoni, M. Marconi, **J.J. Rocca**, W. Chao, J.A. Liddle, E.H. Anderson, Y. Liu, and D.T. Attwood, "Sub-40 nm spatial resolution imaging with 13.2 nm wavelength illumination from a table-top laser," 4<sup>th</sup> International Extreme Ultraviolet Lithography Symposium, San Diego, CA, Nov., (2005).

189. S. Heinbuch, M. Grisham, D. Martz, F. Dong, E. Bernstein, and **J.J. Rocca**, “Demonstration of a desk-top size high repetition rate soft x-ray laser based on a fast capillary discharge,” 47<sup>th</sup> Annual Meeting of the Division of Plasma Physics, Bulletin of the American Physical Society **50**, 71, (2005).
190. M. Berrill, I. Ellis, D. Alessi, **J.J. Rocca**, and V.N. Shlyaptsev, “Modeling of efficient soft x-ray lasers in transitions of nickel-like and neon-like ions,” 47<sup>th</sup> Annual Meeting of the Division of Plasma Physics, Bulletin of the American Physical Society **50**, 283, (2005).
191. Y. Wang, M.A. Larotonda, D. Alessi, B.M. Luther, M. Berrill, N. Shlyaptsev, and **J.J. Rocca**, “Demonstration of saturated tabletop soft x-ray lasers at 5Hz repetition rate in transitions of Ne-like ions with wavelength near 30 nm,” 47<sup>th</sup> Annual Meeting of the Division of Plasma Physics, Bulletin of the American Physical Society **50**, 283, (2005).
192. M. Purvis, J. Grava, J. Filevich, M.C. Marconi, **J.J. Rocca**, J. Dunn, S.J. Moon, R.F. Smith, J. Nilsen, and V.N. Shlyaptsev, “Soft x-ray laser interferometry of colliding plasmas,” 47<sup>th</sup> Annual Meeting of the Division of Plasma Physics, Bulletin of the American Physical Society **50**, 55, (2005).
193. J. Filevich, J. Grava, M. Purvis, M.C. Marconi, **J.J. Rocca**, J. Dunn, J. Nilsen, J. Scofield, S.J. Moon, R.F. Smith, R. Keenan, J.R. Hunter, and V.N. Shlyaptsev, “Multiply Ionized Plasmas with index of refraction greater than one,” 47<sup>th</sup> Annual Meeting of the Division of Plasma Physics, Bulletin of the American Physical Society **50**, 71, (2005).
194. B.M. Luther, Y. Wang, M.A. Larotonda, D. Alessi, M. Berrill, V.N. Shlyaptsev, and **J.J. Rocca**, “High repetition rate tabletop soft x-ray lasers at wavelength down to 11.9 nm in Nickel-like ions,” 47<sup>th</sup> Annual Meeting of the Division of Plasma Physics, Bulletin of the American Physical Society **50**, 71, (2005).
195. G. Vaschenko, F. Brizuela, C. Brewer, M. Grisham, Y. Wang, M.A. Larotonda, B.M. Luther, C.S. Menoni, M. Marconi, **J.J. Rocca**, W.L. Chao, J.A. Liddle, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, Y.P. Pershyn, and V.V. Konratenko, “Nano-imaging with compact extreme ultraviolet laser sources,” Metrology, Inspection, and Process Control for Microlithography XIX, R.M. Silver, eds., Proc. SPIE **5752**, 375, (2005).
196. F. Brizuela, G.O. Vaschenko, C. Brewer, M. Grisham, C.S. Menoni, H. Mancini, M.C. Marconi, **J.J. Rocca**, W. Chao, A. Liddle, E.H. Anderson, D. Attwood, A.V. Vinogradov, I.A. Artioukov, Y.P. Pershyn, and V.V. Kondratenko, “Nanometer-scale imaging with a compact soft x-ray lasers,” SPIE conference on Soft X-ray lasers and Applications, E.E. Fill, eds., Proc. SPIE **5919**, 179, (2005).
197. S.C. Heinbuch, M. Grisham, D. Martz, F. Dong, E.R. Bernstein, and **J.J. Rocca**, “Desk-top size high repetition rate 46.9 nm capillary discharge laser as photoionization source for photochemistry applications,” SPIE conference on Soft X-ray lasers and Applications, E.E. Fill, eds., Proc. SPIE **5919**, 591907, (2005).
198. J. Filevich, J. Grava, M. Purvis, **J.J. Rocca**, M.C. Marconi, S.J. Moon, J. Nilsen, J.H. Scofield, J. Dunn, R.F. Smith, R. Keenan, J.R. Hunter, and V.N. Shlyaptsev, “Soft x-ray laser interferometry unveils plasmas with index of refraction greater than one,” SPIE conference on Soft X-ray lasers and Applications, E.E. Fill, eds., Proc. SPIE **5919**, 591900, (2005).
199. J. Grava, M. Purvis, J. Filevich, M.C. Marconi, **J.J. Rocca**, J. Dunn, S.J. Moon, R.F. Smith, J. Nilsen, and V.N. Shlyaptsev, “Soft x-ray interferometry of colliding plasmas,” SPIE conference on Soft X-ray lasers and Applications, E.E. Fill, eds., Proc. SPIE **5919**, 59190I, (2005).
200. G. Vaschenko, F. Brizuela, C. Brewer, M. Grisham, H. Mancini, C.S. Menoni, M. Marconi, **J.J. Rocca**, W. Chao, A. Liddle, E. Anderson, D. Attwood, A.V. Vinogradov, I.A. Artioukov, Yu.P.

- Pershyn, and V.V. Kondratenko, "Nano-scale imaging with a compact EUV laser," CLEO/QELS Conference, Proc. CLEO '05 Technical Digest, JThG4, **3**, 1953, (2005).
201. M.A. Larotonda, Y. Wang, B.M. Luther, D. Alessi, M. Berrill, M.C. Marconi, **J.J. Rocca**, and V.N. Shlyaptsev, "Saturated high-repetition soft x-ray lasers at wavelength down to 13.9 nm in Ni-like ions," CLEO/QELS Conference, Proc. CLEO '05 Technical Digest, JThG3, **3**, 1955, (2005).
  202. S. Heinbuch, M. Grisham, D. Martz, and **J.J. Rocca**, "Demonstration of a desk-top size 46.9 nm laser at 12Hz repetition rate," CLEO/QELS Conference, Proc. CLEO '05 Technical Digest, JThG1, **3**, 1944, (2005).
  203. D. Alessi, B.M. Luther, Y. Wang, M.A. Larotonda, M. Berrill, F. Pedaci, **J.J. Rocca**, and V.N. Shlyaptsev, "Gain saturated operation of table-top soft x-ray lasers in neon-like ions at 5 Hz repetition rate," CLEO/QELS Conference, Proc. CLEO '05 Technical Digest, JThE91, **3**, 1831, (2005).
  204. G. Vaschenko, F. Brizuela, C. Brewer, M. Grisham, Y. Wang, M.A. Larotonda, B.M. Luther, C.S. Menoni, M. Marconi, **J.J. Rocca**, W.L. Chao, J.A. Liddle, E.H. Anderson, D.T. Attwood, A.V. Vinogradov, I.A. Artioukov, Y.P. Pershyn, and V.V. Kondratenko, "Nano-imaging with compact extreme ultraviolet laser sources," SPIE International Symposium on Microlithography, R.M. Silver, eds., Proc. SPIE **5752**, 375, (2005).
  205. M.G. Capeluto, G. Vaschenko, M.C. Marconi, M. Grisham, C.S. Menoni, and **J.J. Rocca**, "Interferometric lithography at 47nm with a table-top EUV laser," The 17<sup>th</sup> Annual Meeting of the IEE Lasers and Electro-Optics Society, LEOS, Proc. LEOS **2**, 888, (2004).
  206. Y. Wang, M.A. Larotonda, B.M. Luther, D.A. Alessi, M.A. Berrill, M.E. Grisham, S.C. Heinbuch, M.C. Marconi, V.N. Shlyaptsev, and **J.J. Rocca**, "Advances in the Demonstration of High Repetition Rate Soft X-Ray Laser," Optical Society of America Laser Science Annual Meeting, Rochester, NY, Oct. 10-14, (2004).
  207. G.O. Vaschenko, M. Grisham, C.S. Menoni, **J.J. Rocca**, Y.P. Pershin, E.N. Zubarev, D.L. Voronov, V.A. Sevryukova, V.V. Kondratenko, A.V. Vinogradov, and I.A. Artioukov, "Study of irradiation damage of Sc/Si multilayer mirrors with a 46.9-nm tabletop laser," The International Symposium on Optical Science and Technology, SPIE 49<sup>th</sup> Annual Meeting, S.G. Biedron, W. Eberhardt, T. Ishikawa, R.O. Tatchyn, eds., Proc. SPIE **5534**, 53, (2004).
  208. A.M. Dummer, F. Brizuela, C. Duskis, B. Luther, M. Larotonda, **J.J. Rocca**, J. George, S. Kohli, P. McCurdy, and C.S. Menoni, "Investigation of damage threshold of ion beam deposited oxide thin film optics for high-peak-power short-pulse lasers," The International Symposium on Optical Science and Technology, SPIE 49<sup>th</sup> Annual Meeting, J.D.T. Kruschwitz, J.B. Oliver, eds., Proc. SPIE **5527**, 93, (2004).
  209. L. Juha, M. Bittner, D. Chvostova, V. Letal, J. Krasa, Z. Otcenasek, M. Kozlova, J. Polan, A.R. Prag, B. Rus, M. Stupka, J. Krzywinski, A. Andrejczuk, J.B. Pelka, R.H. Sobierajski, L. Ryc, J. Feldhaus, F.P. Boody, H. Fiedorowicz, A. Bartnik, J. Mikolajczyk, R. Rakowski, P. Kubat, L. Pina, M.E. Grisham, G.O. Vaschenko, C.S. Menoni, and **J.J. Rocca**, "Short-wavelength ablation of solids: pulse duration and wavelength effects," The International Symposium on Optical Science and Technology, SPIE 49<sup>th</sup> Annual Meeting, S.G. Biedron, W. Eberhardt, T. Ishikawa, R.O. Tatchyn, eds., Proc. SPIE **5534**, 95, (2004).
  210. M. Bittner, L. Juha, D. Chostova, V. Letal, J. Krasa, Z. Otcenasek, M. Kozlova, J. Polan, A.R. Praeg, B. Rus, M. Stupka, J. Krzywinski, A. Andrejczuk, J.B. Pelka, R.H. Sobierajski, J. Feldhaus, F.P. Boody, M.E. Grisham, G.O. Vaschenko, C.S. Menoni, and **J.J. Rocca**, "Comparing ablation induced by fs, ps, and ns XUV-laser pulses," The International Symposium on Optical Science and Technology, SPIE 49<sup>th</sup> Annual Meeting, C.R. Phipps, eds., Proc. SPIE **5448**, 827, (2004).

211. M.G. Capeluto, G.O. Vaschenko, M.E. Grisham, M.C. Marconi, C.S. Menoni, **J.J. Rocca**, S. Luduena, and L. Pietrasanta, "Interferometric lithography at 46.9 nm," The International Symposium on Optical Science and Technology, SPIE 49<sup>th</sup> Annual Meeting, A. Marcano O., J.L. Paz, eds., Proc. SPIE **5622**, 735, (2004).
212. A. Rahman, **J.J. Rocca**, and J.-F. Wyart, "Classification of the Nickel-like Silver Spectrum from a Fast Capillary Discharge Plasma," 31<sup>st</sup> IEEE International Conference on Plasma Science, Proc. IEEE, 191, (2004).
213. G. Vaschenko, M. Grisham, C.S. Menoni, **J.J. Rocca**, Yu.P. Pershyn, E.N. Zubarev, D.L. Voronov, V.A. Sevryukova, V.V. Kondratenko, A.V. Vinogradov, and I.A. Artioukov, "Damage of Sc/Si multilayer mirrors exposed to intense nanosecond 46.9 nm laser pulses," Conference on Lasers and Electro-Optics, CLEO, Proc. CLEO '04 **1**, 4, (2004).
214. G. Vaschenko, M. Grisham, C.S. Menoni, **J.J. Rocca**, Yu.P. Pershyn, E.N. Zubarev, D.L. Voronov, V.A. Sevryukova, V.V. Kondratenko, A.V. Vinogradov, and I.A. Artioukov, "Damage of Sc/Si multilayer mirrors exposed to intense nanosecond 46.9 nm laser pulses," International Quantum Electronics Conference, IQEC, Proc. IQECC 950, (2004).
215. M.G. Capeluto, M.C. Marconi, S. Luduena, L. Pietrasanta, M. Grisham, B. Reagan, C.S. Menoni, and **J.J. Rocca**, "Nano patterning of PMMA using  $\lambda=46.9$  nm table-top laser," Conference on Lasers and Electro-Optics, CLEO, Proc. CLEO **2**, 2, (2004).
216. J. Filevich, **J.J. Rocca**, M.C. Marconi, E.C. Hammarsten, J. Grava, M. Purvis, R.F. Smith, J. Dunn, R. Keenan, J.R. Hunter, S.J. Moon, J. Nilsen, A. Ng, and V.N. Shlyaptsev, "Soft X-ray lasers expand the limits of dense plasma interferometry," The 14<sup>th</sup> APS Topical Conference on Atomic Processes in Plasmas, Santa Fe, NM, April 19-22, (2004).
217. J. Filevich, **J.J. Rocca**, M.C. Marconi, R.F. Smith, J. Dunn, R. Keenan, J.R. Hunter, S.J. Moon, J. Nilsen, A. Ng, and V.N. Shlyaptsev, "Bound electron contribution to soft x-ray laser interferograms of dense plasmas," The 14<sup>th</sup> APS Topical Conference on Atomic Processes in Plasmas, Santa Fe, NM, April 19-22, (2004).
218. B. Luther, Y. Wang, D. Alessi, M. Berrill, F. Pedaci, M. Marconi, J. Chilla, and **J.J. Rocca**, "Guiding of Laser Beams in Fast Capillary Discharge Plasma Columns Containing Highly Charged Ions," 45<sup>th</sup> Annual Meeting of the Division of Plasma Physics, Bulletin of the American Physical Society **48**, 131, (2003).
219. J. Dunn, R.F. Smith, J. Filevich, **J.J. Rocca**, S.J. Moon, J. Nilsen, V.N. Shlyaptsev, R. Keenan, A. Ng, J.R. Hunter, and M.C. Marconi, "Picosecond X-ray Laser Interferometry for Probing Dense Laser-Produced Plasmas," 45<sup>th</sup> Annual Meeting of the Division of Plasma Physics, Bulletin of the American Physical Society **48**, 287, (2003).
220. J. Dunn, R.F. Smith, J. Filevich, **J.J. Rocca**, S.J. Moon, J. Nilsen, V.N. Shlyaptsev, J.R. Hunter, and M.C. Marconi, "Picosecond X-ray Laser Interferometry for Probing Dense Laser-Produced Plasmas," 3<sup>rd</sup> International Conference on Inertial Fusion Sciences and Applications (IFSA2003), Proc. IEEE, **6D06**, 391, (2003).
221. B.M. Luther, Y. Wang, M.C. Marconi, and **J.J. Rocca**, "Guiding of optical laser pulses in fast capillary discharge plasma columns," SPIE Conference on Soft X-Ray Lasers and Applications V, E.E. Fill, S. Suckewer, eds., Proc. SPIE **5197**, 136, (2003).
222. **J.J. Rocca**, "Small Scale soft x-ray lasers excited by fast discharges and applications," 34<sup>th</sup> Meeting of the Division of Atomic, Molecular and Optical Physics (DAMOP), Bulletin of the American Physical Society, **48**, 73, (2003).

223. E.C. Hammarsten, E. Jankowska, B. Szapiro, J. Filevich, M.C. Marconi, and **J.J. Rocca**, “Soft x-ray laser interferometry/shadowgraphy of exploding wire plasmas,” SPIE Conference on Soft X-Ray Lasers and Applications V, E.E. Fill, S. Suckewer, eds., Proc. SPIE **5197**, 184, (2003).
224. V.N. Shlyaptsev, J. Dunn, S. Moon, R. Smith, R. Keenan, J. Nilsen, K.B. Fournier, J. Kuba, A.L. Osterheld, **J.J. Rocca**, B. Luther, Y. Wang, and M. Marconi, “Numerical studies of transient and capillary x-ray lasers and their applications,” SPIE Conference on Soft X-Ray Lasers and Applications V, E.E. Fill, S. Suckewer, eds., Proc. SPIE **5197**, 221, (2003).
225. J. Dunn, R.F. Smith, J. Filevich, **J.J. Rocca**, S.J. Moon, J. Nielsen, V.N. Shlyaptsev, J. Hunter, and M.C. Marconi, “Picosecond X-Ray Laser Interferometry for Probing Dense Laser- Produced Plasmas,” ICOPS 2003, International Conference on Plasma Science 30<sup>th</sup> International Conference on Plasma Science, JeJu, Korea, June 2-5, (2003).
226. S. Moon, R.F. Smith, J. Filevich, J. Dunn, **J.J. Rocca**, V.N. Shlyaptsev, J. Nielsen, J.R. Hunter, and M.C. Marconi, “Investigation of Dense Laser-Produced Plasmas from Picosecond X-Ray laser Interferometry,” ICOPS 2003, International Conference on Plasma Science, 30<sup>th</sup> International Conference on Plasma Science, JeJu, Korea, June 2-5, (2003).
227. B. Luther, Y. Wang, **J.J. Rocca**, and M. Marconi, “Optical Guiding in Fast Capillary Discharge Plasma Columns,” 34<sup>th</sup> meeting of the Division of Atomic, Molecular and optical Physics (DAMOP), Bulletin of the American Physical Society **48**, 37, (2003).
228. A. Rahman, E.C. Hammarsten, S. Sakadzic, **J.J. Rocca**, J.F. Wyart, V.N. Shlyaptsev, and A. Osterheld, “Spectroscopy of Nickel-like Cadmium and Silver ions from a capillary discharge plasma column,” 34<sup>th</sup> meeting of the Division of Atomic, Molecular and optical Physics (DAMOP), Bulletin of the American Physical Society **48**, 37, (2003).
229. J. Filevich, **J.J. Rocca**, E.C. Hammarsten, E. Jankowska, M.C. Marconi, R.F. Smith, J. Dunn, S. Moon, V. Shlyaptsev, J. Nilsen, and J.R. Hunter, “Amplitude division interferometer for the diagnostic of high-density plasmas with soft x-ray laser radiation,” 34<sup>th</sup> meeting of the Division of Atomic, Molecular and optical Physics (DAMOP), Bulletin of the American Physical Society **48**, 37, (2003).
230. J. Filevich, **J.J. Rocca**, E. Jankowska, E.C. Hammarsten, M.C. Marconi, S.J. Moon, and V.N. Shlyaptsev, “Density depression in laser-created plasma unveiled with table-top soft x-ray laser interferometry,” 8<sup>th</sup> International Conference on X-Ray Lasers, Proc. AIP **641**, 489, (2002).
231. A. Rahman, E.C. Hammarsten, S. Sakadzic, **J.J. Rocca**, V.N. Shlyaptsev, A. Osterheld, and J.-F. Wyart, “Excitation of the 13.2 nm laser line of Nickel-like Cd in a capillary discharge plasma column,” 8<sup>th</sup> International Conference on X-Ray Lasers, Proc. AIP **641**, 113, (2002).
232. B.M. Luther, Y. Wang, M.C. Marconi and **J.J. Rocca**, “Demonstration of a Plasma waveguide in a Fast Argon Capillary Discharge,” 8<sup>th</sup> International Conference, Proc. AIP **641**, 332, (2002).
233. E. Jankowska, E.C. Hammarsten, B. Szapiro, J. Filevich, M.C. Marconi, and **J.J. Rocca**, “Soft x-ray laser interferometry/shadowgraphy of exploding wire plasmas,” 8<sup>th</sup> International Conference on X-Ray Lasers, Proc. AIP **641**, 498, (2002).
234. R.F. Smith, S. Moon, J. Dunn, J. Nilsen, V. Shlyaptsev, J. Hunter, **J.J. Rocca**, J. Filevich, and M.C. Marconi, “Interferometric diagnosis of two-dimensional plasma expansion,” 8<sup>th</sup> International Conference on X-Ray Lasers, Proc. AIP **641**, 538, (2002).
235. S. Le Pape, Ph. Zeitoun, M. Idir, P. Dhez, D. Ros, A. Carillon, **J.J. Rocca**, M. Francois, and S. Sebban, “Measurements of soft X-ray lasers wavefront,” 8<sup>th</sup> International Conference on X-Ray Laser, Proc. AIP **641**, 602, (2002).
236. Y. Liu, D.T. Attwood, **J.J. Rocca**, H. Kapteyn, and M. Murnane, “Spatial Coherence of Currently



- Available EUV/Soft X-Ray Sources,” 8<sup>th</sup> International Conference on X-Ray Laser, Proc. AIP **641**, 607, (2002).
237. V.N. Shlyaptsev, J. Dunn, S.J. Moon, K.B. Fournier, A.L. Osterheld, **J.J. Rocca**, J. Filevich, M.C. Marconi, E. Jankowska, E.C. Hammarsten, S. Sakadzic, A. Raham, M. Frati, F.G. Tomasel, N. Fornaciari, D. Buchenauer, H.A. Bender, S. Karim, M. Kanouff, J. Dimkoff, G. Kubiak, G. Shimkaveg, and W.T. Silfvast, “Modeling of capillary Discharge Plasma for X-Ray lasers, XUV Lithography and other applications,” 5<sup>th</sup> International Conference on Dense Z-Pinches, C. Deeney, N.R. Pereira, J. Davis, eds., Proc. AIP **651**, 416, (2002).
  238. M. Seminario, **J.J. Rocca**, R.A. Depine, and B.W. Bach, “Characterization of diffraction gratings using a tabletop soft x-ray laser,” 4th Iberoamerican Meeting on Optics and 7th Latin American Meeting on Optics, Lasers, and Their Applications, V.L. Brundy, S.A. Ledesma, M.C. Marconi, eds., Proc. SPIE **4419**, 784, (2001).
  239. J. Dunn, R. Smith, J. Nilsen, V. Shlyaptsev, J. Filevich, **J.J. Rocca**, and M.C. Marconi, “Applications using a picosecond 14.7nm x-ray laser,” Applications of High Field and Short Wavelength Sources IX, Palm Springs, CA, Oct., (2001).
  240. E. Jankowska, E.C. Hammarsten, J. Filevich, M.C. Marconi, and **J.J. Rocca** “Progress in dense plasma interferometry with table-top soft x-ray laser,” Proc. Digest of the LEOS Summer Topical Meetings, 27, (2001).
  241. M. Marconi, J. Filevich, **J.J. Rocca**, E. Jankowska, E. Hammerstein, K. Kanizay, and J.L.A. Chilla, “Soft X-Ray laser interferometer used for dense plasma diagnostics,” 4th Iberoamerican Meeting on Optics and 7th Latin American Meeting on Optics, Lasers, and Their Applications, V.L. Brundy, S.A. Ledesma, M.C. Marconi, eds., Proc. SPIE **4419**, 106, (2001).
  242. J. Filevich, E. Jankowska, E.C. Hammarsten, M.C. Marconi, **J.J. Rocca**, V.N. Shlyaptsev, and S.J. Moon, “Observation of a density depression in sub-critical region of a laser-created plasma by soft x-ray laser interferometry,” American Physical Society, Annual Meeting Division of Plasma Science, Long Beach, CA, Oct., (2001).
  243. B.M. Luther, L. Furfaro, A. Klix, and **J.J. Rocca**, “Sub-nanosecond jitter high voltage spark-gap triggered by femtosecond laser pulses,” CLEO, Proc. CLEO ‘01, 459, (2001).
  244. **J.J. Rocca**, J.L. Chilla, S. Sakadzic, A. Rahman, J. Filevich, E. Jankowska, E. Hammersten, B.M. Luther, H. Kapteyn, M.M. Murnane, and V. Shlyaptsev, “Advances in capillary discharge soft x-ray laser research,” SPIE Conference on Soft X-ray Lasers and Applications IV, E.E. Fill, **J.J. Rocca**, eds., Proc. SPIE **4505**, 1, (2001).
  245. K. Janulewicz, **J.J. Rocca**, A. Lucianetti, F. Bortolotto, N. Bobrova, P.V. Satorov, W. Sander, and P.V. Nickles, “Ablative capillary discharge plasma as a preformed medium for soft x-ray laser,” SPIE Conference on Soft X-ray Lasers and Applications IV, E.E. Fill, **J.J. Rocca**, eds., Proc. SPIE **4505**, 7, (2001).
  246. V.N. Shlyaptsev, J. Dunn, K.B. Fournier, S.J. Moon, A.L. Osterheld, **J.J. Rocca**, F. Detering, W. Rozmus, J.P. Matte, H. Fiedorowicz, A. Bartnik, and M.P. Kanouff, “Transient and capillary collisional x-ray lasers,” SPIE Conference on Soft X-ray Lasers and Applications IV, E.E. Fill, **J.J. Rocca**, eds., Proc. SPIE **4505**, 14, (2001).
  247. S. Sakadzic, A. Rahman, M. Frati, F.G. Tomasel, **J.J. Rocca**, V.N. Shlyaptsev, and A.L. Osterheld, “Observation of the 13.2-nm laser line of Nickel-like Cd in a capillary discharge,” SPIE Conference on Soft X-ray Lasers and Applications IV, E.E. Fill, **J.J. Rocca**, eds., Proc. SPIE **4505**, 35, (2001).
  248. Y. Liu, J. Caffey, I. Artiukov, A. Vinogradov, **J.J. Rocca**, and D.T. Attwood, “Focusability of a capillary discharge-pumped soft x-ray laser beam,” SPIE Conference on Soft X-ray Lasers and Applications IV, E.E. Fill, **J.J. Rocca**, eds., Proc. SPIE **4505**, 41, (2001).

249. S. Le Pape, P. Zeitoun, **J.J. Rocca**, A. Carrillon, P. Dhez, M. Francois, S. Hubert, M. Idir, and D. Ros, "Characterization of an x-ray laser beam," SPIE Conference on Soft X-ray Lasers and Applications IV, E.E. Fill, **J.J. Rocca**, eds., Proc. SPIE **4505**, 23, (2001).
250. E. Jankowska, E. Hammarsten, J. Filevich, M.C. Marconi, **J.J. Rocca**, S. Moon, and V.N. Shlyaptsev, "Advances in dense-plasma interferometry with a tabletop capillary discharge soft x-ray laser," SPIE Conference on Soft X-ray Lasers and Applications IV, E.E. Fill, **J.J. Rocca**, eds., Proc. SPIE **4505**, 221, (2001).
251. J. Dunn, R.F. Smith, J. Nilsen, J.R. Hunter, T.W. Barbee, V.N. Shlyaptsev, J. Filevich, **J.J. Rocca**, M.C. Marconi, H. Fiedorowicz, and A. Bartnik, "Recent x-ray laser experiments on the COMET facility," SPIE Conference on Soft X-ray Lasers and Applications IV, E.E. Fill, **J.J. Rocca**, eds., Proc. SPIE **4505**, 62, (2001).
252. M. Frati, M. Seminario, and **J.J. Rocca**, "Demonstration of a table-top laser at 52.9nm in neon-like chlorine," OSA Annual Meeting, Providence, RI, Oct. 22-26, (2000).
253. P.V. Nickles, K.A. Janulewicz, **J.J. Rocca**, F. Bortolotto, and A. Lucianetti, "Hybridly pumped collisional on soft x-ray in Ne-like sulphur," 7<sup>th</sup> International Conference on X-Ray Lasers, G. Jamelot, C. Möller, A. Klisnick, eds., Proc. Journal de Physique IY 11 **PR2**, 93, (2001).
254. I.A. Artioukov, B.R. Benware, R.M. Fechtchenko, **J.J. Rocca**, M. Seminario, A.V. Vinogradov, and M. Yamamoto, "The prospects of reflectometry and ellipsometry with Colorado State University tabletop XUV laser," 7<sup>th</sup> International Conference on X-Ray Laser, G. Jamelot, C. Möller, A. Klisnick, eds., Proc. Journal de Physique IY 11 **PR2**, 451, (2001).
255. Y. Liu, M. Seminario, F.G. Tomasel, C. Chang, **J.J. Rocca**, and D.T. Attwood, "Spatial Coherence measurements of a high average power table-top soft x-ray laser," 7<sup>th</sup> International Conference on X-Ray Lasers, G. Jamelot, C. Möller, A. Klisnick, eds., Proc. Journal de Physique IY 11 **PR2**, 123, (2001).
256. J. Filevich, M.C. Marconi, K. Kanizay, J.L.A. Chilla, and **J.J. Rocca**, "Dense plasma interferometry with a table-top soft x-ray laser and an amplitude division interferometer based on diffraction gratings," 7<sup>th</sup> International Conference on X-Ray Lasers, G. Jamelot, C. Möller, A. Klisnick, eds., Proc. Journal de Physique IY 11 **PR2**, 483, (2001).
257. M. Frati, F.G. Tomasel, B. Bowers, J.J. Gonzalez, V.N. Shlyaptsev, and **J.J. Rocca**, "Generation of highly ionized cadmium plasma columns for a discharge-pumped Nickel-like Cd laser," 7<sup>th</sup> International Conference on X-Ray Lasers, G. Jamelot, C. Möller, A. Klisnick, eds., Proc. Journal de Physique IY 11 **PR2**, 571, (2001).
258. M. Seminario, F.G. Tomasel, **J.J. Rocca**, Y. Liu, C. Chang and D.T. Attwood, "Observation of full spatial coherence in a high average power soft x-ray laser beam," OSA Annual Meeting, Providence, RI, Oct. 22-26, (2000).
259. J. Filevich, K. Kanizay, M.C. Marconi, J.L.A. Chilla, O.E. Martinez, and **J.J. Rocca**, "Dense plasma diagnostics with an amplitude division soft x-ray laser interferometer based on diffraction gratings," Technical Digest Conference on Lasers and Electro-Optics, Proc. CLEO '00, 515, (2000).
260. K.A. Janulewicz, F. Bortolotto, M.P. Kalachnikov, W. Sandner, P.V. Nickles, and **J.J. Rocca**, "Demonstration of a hybridly pumped table-top soft x-ray laser," Technical Digest Conference on Lasers and Electro-Optics, Proc. CLEO '00, 392, (2000).
261. J.J. Gonzalez, M. Frati, **J.J. Rocca**, and V.N. Shlyaptsev, "Generation of Plasma Columns for Shorter Wavelength Capillary Discharge Soft X-Ray Lasers Utilizing a High-Power Blumlein Generator," Soft X-Ray Lasers and Applications III, J.J. Rocca, L.B. Da Silva, eds., Proc. SPIE **3776**, 159, (1999).

262. B.R. Benware, **J.J. Rocca**, A. Ozols, C.D. Macchietto, J.L.A. Chilla, I.A. Atrioukov, Y.A. Kasjanov, V.V. Kondratenko, and A.V. Vinogradov, "Applications of high-repetition-rate soft x-ray laser: laser ablation with a focused beam and reflectometry of materials," *Soft X-Ray Lasers and Applications III*, **J.J. Rocca**, L.B. Da Silva, eds., Proc. SPIE **3776**, 204, (1999).
263. B.R. Benware, C.D. Macchietto, and **J.J. Rocca**, "Generation of millijoule soft x-ray laser pulses at 4-Hz repetition rate with a tabletop amplifier," OSA 1999 Annual Meeting. Santa Clara, CA, Sept. (1999).
264. **J.J. Rocca**, B.R. Benware, C.D. Macchietto, and V.N. Shlyaptsev, "Generation of high average power and millijoule-level pulses with a table-top soft x-ray laser," SPIE Conference on Soft X-Ray Lasers and Applications III, **J.J. Rocca**, L.B. Da Silva, eds., Proc. SPIE **3776**, 152, (1999).
265. I.A. Artioukov, B.R. Benware, **J.J. Rocca**, M. Forsythe, Yu.A. Unspenskii, and A.V. Vinogradov, "XUV laser reflectometry for optical constants determination," SPIE Conference on Soft X-Ray Lasers and Applications III, **J.J. Rocca**, L.B. Da Silva, eds., Proc. SPIE **3776**, 224, (1999).
266. K. Kanizay, M.C. Marconi, C.H. Moreno, **J.J. Rocca**, V.N. Shlyaptsev, Y.A. Unspenskii, A.V. Vinogradov, and Y.P. Pershin, "Plasma diagnostics using a tabletop soft x-ray laser: demonstration of shadowgraphy and interferometry using a Lloyd's mirror," SPIE Conference on Soft X-Ray Lasers and Applications III, **J.J. Rocca**, L.B. Da Silva, eds., Proc. SPIE **3776**, 212, (1999).
267. J. Filevich, M.C. Marconi, K. Kanizay, R.J. Berglung, and **J.J. Rocca**, "Development of a soft x-ray grating interferometer based on diffraction gratings," SPIE Conference on Soft X-Ray Lasers and Applications III, Proc. SPIE **3776**, 232, (1999).
268. **J.J. Rocca**, B.R. Benware, C.D. Macchietto, and V.N. Shlyaptsev, "Generation of millijoule-level soft x-ray laser pulses at 4 Hz repetition rate in a highly saturated tabletop capillary discharge amplifier," Proc. IEEE Lasers and Electro-Optics Society 1999 Annual Meeting, San Francisco, CA, Nov. (1999).
269. **J.J. Rocca**, J. Filevich, M.C. Marconi, and K. Kanizay, "Demonstration of soft x-ray laser plasma interferometry with a tabletop laser and an amplitude division interferometer based on diffraction gratings," 41<sup>st</sup> Annual Meeting of the Division of Plasma Physics of the American Physical Society, Seattle, WA, Nov. 1999, Bulletin American Physical Society **44**, 250, (1999).
270. B.R. Benware, **J.J. Rocca**, A. Ozols, C.D. Macchietto, J.L.A. Chilla, I.A. Artiukov, Yu. S. Kasjanov, V.V. Kondratenko, and A.V. Vinogradov, "Applications of a high repetition rate tabletop soft x-ray laser: laser ablation with a focused beam and reflectometry of materials," SPIE Conference on Soft X-Ray Lasers and Applications III, Proc. SPIE **3776**, 204, (1999).
271. J. Filevich, M.C. Marconi, K. Kanizay, R.J. Berglund, and **J.J. Rocca**, "Development of a soft x-ray grating interferometer based on diffraction gratings," SPIE Conference on Soft X-Ray Lasers and Applications III, Proc. SPIE **3776**, 232, (1999).
272. **J.J. Rocca**, B.R. Benware, C.D. Macchietto, and V.N. Shlyaptsev, "Generation of high average power and millijoule-level pulses with a tabletop soft x-ray laser," SPIE Conference on Soft X-Ray Lasers and Applications III, Proc. SPIE **3776**, 152, (1999).
273. M. Giudici, G. Vaschenko, **J.J. Rocca**, C.S. Menoni, J.R. Tredicce, and S. Balle, "Time resolved spectral dynamics of semiconductor lasers with optical feedback in the regime of low-frequency fluctuations," Proc. Conference on Lasers and Electro-Optics, CLEO'99, 309, (1999).
274. B.R. Benware, C.D. Macchietto, C.H. Moreno, and **J.J. Rocca**, "Demonstration of a 1mW average power, 7Hz table-top soft x-ray laser," Proc. Conference on Lasers and Electro-Optics, CLEO'99, 344, (1999).

275. **J.J. Rocca**, C.H. Moreno, M.C. Marconi, K. Kanizay, V.N. Shlyaptsev, C.D. Macchietto, and B.R. Benware, "Plasma probing with a table-top soft x-ray laser," Proc. Conference on Lasers and Electro-Optics, CLEO'99, 345, (1999).
276. K.A. Janulewicz, F. Bortolotto, P.J. Warwick, M.P. Kalachnikov, V.N. Shlyaptsev, W. Sandner, **J.J. Rocca**, and P.V. Nickles, "Sulfur capillary discharge irradiated by a picosecond-laser pulse: a new way toward tabletop x-ray laser," SPIE Conference on Soft X-Ray Lasers and Applications III, **J.J. Rocca**, L.B. Da Silva, eds., Proc. SPIE **3776**, 37, (1999).
277. J. Filevich, M.C. Marconi, K. Kanizay, and **J.J. Rocca**, "Interferometry of dense plasma with soft x-ray laser," Annual Meeting of Argentine Physical Society, Tucuman, Argentina, (1999).
278. J.J. Gonzalez, M. Frati, **J.J. Rocca** and V.N. Shlyaptsev, "First experimental results of a very high power density capillary discharge plasma," 6<sup>th</sup> International Conference on X-ray Lasers, Proc. X-RAY LASERS 1998 **159**, 163, (1999).
279. J. Filevich, M.C. Marconi, K. Kanizay, R.J. Berglund, and **J.J. Rocca**, "Demonstration of an amplitude-division soft x-ray interferometer for plasma diagnostics based on diffraction gratings," SPIE Conference on Soft X-Ray Lasers and Applications III, **J.J. Rocca**, L.B. Da Silva, eds., Proc. SPIE **3776**, 232, (1999).
280. J. Filevich, K. Kanizay, M.C. Marconi, and **J.J. Rocca**, "Amplitude division grating interferometer for plasma diagnostics X-Ray Lasers," High Energy Density Science Grants Symposium, Los Alamos, NM, (1999).
281. H.A. Bender III, S. Grantham, M.C. Richardson, W.T. Silfvast, V.N. Shlyaptsev, and **J.J. Rocca**, "High resolution temporal and spatial mapping of the electron density in a capillary discharge pumped soft x-ray laser amplifier using sub-ps optical interferometry," 6<sup>th</sup> International Conference on X-ray Lasers, Proc. X-RAY LASERS 1998 **159**, 167, (1999).
282. G. Vaschenko, C.S. Menoni, **J.J. Rocca**, M. Giudici, J.R. Tredicce, and S. Balle, "Picosecond Characterization Of Low-Frequency Fluctuations In Edge Emitting Semiconductor Lasers With Optical Feedback," 23<sup>rd</sup> International Congress on High-Speed Photography and Photonics (ICHSP-98), V.P. Degtyareva, M.A. Monastyrski, M.Y. Schelev, A.V. Smirnov, eds., Proc. SPIE **3516**, 763 (1999).
283. J. Filevich, M.C. Marconi, and **J.J. Rocca**, "Implementation of a prototype grating interferometer for the measurement of linewidth of soft x-ray laser," Annual Meeting of Argentine Physical Society, Buenos Aires, Argentina, (1998).
284. **J.J. Rocca**, C.H. Moreno, M.C. Marconi, V.N. Shlyaptsev, and C.D. Macchietto, "High resolution imaging of a dense plasma with a table-top laser," 11th Annual Meeting IEEE Lasers and Electro-Optics Society, Proc. LEOS'98 **1**, 44, (1998).
285. C.H. Moreno, M.C. Marconi, K. Kanizay, and **J.J. Rocca**, "Soft x-ray interferometry of a dense plasma using a Lloyd mirror," 40<sup>th</sup> Annual Meeting of the Division of Plasma Physics, Bulletin of the American Physical Society **43**, 1782, (1998).
286. **J.J. Rocca**, C.H. Moreno, M.C. Marconi, V.N. Shlyaptsev, and C.D. Macchietto, "High resolution imaging of a dense plasma with a table-top soft x-ray laser," 40<sup>th</sup> Annual Meeting of the Division of Plasma Physics, Bulletin of the American Physical Society **43**, 1782, (1998).
287. **J.J. Rocca**, C.H. Moreno, M.C. Marconi, C. Macchietto, B.R. Benware, and V.N. Shlyaptsev, "Imaging of dense plasmas using a table-top soft x-ray laser," Annual Meeting of the Optical Society of America, Baltimore, MD, Oct. 4-9, (1998).

288. M. Giudici, J.R. Tredicce, G. Vaschenko, **J.J. Rocca**, and C.S. Menoni, "Spatio-temporal dynamics in vertical cavity surface emitting lasers excited by fast electrical pulses," Patterns in Nonlinear Optical Systems Conference, Alicante, Spain, PI-24, (1998).
289. J.L.A. Chilla, J. Martin Regalado, and **J.J. Rocca**, "Polarization Switching in VCSEs at Constant Active Region Temperature," 55th Device Research Conference, Fort Collins, CO, June 23-25, (1997).
290. **J.J. Rocca**, J.L.A. Chilla, C.H. Moreno, M.C. Marconi, and B.R. Benware, "Study of the Spatial Coherence Build-up in a Discharge Pumped Table-Top Soft X-Ray Laser," IEEE Lasers and Electro-Optics Society 1997 Annual Meeting, Proc. LEOS'97 **ML2**, 100, (1997).
291. J.M. Regalado, J.L.A. Chilla, and **J.J. Rocca**, and P. Brusenbach, "Polarization Switching in Vertical-Cavity Surface Emitting Lasers Observed at Constant Active Region Temperature," Polarization Effects in Lasers and Spectroscopy Conference, Toronto, Canada, May (1997).
292. J.L.A. Chilla, M.C. Marconi, **J.J. Rocca**, C.H. Moreno, and B.R. Benware, "Spatial Coherence of a Capillary Discharge Soft X-Ray Amplifier," SPIE conference on Soft X-ray Lasers and Applications II, **J.J. Rocca**, L.B. Da Silva, eds., Proc. SPIE **3156**, 271, (1997).
293. V.N. Shlyaptsev, **J.J. Rocca**, P.V. Nickles, M.P. Kalachnikov, W. Sandner, A.L. Osterheld, and D.C. Eder, "Capillary and transient inversion table-top X-ray lasers," The fourth international conference on dense z-pinchs, Proc. AIP **409**, 413, (1997).
294. **J.J. Rocca**, F.G. Tomasel, V.N. Shlyaptsev, J.L.A. Chilla, D. Clark, and M.C. Marconi, "Demonstration and study of a discharge-pumped, table-top soft-x-ray laser," The tenth American Physical Society topical conference on atomic processes in plasmas, Proc. AIP **381**, 59, (1996).
295. V.N. Shlyaptsev, **J.J. Rocca**, P.V. Nickles, W. Sandner, and A.L. Osterheld, "Theoretical Analysis of Efficient X-Ray Lasers," American Physical Society, Division of Plasma Physics Meeting, Bulletin of the American Physical Society **41**, 1423, (1996).
296. B.R. Benware, C.H. Moreno, D.J. Burd, and **J.J. Rocca**, "Operation of Extremely Compact Capillary Discharge Soft X-Ray Laser," American Physical Society, Division of Plasma Physics Meeting, Bulletin of the American Physical Society **41**, 1423, (1996).
297. **J.J. Rocca**, D.P. Clark, J.L.A. Chilla, V.N. Shlyaptsev, and M.C. Marconi, "Energy Extraction and Achievement of the Saturation Limit in a Discharge Pumped Table-Top Soft X-Ray Amplifier," American Physical Society, Division of Plasma Physics Meeting, Bulletin of the American Physical Society **41**, 1423, (1996).
298. F.G. Tomasel, **J.J. Rocca**, V.N. Shlyaptsev, and C. Machietto, "Lasing at 60.8nm in Ne-like Sulfur Ions Excited by a Capillary Discharge," American Physical Society, Division of Plasma Physics Meeting, Bulletin of the American Physical Society **41**, 1424, (1996).
299. **J.J. Rocca**, D.P. Clark, J.L.A. Chilla, F.G. Tomasel, M.C. Marconi, and V.N. Shlyaptsev, "Achievement of the Saturation Limit and Double Pass Amplification in a Discharge Pumped Soft X-Ray Laser," IEEE Lasers and Electro-Optics Society Annual Meeting, LEOS'96, Proc. LEOS 96' Conference **ThE3**, 302, (1996).
300. J.L.A. Chilla, M.C. Marconi, **J.J. Rocca**, and O.E. Martinez, "Grating Interferometer for Single-Shot Soft X-Ray Laser Linewidth Measurements," 1996 OSA Annual Meeting, Rochester, NY, Oct. 20-24, (1996).
301. **J.J. Rocca**, D. Clark, J.L.A. Chilla, V.N. Shlyaptsev, F. Tomasel, and M.C. Marconi, "Demonstration of Gain Saturation and Double Pass Amplification in a Discharge Pumped Soft X-Ray Laser," 1996 OSA Annual Meeting, Rochester, NY, Oct. (1996).
302. H.A. Bender, **J.J. Rocca**, and W.T. Silfvast, "Capillary Discharge Soft X-Ray amplifier for use in

- Amplifying Harmonic Radiation,” 5<sup>th</sup> International Conference on X-Ray Lasers, Proc. Institute of Physics Conference Series **151**, 184, (1996).
303. J.L.A. Chilla, **J.J. Rocca**, O.E. Martinez, and M.C. Marconi, “Interferometer for Single-Shot Soft X-Ray Laser Linewidth Measurements,” 5<sup>th</sup> International Conference on X-Ray Lasers, Proc. Institute of Physics Conference Series **151**, 361, (1996).
  304. J.L.A. Chilla, and **J.J. Rocca**, “Beam optics of gain guided soft x-ray lasers in cylindrical plasmas,” Quantum Electronics and Laser Science Conference CLEO '96, 70, (1996).
  305. O.E. Buccafusca, J.L.A. Chilla, **J.J. Rocca**, S. Feld, and C.W. Wilmsen, “Transverse mode dynamics in vertical cavity surface emitting lasers excited by fast electric pulses,” Quantum Electronics and Laser Science Conference CLEO '96, Los Angeles, CA, May (1996).
  306. N. Mingolo, C.R. Gonzalez, **J.J. Rocca**, and O.E. Martinez, “Pulsed glow discharge electron gun for metal surface treatment,” Anales de la asociacion Quimica Argentina **83**, 259, (1995).
  307. **J.J. Rocca**, M.C. Marconi, F.G. Tomasel, V.N. Shlyaptsev, J.L.A. Chilla, and D.P. Clark, “Towards Saturation of a Discharge Pumped Soft X-Ray Amplifier,” SPIE Conference on Soft X-Ray Lasers and Applications, **J.J. Rocca**, P.L. Hagelstein, eds., Proc. SPIE **2520**, 201, (1995).
  308. J.L.A. Chilla, B.R. Benware, M.E. Watson, P. Stanko, **J.J. Rocca**, C. Wilmsen S. Feld, and R. Leigbenguth, “Coherence of VCSELs for Holographic Interconnects,” Conference on Lasers and Electro-Optics CLEO '95, Proc. IEEE **7**, 449, (1995).
  309. O. Buccafusca, M.C. Marconi, D. Patel, C.S. Menoni, M. Prasad, **J.J. Rocca**, and G.Y. Robinson, “Effect of gamma-X coupling on the carrier lifetime of InGaP/InAlP multiple quantum wells,” presented at the 1995 Electronics Materials Conference, Charlottesville, VA, June 21-23, (1995).
  310. **J.J. Rocca**, F.G. Tomasel, M.C. Marconi, V.N. Shlyaptsev, J.L.A. Chilla, and D. Clark, “Small-scale soft x-ray laser excited by a fast discharge: realization and characterization,” National Science Foundation Forum on Optical Science and Engineering, W.H. Carter, eds., Proc. SPIE **2524**, 174, (1995).
  311. V.N. Shlyapstev, **J.J. Rocca**, and A.L. Osterheld, “Modeling of a capillary discharge soft x-ray amplifier,” The 4th international colloquium: X-ray lasers 1994, Proc. AIP **332**, 375, (1995).
  312. **J.J. Rocca**, F.G. Tomasel, V.A. Shlyaptsev, O.D. Cortázar, J.L.A. Chilla, and G. Giudice, “Soft-x-ray amplification in a capillary discharge plasma,” The 4th international colloquium: X-ray lasers 1994, Proc. AIP **332**, 359, (1995).
  313. V. Shlyaptsev, **J.J. Rocca**, and A.L. Osterheld, “Dynamic and Kinetics of a Capillary Discharge X-Ray Laser,” International Conference on Short Wavelength Radiation and Applications, Zvenigorov, Russia, Aug 29- Sept 2, (1994).
  314. O.F. Buccafusca, G.A. Patrizi, L.M. Woods, C.S. Menoni, **J.J. Rocca**, G.Y. Robinson, and J.E. Fouquet, “Optical Properties of Lattice-Matched InGaP/InAlP Multiple Quantum Wells,” 36<sup>th</sup> Electronic Materials Conference, Boulder CO, June 22-24, (1994).
  315. M.E. Watson, J.L.A. Chilla, **J.J. Rocca**, J.W. Kim, D.L. Lile, T.J. Vogt, and G.Y. Robinson, “Saturation Intensity and Time Response of InGaAs-InGaP MQW Optical Modulators,” 36<sup>th</sup> Electronic Materials Conference, Proc. IEE, **31**, 254, (1994).
  316. V. Shlyaptsev, **J.J. Rocca**, and A. Osterheld, “Modeling of a capillary discharge pumped soft x-ray amplifier,” 4<sup>th</sup> International Colloquium on X-Ray Lasers, Proc. AIP **332**, 375, (1994).
  317. M.E. Watson, J.L.A. Chilla, **J.J. Rocca**, J.W. Kim, D.L. Lile, T.J. Vogt, and G.Y. Robinson, “Modulation Saturation Measurements on InGaAs/InGaP MQW Modulators,” Conference on Lasers and Electro-Optics CLEO'94, Anaheim, CA, May 8-13, (1994).

318. **J.J. Rocca**, V.N. Shlyaptsev, F.G. Tomasel, and O.D. Cortazar, "Search for XUV Amplification in a Capillary Discharge Plasma," Future Prospects for UV and VUV Lasers, Santa Barbara, CA, Feb. 27- March 4, (1994).
319. V. Shlyaptsev, A.V. Gerusov, A.V. Vinogradov, **J.J. Rocca**, O.D. Cortazar, F.G. Tomasel, and B.T. Szapiro, "Modeling of Fast Capillary Discharge for Collisionally Excited Soft X-Ray Lasers: Comparison with Experiments," SPIE conference on Ultrashort Wavelength Lasers II, S. Suckewer, eds., Proc. SPIE **2012**, 99, (1993).
320. M. Prasad, O.E. Martinez, C.S. Menoni, **J.J. Rocca**, J.L.A. Chilla, M. Hafich, and G.Y. Robinson, "Transient grating measurements of ambipolar diffusion and carrier recombination in InGaP/InAlP multiple quantum wells and InGaP bulk," Proc. 1993 Electronic Materials Conference **23**, 359, (1994).
321. O.F. Buccafusca, J.L.A. Chilla, C.S. Menoni, **J.J. Rocca**, M.J. Hafich, L.M. Woods, and G.Y. Robinson, "Picosecond Photoluminescence study of tunneling in InGaP/InAlP asymmetric double quantum wells," Proc. Quantum Electronics Laser Science Conference, QELS'93, 179, (1993).
322. J.L.A. Chilla, O. Buccafusca, and **J.J. Rocca**, "Analysis of the complexity of photoluminescence signals obtained by picosecond excitation correlation," Proc. Conference on Lasers and Electro-Optics, CLEO'93, 354, (1993).
323. F.G. Tomasel, **J.J. Rocca**, O.D. Cortazar, B.T. Szapiro, and K. Floyd, "Generation of hot ( $T_e > 150\text{eV}$ ) capillary plasma columns for soft x-ray amplification," 1992 Annual Meeting of the Division of Plasma Science, Seattle, WA, Nov 1992, Bulletin of the American Physical Society **37**, 1501, (1992).
324. M.C. Marconi, C.S. Menoni, O. Buccafusca, M. Prasad, **J.J. Rocca**, M.J. Hafich, and G.Y. Robinson, "Photoexcited carrier relaxation in InGaP bulk and InGaP-InAlP multiple quantum wells," Quantum Electronics and Laser Science Conference QELS'92, Anaheim, CA, May, (1992).
325. **J.J. Rocca**, B. Szapiro, D. Cortazar, F.G. Tomasel, J. Meyer, J. Hung, and K. Floyd, "Fast Discharge Excitation of small scale soft x-ray lasers," Institute of Physics Conference Series, Proc. 3<sup>rd</sup> Int. Colloquium on X-ray Lasers **125**, 427, (1992).
326. **J.J. Rocca**, B.T. Szapiro, O.D. Cortazar, F.G. Tomasel, J. Hung, and K. Floyd, "Soft x-ray radiation of H-like and Li-like ions in a fast, high power capillary discharge," 1992 IEEE Conference on Plasma Science, Proc. IEEE **5A11**, 157, (1992).
327. **J.J. Rocca**, M.C. Marconi, B.T. Szapiro, and J. Meyer, "Experiments on soft x-ray laser development in a tabletop capillary discharge," Proc. SPIE **1551**, 275 (1992).
328. **J.J. Rocca**, B.T. Szapiro, M.C. Marconi, O.D. Cortazar, J. Meyer, and F.G. Tomasel, "Soft x-ray emission spectroscopy of high power capillary for a recombination laser scheme," 1991 Annual Meeting of the Division of Plasma Science, Tampa, FL; Bulletin of the American Physical Society **36**, 2432, (1991).
329. **J.J. Rocca**, M.C. Marconi, B.T. Szapiro, and J. Meyer, "Experiments on soft x-ray laser development in a table-top capillary discharge," SPIE conference on Ultrashort Wavelength Lasers, S. Suckewer, eds., Proc. SPIE **1551**, 275, (1991).
330. **J.J. Rocca**, F. Gonzalez, and K. Floyd, "Glow discharge opening and closing plasma switch scheme," 44<sup>th</sup> Annual Gaseous Electronic Conference Abstracts, pp. 181, Albuquerque, NM, Oct. 22-25, (1991).
331. B.T. Szapiro, **J.J. Rocca**, M.C. Marconi, O.D. Cortazar, and F.G. Tomasel, "Study of the soft x-ray emission from carbon plasmas excited by fast capillary discharges," 44<sup>th</sup> Annual Gaseous Electronic Conference Abstracts, pp. 175, Albuquerque, NM, Oct. 22-25, (1991).

332. **J.J. Rocca**, M.C. Marconi, B.T. Szapiro, O. Buccafusca, and J. Meyer, "Experiments on a capillary discharge soft x-ray laser scheme," Quantum Electronics and Laser Science Conference QELS'91, Baltimore, MD, Oct. 12 -17, (1991).
333. P. Thiagarajan, J.F. Schmerge, C.S. Menoni, M.C. Marconi, O.E. Martinez, **J.J. Rocca**, M. Hafich, H.Y. Lee, and G.Y. Robinson, "Study of the picosecond carrier dynamics in photoexcited InGaP epitaxial films," Quantum Electronics and Laser Science Conference QELS'91, Baltimore, MD, Oct. 12 -17, (1991).
334. **J.J. Rocca**, M.C. Marconi, B.T. Szapiro, and J. Meyer, "Progress towards the development of a compact capillary discharge soft x-ray laser," P. Bucksbaum, N. Ceglio, eds., OSA Proc. on Short Wavelength Coherent Radiation and Applications **11**, 106, (1991).
335. **J.J. Rocca**, M.C. Marconi, B. Szapiro, O. Buccafusca, and K. Richardson, "Observation of Intense CVI Soft X-Ray Emission from a Capillary Discharge: Prospects of Recombining Lasing," Post-deadline paper 32<sup>nd</sup> Annual Meeting of Plasma Physics, American Physical Society, Cincinnati, OH, Nov. 12-16, (1990).
336. **J.J. Rocca**, B.T. Szapiro, and C. Murray, "Electron Beam Generation by Electron Bombardment Induced Cathode Emission," 42<sup>nd</sup> Annual Gaseous Electronic Conference, Menlo Park, CA, Oct. 17-20, (1989).
337. J.F. Schmerge, **J.J. Rocca**, and M.C. Marconi, "Time Resolved XUV Emission from Highly Ionized Capillary Discharges," 42<sup>nd</sup> Annual Gaseous Electronic Conference, Menlo Park, CA, Oct. 17-20, (1989).
338. B. Wernsman and **J.J. Rocca**, "Laser Action in the Flowing Afterglow of a Hollow Cathode Discharge," 42<sup>nd</sup> Annual Gaseous Electronic Conference, Menlo Park, CA, Oct. 17-20, (1989).
339. **J.J. Rocca**, M.C. Marconi, M. Villagran, D.C. Beethe, and J.F. Schmerge, "Time Resolved XUV Spectroscopy from Highly Ionized Capillary Discharges," 1989 IEEE International Conference on Plasma Science, Proc. IEEE, 167 6P58 (1989).
340. O.E. Martinez, T. Prabhuram, M.C. Marconi, and **J.J. Rocca**, "Expansion and compression of subpicosecond pulses from a frequency doubled Nd-YLF laser," Conference on Lasers and Electro-Optics, CLEO'89, Proc. IEEE Journal of Quantum Mechanics **25**, 10, (1989).
341. **J.J. Rocca**, D. Beethe, and M.C. Marconi, "Model calculations of amplification of short wavelength radiation in capillary plasmas," 41<sup>st</sup> Gaseous Electronic Conference, Minneapolis, MN, Oct. (1988).
342. **J.J. Rocca**, B. Szapiro, and T. Prabhuran, "Electron Yield of Glow Discharge Cathode materials under noble gas ion bombardment," 41<sup>st</sup> Gaseous Electronic Conference, Minneapolis, MN, Oct. (1988).
343. M. Villagran and **J.J. Rocca**, "Time resolved measurements of the plasma density in a highly ionized helium capillary discharge," 41<sup>st</sup> Gaseous Electronic Conference, Minneapolis, MN, Oct. (1988).
344. F.J. Fetzter, N. Reesor, and **J.J. Rocca**, "A self consistent model of a hollow cathode discharge Helium-Mercury laser," 41<sup>st</sup> Gaseous Electronic Conference, Minneapolis, MN, Oct. (1988).
345. C. Murray, **J.J. Rocca**, and B. Szapiro, "A reflex electron beam discharge as a plasma source for electron beam generation," 41<sup>st</sup> Gaseous Electronic Conference, Minneapolis, MN, Oct. (1988).
346. **J.J. Rocca**, M.C. Marconi, D. Beethe, and M. Villagran, "Capillary Discharge Plasmas as XUV Laser Sources," OSA Proc. on Short Wavelength Coherent Radiation: Generation and Applications, vol. 2, pp.99, Eds. R.W. Falcone and J. Kirz, North Falmouth, MA, (1988).
347. **J.J. Rocca**, M.C. Marconi, D. Beethe, and M. Villagran, "Fast Capillary Discharges as a Soft



- X-Ray and XUV Laser Media,” 15<sup>th</sup> IEEE Conference on Plasma Science, Seattle, WA, June (1988).
348. **J.J. Rocca**, C. Murray, and B. Szapiro, “A Reflex Glow Discharge as a Plasma Source for Broad Area Electron Beam Generation,” 15<sup>th</sup> IEEE Conference on Plasma Science, Proc. IEEE **16**, 570, (1988).
  349. S.A. Lee, L.U. Andersen, **J.J. Rocca**, M. Marconi, and N. Reesor, “Electric Field Distribution in a Glow Discharge by Quadratic Stark Laser Spectroscopy,” CLEO'88 Conference on Lasers and Electro-Optics, Anaheim, CA, April (1988).
  350. B. Wernsman, T. Prabhuran, K. Lewis, F. Gonzalez, M. Villagran, and **J.J. Rocca**, “CW Silver Ion Laser with Electron Beam Excitation,” CLEO'88 Conference on Lasers and Electro-Optics, Proc. IEEE **24**, 1554, (1988).
  351. S.A. Lee, L.U. Andersen, **J.J. Rocca**, M. Marconi, and N. Reesor, “Quadratic Stark Laser Spectroscopy Determination of the Electric Field Distribution in the Cathode Sheath of an Electron Beam Glow Discharge,” 40<sup>th</sup> Gaseous Electronic Conference, Atlanta, GA, Oct. (1987).
  352. T. Verhey, **J.J. Rocca**, and P.K. Boyer, “Anisotropic Etching of Silicon Dioxide and Silicon in an Electron Beam generated Plasma,” 40<sup>th</sup> Gaseous Electronic Conference, Atlanta, GA, Oct. (1987).
  353. B.T. Szapiro, H.F. Ranea-Sandoval, C. Murray, and **J.J. Rocca**, “Study of Intense Pulsed Glow Discharges,” 40<sup>th</sup> Gaseous Electronic Conference, Atlanta, GA, Oct. (1987).
  354. P.K. Boyer, T. Verhey, and **J.J. Rocca**, “Large Area Electron Beam Enhanced Reactive Etching of SiO<sub>2</sub>,” Materials Research Society, Spring Meeting, April (1987).
  355. **J.J. Rocca**, “Short Wavelength Lasers in Non-equilibrium Discharges,” Future Prospects and Applications for UV and VUV Lasers, Santa Barbara, CA, Feb. 22-27 (1987).
  356. H. Ranea-Sandoval, N. Reesor, B.T. Szapiro, C. Murray, and **J.J. Rocca**, 39<sup>th</sup> Gaseous Electronic Conference, Madison, WI, Oct. (1986).
  357. **J.J. Rocca**, H.L. Mancini, B. Wernsman, and G.J. Fetzer, “Recombination Lasers Excited by Electron Beams,” Lasers 85, Proc. Int. Conf. LASERS'85 **1986**, 805, (1985).
  358. M. Villagran, J.O. Tocho, M. Gallardo, and **J.J. Rocca**, “Recombination Laser in Cd Vapor,” Meeting Asociacion Fisica Argentina, Buenos Aires, Argentina, Nov. (1985).
  359. **J.J. Rocca**, B. Wernsman, and H.L. Mancini, “CW Recombination Lasers in Negative Glow Plasmas,” 38<sup>th</sup> Gaseous Electronic Conference, Monterey, CA, Oct. (1985).
  360. H. Zarnani, **J.J. Rocca**, D. Bishop, N. Cody, and G.J. Collins, “Chemical Vapor Deposition of Silicon Insulating Films Induced with a Perpendicular Electron Beam,” Material Research Society Annual Meeting, Boston, MA, Nov. (1984).
  361. J.A. Meyer, **J.J. Rocca**, B. Philstrom, and G.J. Collins, “Electron Beam Excited Charge Transfer Lasers,” 37<sup>th</sup> Gaseous Electronics Conference, Boulder, CO, Oct. (1984).
  362. G.J. Fetzer, **J.J. Rocca**, G.J. Collins, and R. Jacobs, “Computer Modeling of Electron Beam Excited CW Lasers,” 37<sup>th</sup> Gaseous Electronics Conference, Boulder, CO, Oct. (1984).
  363. **J.J. Rocca**, C.A. Moore, L.R. Thompson, and G.J. Collins, “Glow Discharge Electron Beam Processing of Microelectronic Materials,” 37<sup>th</sup> Gaseous Electronic Conference, Boulder, CO, Oct. (1984).
  364. Thompson, R. Solanki, **J.J. Rocca**, H. Zarnani, and G.J. Collins, “Laser and Electron Beam Deposition of Insulators and Metals,” 1984 International Conference on Metallurgical Coatings, American Vacuum Society, San Diego, CA, April (1984).

365. K. Emery, L.R. Thompson, **J.J. Rocca**, and G.J. Collins, "Electron Beam Assisted CVD of Silicon Dioxide and Silicon Nitride Films," SPIE Meeting, Proc. SPIE **459**, 82, (1984).
366. **J.J. Rocca**, J.D. Meyer, Z. Yu, M. Farrell, and G.J. Collins, "CW Electron Beam Excited Ion Lasers," 13<sup>th</sup> Winter Colloquium on Quantum Electronics, Snowbird, UT, Jan. (1983).
367. C.A. Moore, **J.J. Rocca**, and G.J. Collins, "Large Area Continuous Electron Beam for Semiconductor Processing," Material Research Society Annual Meeting, Boston MA, Nov. (1983).
368. Z. Yu, J.D. Meyer, **J.J. Rocca**, and G.J. Collins, "Studies of Glow Discharge Electron Beams," 35<sup>th</sup> Gaseous Electronic Conference, 35<sup>th</sup> Annual Gaseous Electronic Conference Abstracts, (1982).
369. **J.J. Rocca**, J.D. Meyer, Z. Yu, and G.J. Collins, "CW Ion Lasers Pumped by Electron Beams," Proceedings of the 12<sup>th</sup> International Quantum Electronic Conference, Applied Physics B-photonics and Laser Chemistry **28**, 239, (1982).
370. **J.J. Rocca**, J.D. Meyer, Z. Yu, and G.J. Collins, "Electron Beam Excitation of CW Lasers," 34<sup>th</sup> Gaseous Electronic Conference, 34<sup>th</sup> Annual Gaseous Electronics Conference Abstracts **1982**, 131, (1981).