

## Christopher M. Rouleau

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### Education

Western New England College, Springfield, MA	Electrical Engr.	B.S., <i>Summa Cum Laude</i> , 1988
University of Florida, Gainesville, FL	Electrical Engr.	M.S., 1991
University of Florida, Gainesville, FL	Mat. Sci. & Engr.	Ph.D., 1994

### Professional Experience

1998–p	Research Staff Member, Center for Nanophase Materials Sciences (CNMS), Oak Ridge National Laboratory (ORNL)
1996–1998	Wigner Fellow, Materials Sciences & Technology Division, ORNL
1994–1996	Postdoctoral Research Assistant, Solid State Division, ORNL
1993	Visiting Scientist, 3M Company, St. Paul, Minnesota

### Professional and Synergistic Activities

2006–2008	SEED Money Fund Proposal Review Committee, Oak Ridge National Laboratory
2001	Session Co-organizer and Chairman, Division of Materials Physics Focus Session on Laser Processing of Novel Nanoscale Materials, American Physical Society, Seattle, Washington
2001	Session Co-organizer and Chairman, Division of Materials Science Focus Session on Laser Ablation and Low-Energy Beam-Assisted Film Growth I, American Physical Society, Kansas City, Missouri

### Awards and Honors

2008	R&D 100 Award
2007	2 <sup>nd</sup> Place, DuBose-Crouse Award for Unique, Unusual, and New Techniques in Microscopy
1996–1988	Wigner Fellowship, ORNL

### Invited\* and Contributed Conference Presentations

“Dynamics of TiO<sub>2</sub> Nanoparticle Formation and Deposition for Nanostructured Thin Films,” C. M. Rouleau, J. D. Readle, A. A. Puretzky, R. Ghosh, R. Lopez, G. Eres, M. Regmi, G. Duscher, M. Yoon, and D. B. Geohegan, SPIE Photonics West 2012, Laser Nanoscale Materials Processing and Manufacturing, San Francisco, California, Jan. 23-28, 2012.

“Nanoparticle Synthesis and Transport Dynamics Resulting from Through Thin Film Femtosecond Laser Ablation,” C. M. Rouleau, J. D. Readle, A. A. Puretzky, D. B. Geohegan, and K. L. More, 11th International Conference on Laser Ablation (COLA 2011), Playa del Carmen, Mexico, Nov. 13-19, 2011.\*

“Two-Beam Studies of Nanoparticle Ejection and Transport Dynamics Resulting from Femtosecond Laser Ablation,” C. M. Rouleau, J. D. Readle, A. A. Puretzky, N. Thonnard, and D. Geohegan, 2011 Materials Research Society Spring Meeting and Exhibit, San Francisco, California, Apr. 25-29, 2011.

- “Laser Interactions with Vertically Aligned Carbon Nanotube Arrays,” C. M. Rouleau, D. B. Geohegan, A. A. Puzetky, J. J. Jackson, G. Duscher, and K. L. More, SPIE Photonics West 2010, Synthesis and Photonics of Nanoscale Materials VII, San Francisco, California, Jan. 23-28, 2010.
- “Laser Interactions with Vertically Aligned Carbon Nanotube Arrays,” C. M. Rouleau, D. B. Geohegan, A. A. Puzetky, G. Eres, J. J. Jackson, N. Thonnard, D. Pickel, I. N. Ivanov, and K. L. More, 10th International Conference on Laser Ablation (COLA 2009), Singapore, China, Nov. 23-27, 2009.
- “Laser Processing of Multilayered Metal Catalyst Films for Enhanced Growth of Vertically Aligned Carbon Nanotube Arrays,” C. M. Rouleau, G. Eres, A. A. Puzetky, J. J. Jackson, H. Hu, B. Zhao, and D. B. Geohegan, 9<sup>th</sup> International Conference on Laser Ablation – COLA 2007, Tenerife, Spain, Sept. 24-28, 2007.
- “Laser Irradiation Pretreatment Effects on Catalyst-Coated Silicon and Subsequent CVD Nanotube Growth,” C. M. Rouleau, G. Eres, H. Cui, D. B. Geohegan, I. N. Ivanov, A. A. Puzetky, 2006 APS March Meeting, DMP Focus Session, Carbon Nanotubes: Synthesis and Growth II, Baltimore, Maryland, Mar. 13-17, 2006.
- “Laser Irradiation Pretreatment Effects on Catalyst Coated Silicon and Subsequent CVD Nanotube Growth,” C.M. Rouleau, G. Eres, I. N. Ivanov, H. Cui, A. A. Puzetky, and D. B. Geohegan, 8th International Conference on Laser Ablation (COLA), Banff, Canada, Sept. 11-16, 2005.
- “Ionic Conductivity in Nanometer-Scale Heteroepitaxial YSZ Films,” C. M. Rouleau, I. P. Kosacki, P. Becher, D. H. H. Lowndes, 2003 TMS Annual Meeting and Exhibition: 132nd Annual Meeting and Exhibition of The Minerals, Metals & Materials Society (TMS), International Symposium on Structures and Properties of Nanocrystalline Materials: Magnetic and Other Functional Properties, San Diego, California, Mar. 2-6, 2003.\*

**Publications** (Over 70 publications in refereed journals, 2 book chapters) *Full publication list follows CV*

### **Research Synopsis**

Understanding the growth of oxide thin films by pulsed-laser deposition and surface x-ray diffraction; Synthesis and processing of materials by pulsed laser (excimers, high power Nd:YAG, femtosecond) vaporization to produce different nanomaterials including graphene, carbon nanotubes, carbon nanohorns, nanoparticles, nanowires, and thin films; Development of time-resolved spectroscopic and imaging techniques (gated ICCD imaging, Rayleigh scattering, absorption, photoluminescence, laser induced luminescence and incandescence, ion probe) to reveal the mechanisms of thin film and nanomaterial synthesis by pulsed laser vaporization.

### **Collaborations**

P. Zschack (Argonne National Laboratory/Univ. of Illinois); T. Campbell (Univ. of Virginia); H. Dorn (Virginia Tech); M. Rylander (Virginia Tech); K. More (ORNL); G. Duscher (Univ. of TN-Knoxville); R. Lopez (Univ. of North Carolina, Chapel Hill); G. Eres (ORNL); I. Kosacki (Shell Int. E&P, Inc.); J. Kilner (Imperial College, London); G. Eres (ORNL); L. V. Zhigilei (Univ. of Virginia)

### **Graduate and Postdoctoral Advisors**

Graduate Advisor: Robert M. Park, University of Florida (retired)  
 Postdoctoral Advisor: Douglas H. Lowndes, ORNL (retired)

### **Thesis Advisor and Postgraduate-Scholar Sponsor**

Total Graduate Students Advised: 0  
 Total Postdoctoral Scholars Advised: 0

## PUBLICATIONS

**Christopher M. Rouleau**

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### ***Book Chapters***

- “Laser Interactions in Nanomaterials Synthesis,” D. B. Geohegan, A. A. Puretzky, C. M. Rouleau, J. J. Jackson, G. Eres, Z. Liu, D. Styers-Barnett, H. Hu, B. Zhao, K. Xiao, I. Ivanov, and K. More, Chapter 1 in Laser-Surface Interactions for New Materials Production: Tailoring Structure and Properties, Springer Series in Materials Science, Vol. 130, Eds., A. Miotello and P. Ossi, Springer-Verlag, Berlin Heidelberg, Germany (2010).
- “All Carbon Nanotubes are not Created Equal,” G. Eres, D. B. Geohegan, A. A. Puretzky, and C. M. Rouleau, Chapter 4 in Nanotechnology for Electronics, Photonics, and Renewable Energy, pp. 131-152, Springer Series in Nanostructure Science and Technology, Eds., A. Korkin, P. S. Krstic, and J. C. Wells, Springer-Verlag, Berlin Heidelberg, Germany (2010).

### ***Conference Proceedings***

- Lee, H. N.; Christen, H. M.; Rouleau, C. M.; Senz, S.; Lee, S. K.; Hesse, D.; Lowndes, D. H., “Compositionally Asymmetric Tri-Color Superlattices Grown by Pulsed Laser Deposition,” pp. 127-131 in *Ferroelectric Thin Films XII, Materials Res. Soc. Fall Meeting Proc.*, Vol. 784, Boston, Massachusetts, Dec. 1-4, 2003; ed. by Hoffmann-Eifert, S., Funakubo, H., Joshi, V., Kingon, A. I., Koutsaroff, I. P., Materials Research Society: Warrendale, Pennsylvania, 2004.
- Cantoni, C.; Christen, D. K.; Goyal, A.; Heatherly, L.; Ownby, G. W.; Zehner, D. M.; Norton, D. P.; Rouleau, C. M. Christen, H. M., “Effect of Sulfur Surface Structure on Nucleation of Oxide Seed Layers on Textured Metals for Coated Conductor Applications,” pp. 349-354 in *Materials for High-Temperature Superconductor Technologies, Materials Res. Soc. Symp. Proc.*, Vol. 689, Boston, Massachusetts, Nov. 26-29, 2001; ed. by Paranthaman, M. P.; Rupich, M. W.; Salama, K.; Mannhart, J.; Hasegawa, T., Materials Research Society: Warrendale, Pennsylvania, 2002.
- Jellison, G. E.; Withrow, S. P.; Jaiswal, S.; Rouleau, C. M.; Simpson, J. T.; White, C. W.; Griffiths, C. O., “Spectroscopic Ellipsometry Studies of Nanocrystalline Silicon in Thin-Film Silicon Dioxide,” pp. 259-264 in *Quantum Confined Semiconductor Nanostructures, Materials Res. Soc. Fall Meeting Proc.*, Vol. 737, Boston, Massachusetts, Dec. 2-5, 2002; ed. by Kilmov, V. I., Buriak, J. M., Wayner, D. D. M., Priolo, F., White, B., Tsybeskov, L., Materials Research Society: Warrendale, Pennsylvania, 2002.
- Jellison, Jr., G. E.; Griffiths, C. O.; Rouleau, C. M.; Holcomb, D. E., “Characterization of Linear Diattenuator and Retarders Using a Two-Modulator Generalized Ellipsometer,” pp. 9-19 in *SPIE Polarization Analysis, Measurement, and Remote Sensing V*, Vol. 4819, Seattle, Washington, Jul. 8-9, 2002; ed. by Goldstein, D. H., Chenault, D. B., SPIE-The International Society for Optical Engineering: Bellingham, Washington, 2002.
- Lowndes, D. H.; Merkulov, V. I.; Puretzky, A. A.; Geohegan, D. B.; Jellison, G. E.; Rouleau, C. M.; Thundat, T., “Amorphous Diamond Films Synthesized by Pulsed-Laser Ablation: Influence of Carbon Ion Kinetic Energy and Laser Wavelength,” pp. 325-330 in *Advances in Laser Ablation of Materials*, Proc. Materials Res. Soc. Symp., Vol. 526, San Francisco, California, Apr. 13-16, 1998; ed. by Singh, R., Chrissy, D. B., Lowndes, D. H., Narayan, J., Fogarassy, E., Kawai, T., Materials Research Society: Warrendale, Pennsylvania, 1998.
- Park, J.-W.; Rouleau, C. M.; Lowndes, D. H., “Study of Substrate Diffusion in Epitaxial *n*-Type CdSe Films Grown on GaAs (001) by Pulsed-Laser Ablation,” pp. 27-32 in *Advances in Laser Ablation of*

- Materials, Materials Res. Soc. Symp. Proc.*, Vol. 526, San Francisco, California, Apr. 13–16, 1998; ed. by Singh, R. K., Lowndes, D. H., Narayan, J., Chrisey, D. B., Kawai, T., Fogarassy, E., Materials Research Society: Warrendale, PA, 1998.
- Lowndes, D. H.; Rouleau, C. M.; Geohegan, D. B.; Poretzky, A. A.; Strauss, M. A.; Park, J. W.; Budai, D.; Poker, D. B., "Pulsed Laser Ablation Growth and Doping of Epitaxial Compound Semiconductor Films," pp. 107-118 in *Advances in Laser Processing of Materials – Fundamental and Applications, Materials Res. Soc. Symp. Proc.*, Vol. 397, Boston, Massachusetts, Nov. 27-30, 1995; ed. by Singh, R., Norton, D., Laude, L. D., Narayan, J., Cheung, J., Materials Research Society: Warrendale, Pennsylvania, 1996.
- Lowndes, D. H.; Rouleau, C. M.; Geohegan, D. B.; Poretzky, A. A.; Strauss, M. A.; Pedraza, A. J.; Park, J. W.; Budai, J. D.; Poker, D. B., "Pulsed Laser Deposition of Doped Epitaxial Compound Semiconductor Films," pp. 34-35 in *IEEE/LEOS 1996 Summer Topical Meetings – Advanced Applications of Lasers in Materials and Processing Digest*, Keystone, Colorado, Aug. 5-9, 1996; ed. by IEEE Group: IEEE, New York, NY, 1996.
- Rouleau, C. M.; Lowndes, D. H.; Strauss, M. H.; Cao, S.; Pedraza, A. J.; Geohegan, D. B.; Poretzky, A. A.; Allard, L. G., "Effect of Ambient Gas Pressure on Pulsed Laser Ablation Plume Dynamics and ZnTe Film Growth," pp. 119-124 in *Advances in Laser Processing of Materials – Fundamental and Applications, Proc. Materials Res. Soc. Symp.*, Vol. 397, Boston, Massachusetts, Nov. 27-30, 1995; ed. by Singh, R., Norton, D., Laude, L. D., Narayan, J., Cheung, J., Materials Research Society: Warrendale, Pennsylvania, 1996.
- Lowndes, D. H.; Rouleau, C. M.; McCamy, J. W.; Budai, J. D.; Poker, D. B.; Geohegan, D. B.; Poretzky, A. A.; Zhu, S., "Growth of Highly Doped p-Type ZnTe Films by Pulsed Laser Ablation in Molecular Nitrogen," pp. 85-90 in *Film Synthesis and Growth Using Energetic Beams*, Proc. Materials Res. Soc. Symp., Vol. 388, San Francisco, California, Apr. 17-20, 1995; ed. by Atwater, H. A., Lowndes, D. H., Dickenson, J. T., Polman, A., Materials Research Society: Warrendale, Pennsylvania, 1995.
- Rouleau, C. M.; Park, R. M., "Real-time In-Situ Monitoring of Defect Evolution at Widegap-II-VI GAAS Heterointerfaces during Epitaxial-Growth," pp. 125-131, in *Diagnostic Techniques for Semiconductor Materials Processing, Proc. Materials Res. Soc. Symposium Proc.*, Vol. 324, Boston, Massachusetts, Nov. 29-Dec. 2, 1993; ed. by Glembocki, O. J., Pang, S. W., Pollak, F. H., Crean, G. M., Larrabee, G., Materials Research Society: Warrendale, Pennsylvania, 1994.

#### **Refereed Journal Papers:**

- A.A. Poretzky, D.B. Geohegan, J.J. Jackson, S. Pannala, G. Eres, C.M. Rouleau, K.L. More, N. Thonnard, J.D. Readle, Incremental Growth of Short SWNT Arrays by Pulsed Chemical Vapor Deposition, *Small* 8, 1534 (2012).
- X.Y. Liu, S. Sen, J.Y. Liu, I. Kulaots, D.B. Geohegan, A. Kane, A.A. Poretzky, C.M. Rouleau, K.L. More, G.T.R. Palmore, and R.H. Hurt, Antioxidant Deactivation on Graphenic Nanocarbon Surfaces, *Small* 7, 2775 (2011).
- Y. Liu, C. M. Brown, D. A. Neumann, D. B. Geohegan, A. A. Poretzky, C. M. Rouleau, H. Hu, D. Syers-Barnett, P. O. Krasnov, B. I. Yakobson, "Metal-Assisted Hydrogen Storage on Pt-Decorated Single-Walled Carbon Nanohorns," *Carbon* 50 (13), 4953–4964 (2012).
- G. Eres, J. Z. Tischler, C. M. Rouleau, P. Zschack, H. M. Christen, and B. C. Larson, "Quantitative Determination of Energy Enhanced Interlayer Transport in Pulsed Laser Deposition of SrTiO<sub>3</sub>," *Physical Review B* 84(19) (2011).
- D. B. Geohegan, A. A. Poretzky, J. J. Jackson, C. M. Rouleau, G. Eres, and K. L. More, "Flux-Dependent Growth Kinetics and Diameter Selectivity in Single-Wall Carbon Nanotube Arrays," *Acs Nano* 5(10), 8311 (2011).
- N. A. Hatab, C. M. Rouleau, S. T. Retterer, G. Eres, P. B. Hatzinger, and B. H. Gu, "An Integrated Portable Raman Sensor with Nanofabricated Gold Bowtie Array Substrates for Energetics Detection," *Analyst* 136(8), 1697 (2011).

- X. Y. Liu, S. Sen, J. Y. Liu, I. Kulaots, D. Geohegan, A. Kane, A. A. Puzetky, C. M. Rouleau, K. L. More, G. T. R. Palmore, and R. H. Hurt, "Antioxidant Deactivation on Graphenic Nanocarbon Surfaces," *Small* **7**(19), 2775 (2011).
- R. J. H. Morris, S. Fearn, J. Perkins, J. Kilner, M. G. Dowsett, M. D. Biegalski, and C. M. Rouleau, "The Use of Low-Energy Sims (Le-Sims) for Nanoscale Fuel Cell Material Development," *Surface and Interface Analysis* **43**(1-2), 635 (2011).
- Z. Z. Sun, K. Xiao, J. K. Keum, X. Yu, K. L. Hong, J. Browning, I. N. Ivanov, J. H. Chen, J. Alonzo, D. W. Li, B. G. Sumpter, E. A. Payzant, C. M. Rouleau, and D. B. Geohegan, "Ps-B-P3ht Copolymers as P3ht/Pcbm Interfacial Compatibilizers for High Efficiency Photovoltaics," *Advanced Materials* **23**(46), 5529 (2011).
- J. R. Whitney, S. Sarkar, J. F. Zhang, D. Thao, T. Young, M. K. Manson, T. A. Campbell, A. A. Puzetky, C. M. Rouleau, K. L. More, D. B. Geohegan, C. G. Rylander, H. C. Dorn, and M. N. Rylander, "Single Walled Carbon Nanohorns as Photothermal Cancer Agents," *Lasers in Surgery and Medicine* **43**(1), 43 (2011).
- X. A. Bai, K. More, C. M. Rouleau, and A. Rabiei, "Functionally Graded Hydroxyapatite Coatings Doped with Antibacterial Components," *Acta Biomaterialia* **6**(6), 2264 (2010).
- J. J. Jackson, A. A. Puzetky, K. L. More, C. M. Rouleau, G. Eres, and D. B. Geohegan, "Pulsed Growth of Vertically Aligned Nanotube Arrays with Variable Density," *Acs Nano* **4**(12), 7573 (2010).
- J. M. Perkins, S. Fearn, S. N. Cook, R. Srinivasan, C. M. Rouleau, H. M. Christen, G. D. West, R. J. H. Morris, H. L. Fraser, S. J. Skinner, J. A. Kilner, and D. W. McComb, "Anomalous Oxidation States in Multilayers for Fuel Cell Applications," *Advanced Functional Materials* **20**(16), 2664 (2010).
- A. A. Puzetky, D. B. Geohegan, and C. M. Rouleau, "Narrow and Intense Resonances in the Low-Frequency Region of Surface-Enhanced Raman Spectra of Single-Wall Carbon Nanotubes," *Physical Review B* **82**(24) (2010).
- J. F. Zhang, J. C. Ge, M. D. Shultz, E. N. Chung, G. Singh, C. Y. Shu, P. P. Fatouros, S. C. Henderson, F. D. Corwin, D. B. Geohegan, A. A. Puzetky, C. M. Rouleau, K. More, C. Rylander, M. N. Rylander, H. W. Gibson, and H. C. Dorn, "In Vitro and in Vivo Studies of Single-Walled Carbon Nanohorns with Encapsulated Metallofullerenes and Exohedrally Functionalized Quantum Dots," *Nano Letters* **10**(8), 2843 (2010).
- G. Eres, C. M. Rouleau, M. Yoon, A. A. Puzetky, J. J. Jackson, and D. B. Geohegan, "Model for Self-Assembly of Carbon Nanotubes from Acetylene Based on Real-Time Studies of Vertically Aligned Growth Kinetics," *Journal of Physical Chemistry C* **113**(35), 15484 (2009).
- H. M. Christen, D. H. Kim, H. N. Lee, M. D. Biegalski, and C. M. Rouleau, "Inor 418-Modifying the Properties of Perovskites Via Strain and Interfacial Effects in Epitaxial Heterostructures," *Abstracts of Papers of the American Chemical Society* **235** (2008).
- H. M. Christen, D. H. Kim, C. M. Rouleau, "Interfaces in Perovskite Heterostructures," *Applied Physics a-Materials Science & Processing* **93**(3), 807 (2008).
- Z. Liu, D. J. Styers-Barnett, A. A. Puzetky, C. M. Rouleau, D. Yuan, I. N. Ivanov, K. Xiao, J. Liu, and D. B. Geohegan, "Pulsed Laser Cvd Investigations of Single-Wall Carbon Nanotube Growth Dynamics," *Applied Physics a-Materials Science & Processing* **93**(4), 987 (2008).
- A. A. Puzetky, G. Eres, C. M. Rouleau, I. N. Ivanov, and D. B. Geohegan, "Real-Time Imaging of Vertically Aligned Carbon Nanotube Array Growth Kinetics," *Nanotechnology* **19**(5) (2008).
- A. A. Puzetky, D. J. Styers-Barnett, C. M. Rouleau, H. Hu, B. Zhao, I. N. Ivanov, and D. B. Geohegan, "Cumulative and Continuous Laser Vaporization Synthesis of Single Wall Carbon Nanotubes and Nanohorns," *Applied Physics a-Materials Science & Processing* **93**(4), 849 (2008).
- C. M. Rouleau, G. Eres, H. Cui, H. M. Christen, A. A. Puzetky, and D. B. Geohegan, "Altering the Catalytic Activity of Thin Metal Catalyst Films for Controlled Growth of Chemical Vapor Deposited Vertically Aligned Carbon Nanotube Arrays," *Applied Physics a-Materials Science & Processing* **93**(4), 1005 (2008).
- D. B. Geohegan, A. A. Puzetky, D. Styers-Barnett, H. Hu, B. Zhao, H. Cui, C. M. Rouleau, G. Eres, J. J. Jackson, R. F. Wood, S. Pannala, and J. C. Wells, "In Situ Time-Resolved Measurements of Carbon

- Nanotube and Nanohorn Growth," *Physica Status Solidi B-Basic Solid State Physics* **244**(11), 3944 (2007).
- B. Zhao, A. A. Puretzky, H. Hu, D. Styers-Barnett, I. Ivanov, C. M. Rouleau, and D. B. Geohegan, "Inor 1253-Purification of Single-Walled Carbon Nanotubes and Production of Conductive Bio Thin Film," *Abstracts of Papers of the American Chemical Society* **233**, 108 (2007).
- G. E. Jellison, D. E. Holcomb, J. D. Hunn, C. M. Rouleau, and G. W. Wright, "Generalized Ellipsometry in Unusual Configurations," *Applied Surface Science* **253**(1), 47 (2006).
- G. E. Jellison, J. D. Hunn, and C. M. Rouleau, "Normal-Incidence Generalized Ellipsometry Using the Two-Modulator Generalized Ellipsometry Microscope," *Applied Optics* **45**(22), 5479 (2006).
- J. Tischler, G. Eres, B. Larson, C. M. Rouleau, P. Zschack, D. H. Lowndes, "Nonequilibrium Interlayer Transport in Pulsed Laser Deposition," *Physical Review Letters* **96**, 226104 (2006).
- H. N. Lee, H. M. Christen, M. F. Chisholm, C. M. Rouleau, and D. H. Lowndes, "Strong Polarization Enhancement in Asymmetric Three-Component Ferroelectric Superlattices," *Nature* **433**(7024), 395 (2005).
- Z. W. Pan, S. Dai, C. M. Rouleau, and D. H. Lowndes, "Germanium-Catalyzed Growth of Zinc Oxide Nanowires: A Semiconductor Catalyst for Nanowire Synthesis," *Angewandte Chemie-International Edition* **44**(2), 274 (2005).
- H. M. Christen, D. F. Lee, F. A. List, S. W. Cook, K. J. Leonard, L. Heatherly, P. M. Martin, M. Paranthaman, A. Goyal, and C. M. Rouleau, "Pulsed Electron Deposition of Fluorine-Based Precursors for Yba2cu3o7-X-Coated Conductors," *Superconductor Science & Technology* **18**(9), 1168 (2005).
- H. M. Christen, I. Ohkubo, C. M. Rouleau, G. E. Jellison, A. A. Puretzky, D. B. Geohegan, and D. H. Lowndes, "A Laser-Deposition Approach to Compositional-Spread Discovery of Materials on Conventional Sample Sizes," *Measurement Science & Technology* **16**(1), 21 (2005).
- G. E. Jellison, C. M. Rouleau, "Determination of Optical Birefringence by Using Off-Axis Transmission Ellipsometry," *Applied Optics* **44**(16), 3153 (2005).
- I. Kosacki, C. M. Rouleau, P. F. Becher, J. Bentley, D. H. Lowndes, "Nanoscale Effects on the Ionic Conductivity in Highly Textured Ysz Thin Films," *Solid State Ionics* **176**(13-14), 1319 (2005).
- D. F. Lee, H. M. Christen, F. A. List, L. Heatherly, K. J. Leonard, C. M. Rouleau, S. W. Cook, P. M. Martin, M. Paranthaman, and A. Goyal, "R&D of Rabbits-Based Coated Conductors: Conversion of Ex Situ Ybco Superconductor Using a Novel Pulsed Electron-Beam Deposited Precursor," *Physica C-Superconductivity and Its Applications* **426**, 878 (2005).
- I. Kosacki, C. M. Rouleau, P. F. Becher, J. Bentley, and D. H. Lowndes, "Surface Interface-Related Conductivity in Nanometer Thick Ysz Films," *Electrochemical and Solid State Letters* **7**(12), A459 (2004).
- H. N. Lee, H. M. Christen, M. F. Chisholm, C. M. Rouleau, and D. H. Lowndes, "Thermal Stability of Epitaxial Srro3 Films as a Function of Oxygen Pressure," *Applied Physics Letters* **84**(20), 4107 (2004).
- H. N. Lee, H. M. Christen, C. M. Rouleau, S. Senz, S. K. Lee, D. Hesse, and D. H. Lowndes, "Compositionally Asymmetric Tri-Color Superlattices Grown by Pulsed Laser Deposition," *Ferroelectric Thin Films Xii* **784**, 127 (2004).
- I. Ohkubo, H. M. Christen, S. V. Kalinin, G. E. Jellison, C. M. Rouleau, and D. H. Lowndes, "High-Throughput Growth Temperature Optimization of Ferroelectric Srxba1-Xnb2o6 Epitaxial Thin Films Using a Temperature Gradient Method," *Applied Physics Letters* **84**(8), 1350 (2004).
- I. Ohkubo, H. M. Christen, P. Khalifah, S. Sathyamurthy, H. Y. Zhai, C. M. Rouleau, D. G. Mandrus, and D. H. Lowndes, "Continuous Composition-Spread Thin Films of Transition Metal Oxides by Pulsed-Laser Deposition," *Applied Surface Science* **223**(1-3), 35 (2004).
- C. Cantoni, D. K. Christen, A. Goyal, L. Heatherly, F. A. List, G. W. Ownby, D. M. Zehner, H. M. Christen, and C. M. Rouleau, "Growth of Oxide Seed Layers on Ni and Other Technologically Interesting Metal Substrates: Issues Related to Formation and Control of Sulfur Superstructures for Texture Optimization," *Ieee Transactions on Applied Superconductivity* **13**(2), 2646 (2003).

- H. M. Christen, C. M. Rouleau, I. Ohkubo, H. Y. Zhai, H. N. Lee, S. Sathyamurthy, and D. H. Lowndes, "An Improved Continuous Compositional-Spread Technique Based on Pulsed-Laser Deposition and Applicable to Large Substrate Areas," *Review of Scientific Instruments* **74**(9), 4058 (2003).
- G. E. Jellison, S. P. Withrow, S. Jaiswal, C. M. Rouleau, R. T. Simpson, C. W. White, and C. O. Griffiths, "Spectroscopic Ellipsometry Studies of Nanocrystalline Silicon in Thin-Film Silicon Dioxide," *Quantum Confined Semiconductor Nanostructures* **737**, 259 (2003).
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