Biographical Informations

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Education:

1981–1987	Undergraduate and Graduate Studies in Physics, Universität Stuttgart, Germany
1988	Diploma in physics (with distinction)
1988 – 1992	Graduate Studies, University of Utah, Salt Lake City, Utah (USA)
1992	Ph.D. in physics, University of Utah, Salt Lake City, Utah (USA)

Professional Experience:

1988 – 1992	Research Assistant , University of Utah, Salt Lake City, Utah (USA)
1992 – 1996	Postdoctoral Research Associate, University of Utah, Salt Lake City, Utah
1995 – 1996	DFG- Research Fellowship, Universität Paderborn, Germany
1996 – 2000	Research Scientist, group leader, “Optical Spectroscopy of $LiNbO_3$ waveguides”, with teaching responsibilities (roughly equivalent to a Assistant Professor) Physics Dept. Universität Paderborn
2001.	Habilitation in Experimental Physics, Universität Paderborn
2000-2008	Associate Professor, Lehigh University, Bethlehem, USA (tenured 2006)
since 2008	Professor of Physics, Lehigh University, Bethlehem,
since 2008	Professor of Materials Science and Eng. Lehigh University, Bethlehem,
2008-2009	Mercator Visiting Professor, Physics Dept., University Bonn, Germany
since July 2009	Chair, Department of Physics, Lehigh University Bethlehem
since July 2014	University Distinguished Professor

Honors and Awards

July 2014	Senior Member of OSA
June 2008 (DFG)	Mercator Visiting Professor Award of the German Science Foundation
May 2007	Lehigh University Joseph F. Libsch Early Career Research Award, which honors faculty members who are early in their research career and who have demonstrated the potential for high-quality research and scholarship
June 2001	Appointment as a Private Lecture, Experimental Physics, Physics Department, Universität Paderborn
1995	DFG Post-Doctorial Research fellowship
1994	Teaching Assistant of the Year, Physics Department, University of Utah
1992	Research Assistant of the Year, Physics Department, University of Utah

Editorships

★ Editorial Board Member, SGRE Smart Grid and Renewable Energy, since 2010

★ Principal Editor for the Journal of Materials Research (2004-2009)

★ Guest Editor. Special issue of Optical Materials. 2011

★ Editor, Topics in Applied Physics: Rare-Earth Doped III-Nitrides for Optoelectronic and Spintronic Applications, (Springer-Verlag, Berlin, Heidelberg, New York, 2010).

★ Editor, Proceedings of Symposium of MRS meeting, Fall 2008, Spring 2011,

Research and Scholarship

Recent Publications (since 2000) out of > 150 total

1) Books and Book Chapters

1. *Rare-Earth Doping of Advanced Materials for Photonics Applications,* MRS Symposium Proceedings, Volume 1342 (Editors: **V. Dierolf**, Y. Fujiwara, T. Gregoriewicz, W. M. Jadwisienczak., Cambridge University Press, New York, 2011).

2. Light Aided Domain Patterning and Rare Earth Emission Based Imaging of Ferroelectric Domains, V Dierolf, C Sandmann, Chapter 6 (pg. 135-162) in Ferroelectric Crystals for Photonic Applications, Springer Series in Materials Science Volume 91, 2nd edition revised edition, edited by P. Ferraro, S. Grilli, and P. De Natale, Springer-Verlag, Berlin, Heidelberg, New York, 2014).

3. Site Selective Spectroscopy of rare earth ions in gallium nitride based materials. Chapter 8 in *Rare-Earth Doped III-Nitrides for Optoelectronic and Spintronic Applications,* (ed. K.P. O'Donnell, **V. Dierolf** Springer-Verlag, Berlin, Heidelberg, New York, 2010).

4. *Rare-Earth Doping of Advanced Materials for Photonics Applications,* MRS Symposium Proceedings, Volume 1111(Editors: **V. Dierolf**, Y. Fujiwara, U. Hommerich, P. Ruterana, J. Zavada, Warrendale, PA, 2009).

5. *Light aided domain patterning and rare earth emission based imaging of ferroelectric domains*, Chapter 6 in Micro/nano engineering and characterization of ferroelectric crystals for applications in photonics (edited by P. Ferraro, S. Grilli, and P. De Natale, Springer-Verlag, Berlin, Heidelberg, New York, 2009).

6. *Ferroelectric Materials,* Chapter 6 in *The Handbook of Photonics,* 2nd edition edited by Mool C. Gupta, John Ballato. *CRC-Press, 2007.*

7. *Electronic Defect States and Molecular Ions in Alkali Halides,* Monograph, Springer Tracts in Modern Physics, **185** (Springer-Verlag, Berlin, Heidelberg, New York, 2003).

8. Routine Haematological Tests, Chapter 10 in Medical Laboratory Technology (Volume I), (ed. K. Mukherjee and S. Ghosh, McGrawHill, 2010)

2) Peer Reviewed Publications (>150 since 2000)

Journals

1. Direct laser-writing of ferroelectric single-crystal waveguide architectures in glass for 3D integrated optics, Adam Stone, Himanshu Jain, Volkmar Dierolf, Masaaki Sakakura, Yasuhiko Shimotsuma, Kiyotaka Miura, Kazuyuki Hirao, Jerome Lapointe & Raman Kashyap, Scientific Reports 5, Article number: 10391 (2015)

2. Laser-induced growth of oriented Sb2S3 single crystal dots on the surface of 82SbSI–18Sb2S3 glasses, D. Savytskii, B. Knorr, V. Dierolf, H. Jain, Journal of Non-Crystalline Solids 2015

3. Thermodynamics and Kinetics of Three Mg− H− V N Complexes in Mg: GaN from Combined First-Principles Calculation and Experiment, D Lee, B Mitchell, Y Fujiwara, V Dierolf, Physical Review Letters 112 (20), 205501 (2014).

4. Present understanding of Eu luminescent centers in Eu-doped GaN grown by organometallic vapor phase epitaxy, Y Fujiwara, V Dierolf, Japanese Journal of Applied Physics 53 (5S1), 05FA13 (2014)

5. Formation of Ferroelectric Phases in Sb–S–I Glasses, D Savytskii, K Atwater, V Dierolf, H Jain. Journal of the American Ceramic Society 97 (11), 3458-3462 (2014).

6. The role of donor-acceptor pairs in the excitation of Eu-ions in GaN: Eu epitaxial layers, B Mitchell, J Poplawsky, D Lee, A Koizumi, Y Fujiwara, V Dierolf, Journal of Applied Physics 115 (20), 204501 (2014).

7. Spectroscopic properties of Sm3+-doped lanthanum borogermanate glass, R. Rajaramakrishna, Brian Knorr, Volkmar Dierolf, R.V. Anavekara, H. Jain, J Lumin. Vol. 156, 192 (2014).

8. Crystallization of Stoichiometric SbSI Glass, D Savytskii, M Sanders, R Golovchak, B Knorr, V Dierolf, H Jain, Journal of the American Ceramic Society 97, (1), pages 198–205, (2014).

9. Defect roles in the excitation of Eu ions in Eu: GaN, JD Poplawsky, A Nishikawa, Y Fujiwara, V Dierolf, Optics Express 21 (25), 30633-30641 (2013).

10. Vibrationally induced center reconfiguration in co-doped GaN: Eu, Mg epitaxial layers: Local hydrogen migration vs. activation of non-radiative channels, B Mitchell, D Lee, Y Fujiwara, V Dierolf Applied Physics Letters 103 (24), 242105 (2013).

11. Electron-beam-induced migration of hydrogen in Mg-doped GaN using Eu as a probe, B Mitchell, D Lee, A Koizumi, J Poplawsky, Y Fujiwara, V Dierolf, Physical Review B 88 (12), 121202 (2013).

12. Challenges of CW laser-induced crystallization in a chalcogenide glass, D Savytskii, B Knorr, V Dierolf, H Jain, Optical Materials Express 3 (8), 1026-103 (2013).

13. Luminescence properties of Eu-doped GaN under resonant excitation and quantitative evaluation of luminescent sites, R Wakamatsu, D Lee, A Koizumi, V Dierolf, Y Fujiwara, Journal of Applied Physics 114 (4), 043501 (2013).

14. Luminescence Properties of Eu-Doped GaN Grown on GaN Substrate, R Wakamatsu, D Lee, A Koizumi, V Dierolf, Y Terai, Y Fujiwara, Japanese Journal of Applied Physics 52 (8), 08JM03 (2013).

15. Multilayer aberration correction for depth-independent three-dimensional crystal growth in glass by femtosecond laser heating, A Stone, H Jain, V Dierolf, M Sakakura, Y Shimotsuma, K Miura, K Hirao, JOSA B 30 (5), 1234-1240 (2013).

16. Effect of thermal annealing on luminescence properties of Eu, Mg-codoped GaN grown by organometallic vapor phase epitaxy, D Lee, R Wakamatsu, A Koizumi, Y Terai, JD Poplawsky, V Dierolf, Y Fujiwara, Applied Physics Letters 102 (14), 141904-141904-4 (2013).

17. Formation of laser-induced SbSI single crystal architecture in Sb–S–I glasses, D Savytskii, B Knorr, V Dierolf, H Jain, Journal of Non-Crystalline Solids (2013).

18. Local probing of the interaction between intrinsic defects and ferroelectric domain walls in lithium niobate, G Stone, D Lee, H Xu, SR Phillpot, V Dierolf, Applied Physics Letters 102 (4), 042905-042905-4 (2013).

19. Crystal field and Zeeman splittings for energy levels of Nd^{3+} in hexagonal AlN, J. B. Gruber, G. W. Burdick, U. Vetter, B. Mitchell, V. Dierolf, and H. Hofsäss., Optical Materials Express, **2** 1176 (2012)

20. Influence of ferroelectric domain walls on the Raman scattering process in lithium tantalate and niobate, G. Stone and V. Dierolf, Optics Letters, **37**, 1032 (2012).

21. High-Resolution Confocal Microscopy with Simultaneous Electron and Laser Beam Irradiation., J. Poplawsky, and V. Dierolf. Microscopy and Microanalysis, **18**, 1263 (2012).

22. Frequency shift of Raman modes due to an applied electric field and domain inversion in LiNbO3, G Stone, B Knorr, V Gopalan, V Dierolf. Physical Review B 84 (13), 134303 (2011).

23. Enhanced magnetization in erbium doped GaN thin films due to strain induced electric fields. NT Woodward, N Nepal, B Mitchell, IW Feng, J Li, HX Jiang, JY Lin, JM Zavada, V. Dierolf, Appl. Phys. Lett. 99, 122506 (2011).

24. Al nanogrid electrode for ultraviolet detectors, G Ding, J Deng, L Zhou, Q Gan, JCM Hwang, V Dierolf, FJ Bartoli, C Mazuir, WV Schoenfeld, Optics Letters 36 (18), 3663-3665, (2011)

25. Unexpected influence of focal depth on nucleation during femtosecond laser crystallization of glass A Stone, M Sakakura, Y Shimotsuma, K Miura, K Hirao, V Dierolf, H Jain, Optical Materials Express 1 (5), 990-995 (2011)

26. Crystal-field analysis and Zeeman splittings of energy levels of Nd3+ (4f3) in GaN, JB Gruber, GW Burdick, NT Woodward, V Dierolf, S Chandra, DK Sardar, Journal of Applied Physics 110, 043109 (2011).

27. Laser fabrication of semiconducting ferroelectric single crystal SbSI features on chalcohalide glass, P Gupta, A Stone, N Woodward, V Dierolf, H Jain, Optical Materials Express 1 (4), 652-657 (2011).

28. Approaches for high internal quantum efficiency green InGaN light-emitting diodes with large overlap quantum wells, H Zhao, G Liu, J Zhang, JD Poplawsky, V Dierolf, N Tansu, Optics Express 19 (104), A991-A1007, 13 (2011)

29. Optical and magneto-optical properties of erbium doped InGaN and GaN epilayers, N Woodward, V Dierolf, JY Lin, HX Jiang, JM Zavada, Optical Materials 33 (7), 1059-1062, (2011)

30. Site and sample dependent electron–phonon coupling of Eu ions in epitaxial-grown GaN layers, N Woodward, A Nishikawa, Y Fujiwara, V Dierolf, Optical Materials 33 (7), 1050-1054, (2011)

31. Near-infrared photoluminescence properties of neodymium in in situ doped AlN grown using plasma-assisted molecular beam epitaxy, GD Metcalfe, ED Readinger, R Enck, H Shen, M Wraback, NT Woodward, J.Poplawsky, V. Dierolf, Optical Materials Express 1 (1), 78-84 (2011).

32. Shape of ferroelectric domains in LiNbO3 and LiTaO3 from defect/domain-wall interactions, D Lee, H Xu, V Dierolf, V Gopalan, SR Phillpot, Applied Physics Letters 98, 092903 (2011).

33. Microscopic structure and energy transfer of vacancy-related defect pairs with Erbium in wide-gap semiconductors. A Konopka, S Greulich-Weber, V Dierolf, HX Jiang, U Gerstmann, E Rauls, S. Sanna,W.G. Schmidt, Optical Materials 33 (7)1041-1044 (2011).

34. Excitation of Eu in gallium nitride epitaxial layers: Majority versus trap defect center, N Woodward, J Poplawsky, B Mitchell, A Nishikawa, Y Fujiwara, V Dierolf, Applied Physics Letters 98, 011102 (2011).

35. Formation of ferroelectric single-crystal architectures in LaBGeO5 glass by femtosecond vs. continuous-wave lasers, A. Stone, M. Sakakura, Y. Shimotsuma, G. Stone, P. Gupta, K. Miura, K. Hirao, V. Dierolf, H. Jain, Journal of Non-Crystalline Solids 356 (2010) 3059–3065.

36. Stability and charge transfer levels of extrinsic defects in $LiNbO_3$, H.Xu ,A. Chernatynskiy, D.Lee, S.B. Sinnott, V. Gopalan, V. Dierolf, and S. R. Phillpot, Phys, Rev. B 82, 184109 (2010).

37. Interactions of Defects and Domain Walls in $LiNbO_3$ – Insights from Simulations, H. Xu, D. Lee, S. B Sinnott, V. Gopalan, V. Dierolf and S. R Phillpot, IOP Conf. Series: Materials Science and Engineering 15 (2010) (invited paper) 012003.

38. Influence of heat and UV light on the coercive field of lithium niobate crystals, H. Steigerwald, F. von Cube, F. Luedtke , V. Dierolf, K. Buse, Appl Phys B 101,535–539 (2010).

39. Structure and energetics of ferroelectric domain walls in $LiNbO_3$ from atomic-level simulations, D. Lee H. Xu V. Dierolf, V. Gopalan and S. R. Phillpot, Phys. Rev. B **82**, 014104 2010.

40. Structure and diffusion of intrinsic defect complexes in LiNbO3 from density functional theory calculations, H. Xu, D. Lee, S. B Sinnott, V. Dierolf, V. Gopalan. and S. R Phillpot, J. Phys.: Condens. Matter 22 (2010) 135002.

41. Site Selective Spectroscopy on Erbium Ions in Stoichiometric Lithium Tantalate, K. Miyahara, A. Toulouse, N. Woodward, P. Capek, and V. Dierolf, Journal of Physics: Conference Series 249 (2010) 012011.

42. Crystal-field split levels of Nd3+ ions in GaN measured by luminescence spectroscopy, Grace D. Metcalfe, Eric D. Readinger, H. Shen, N. T. Woodward, V. Dierolf, and Michael Wraback, J.Appl. Phys. 105, 053101 (2009).

43. *Excitation pathways and efficiency of Eu ions in GaN by site-selective spectroscopy*, Z. Fleischman, C. Munasinghe, A. J. Steckl, A. Wakahara, J. Zavada and **V. Dierolf**, Appl Phys B **97** 607 (2009).

44. *Growths of staggered InGaN quantum wells light-emitting diodes emitting at 520-525 nm employing graded growth-temperature profile,* H. Zhao, G. Liu, X. Li, G. S. Huang, J. D. Poplawsky, S. Tafon Penn, **V. Dierolf**, and N.Tansu, Appl. Phys. Lett. 95, 061104 (2009).

45. *Direct near-field optical imaging of UV bowtie nanoantennas*, L. Zhou, Q. Gan, F. J. Bartoli, **V. Dierolf**, Optics Express, **17** 20301 (2009).

46. *Directionally controlled 3D ferroelectric single crystal growth in $LaBGeO_5$ glass by femtosecond laser irradiation*, A. Stone, M. Sakakura, Y. Shimotsuma, G. Stone, P. Gupta, K. Miura, K. Hirao, **V. Dierolf**, H. Jain, Optics Express, **17,** 23284 (2009).

47. *Direct mapping of the UV surface plasmons* Q. Gan, L.Zhou,**V. Dierol**f, F.J.Bartoli, Optics Letters, **34**, 1324-1326 (2009).

48. *Design and characteristics of staggered InGaN quantum-well light-emitting diodes in the green spectral regime*, H Zhao, G Liu, X Li, R Arif, G Huang, J Poplawsky, S Tafon Penn, **V. Dierolf**, N. Tansu, Optoelectronics, **3,** 283 (2009).

49. *UV Plasmonic Structures: Direct Observations of UV Extraordinary Optical Transmission and Localized Field Enhancement Through Nanoslits,* Q. Gan, L. Zhou, **V. Dierolf**, F. Bartoli, Photonics Journal, **1**, 245 (2009).

50. *Structure and energetics of Er defects in $LiNbO_3$ from first-principles and thermodynamic calculations*, H. Xu, D. Lee, S. B Sinnott, V. Gopalan, **V. Dierolf**, S.R Phillpot, Phys Rev B **80,** 144104 (2009).

51. *Continuous-wave optical parametric terahertz source,* R. Sowade, I. Breunig, I. C. Mayorga, J. Kiessling, C. Tulea, **V. Dierolf,** and K. Buse, Optics Express **17**,22304 (2009).

52. *Energy levels of Nd^{3+} ions in GaN,* G. D. Metcalfe. E. D. Readinger, H Shen, N. Woodward, **V. Dierolf**, M. Wraback, physica status solidi (c) **6,** 671 (2009).

53. *Cascaded optical parametric oscillations generating tunable terahertz waves in periodically poled lithium niobate crystals,* J. Kiessling, R. Sowade, I. Breunig, and K. Buse, **V. Dierolf**, Optics Express, **17,** 87 (2009).

54. *Stability of intrinsic defects and defect clusters in $LiNbO_3$ from density functional theory calculations,* H. Xu, D. Lee, J. He, S. B Sinnott, V. Gopalan, **V. Dierolf** and S, R Phillpot, Phys. Rev. **B 78**, 174103 (2008).

55. *The influence of 180° ferroelectric domain wall width on the threshold field for wall motion,* S. Choudhury, Y. Li, N. Odagawa, A. Vasudevarao, L Tian, P. Capek, **V. Dierolf**, A. N Morozovska, E. A Eliseev, S. Kalinin, Y.Cho, L.-Q. Chen, V. Gopalan, J. Appl. Phys. **104** 084107 (2008)

56. *Three-dimensional grain boundary spectroscopy in transparent high power ceramic laser materials,* M. O Ramirez, J. Wisdom, H. Li, Y. Lin Aung, J. Stitt, G. L Messing, **V. Dierolf**, Z. Liu, A. Ikesue, R. L Byer, V. Gopalan, Opt. Express, 16, 5965 (2008).

57. *Site-specific excitation of Eu ions in GaN,* S. Tafon Penn , Z. Fleischman, and **V. Dierolf***,* physica status solidi A, **205,** 30-33 (2008).

58. *Defect-Domain Wall Interactions in Ferroelectrics,* V. Gopalan, **V. Dierolf**, and D. Scrymgeour*,* Annual Reviews in Material Science **37,** 449-489, (2007)*,* invited review article

59. *Analytical Description of Birefringence Statistics in Randomly Concatenated Single-Mode Fiber Systems,* M. Yoshida-Dierolf, **V. Dierolf**, Journal Optical Communication 28 (2) 112-122 (2007).

60. *Combined excitation emission spectroscopy of defects for site-selective probing of ferroelectric domain inversion in lithium niobate,* **V. Dierolf**, C. Sandmann, J. Luminescence 125, 67-79 (2007). (invited review article).

61. *Defect Based Real-Time Diagnostics of Ferroelectric Domain Wall Motion,* **V. Dierolf**, C. Sandmann, and P. Capek, phys. stat. sol. (a) 204, 690-94. (2007).

62. *Raman studies of ferroelectric domain walls in lithium tantalate and niobate,* P. Capek, G. Stone ,**V. Dierolf**, C.Althouse, and V. Gopalan, phys. stat. sol. (c)4, No. 3, 830–33 (2007).

63. *Identification of defect-trap-related europium sites in gallium nitride,* Z. Fleischman, P.S. Tafon, **V. Dierolf** , C. Munasinghe , and A.J. Steckl, phys. stat. sol. (c)4, No. 3, 834–37 (2007).

64. *Site-selective studies of erbium ion defects in thermally grown silicon oxides*, Z. Fleischman, **V. Dierolf** Z. Dong, Y. Zhang, M. White, R. Pafchek, M. Webster, and T. Koch, phys. stat. sol. (c)4, No. 3, 749–52 (2007).

65. *Role of Extrinsic Defects in Ferroelectric Domain Inversion of Lithium Niobate,* **V. Dierolf** and C. Sandmann, Ceramics Transactions, Vol. **196,** 143-53 (2006).

66. *Determination of birefringence configuration in Single-Mode Fiber Systems through Backscattering Signal Analysis*, M. Yoshida-Dierolf, **V. Dierolf**, J. Optical Communication, **26,** no 4, 171-7 (2005).

67. *Internal fluorescence induced refreshment of thermally fixed photorefractive grating in* $Ti:Fe:Er:LiNbO_3$, B.K. Das*, W.Sohler, and **V. Dierolf**, Electronics Letters **41,** no. 11, 646-7 (2005).

68. *Enhanced Room-Temperature Luminescence Efficiency Through Carrier Localization in* $Al_xGa_{1-x}N$ *Alloys,* C. J. Collins, A. V. Sampath, G. A. Garrett, W. L. Sarney, H. Shen, M. Wraback A. Yu. Nikiforov* and G. S. Cargill, III, and **V. Dierolf**, Appl. Phys. Lett.,**86**, 31916-8 (2005).

69. *The role of defects in light induced domain inversion in lithium niobate*, C. Sandmann*, **V. Dierolf**, Physica Status Solidi C **2,** 136 (2005).

70. *Direct –write method for domain inversion pattern in* $LiNbO_3$, **V. Dierolf** and C. Sandmann*, Appl. Phys. Lett. 84, 3987-9 (2004).

71. *Site-selective spectroscopy of Er in GaN*, **V. Dierolf,** C. Sandmann*, J. Zavada, P. Chow, B. Hertog, J. Appl. Phys. 95, 5464-70 (2004).

72. *Inspection of periodically poled waveguide devices by confocal luminescence microscopy*, **V. Dierolf**, C. Sandmann*, Appl. Phys. B 78, 363-6 (2004).

73. *Laser Writes Ferroelectric Domains in a Confocal Microscope*, C. Sandmann*, **V. Dierolf,** Photonics Spectra, August 2004, pg. 68-9 (invited).

74. *Ferroelectric domain patterns are directly written into lithium niobate*, **V. Dierolf**, News Breaks, Laser Focus World, July 2004, pg. 13 (invited).

75. *Rearrangement of rare earth defects under domain inversion in $LiNbO_3$,* V. Dierolf, C. Sandmann, V. Gopalan, S. Kim S, K. Polgar, Radiation Effects and Defects in solids **158** (1-6): 247-250.

76. *Ferroelectric domain imaging by defect luminescence microscopy*, **V. Dierolf**, C. Sandmann*, V. Gopalan, S. Kim, and K. Polgar, J. Appl. Phys. 93-7, 2295 (2003).

77. *Confocal two photon emission microscopy: A new approach to waveguide imaging*, **V. Dierolf** and C. Sandmann*, J of Lumin. 102-103, 201-5 (2003).

78. *Analytical Form of Frequency Dependence of DGD in Concatenated Single-Mode Fiber Systems*, M. Yoshida-Dierolf* and **V. Dierolf**, J. Lightwave Techn. 21, 2217-23 (2003).

79. *Characterization of new erbium-doped tellurite glasses and fiber*, S. Marjanovic, J. Toulouse, H. Jain, C. Sandmann*, **V. Dierolf**, N. Kopylov, A.R.Kortan and R.Ahrens, J. Non-Crystalline Solids 322, 311-18 (2003).

80. *Comparative studies of Er^{3+} ions in LiNbO3 waveguides produced by different method*, **V. Dierolf**, T. Morgus*, C. Sandmann*, E. Cantelar, F. Cusso, P. Capek, J. Spirkova, K. Polgar, W. Sohler, and A. Ostendorf Radiat. Eff. Defects Solids, 158, 263-7 (2003).

81. *Spectral line broadening mechanism of Er^{3+} transitions in Er:Ti:$LiNbO_3$ channel waveguides*, **V. Dierolf**, A.B. Kutsenko*, A. Ostendorf*, and C. Sandmann*, Applied Physics B 73, 443-8 (2001).

82. *Optical characterization of Cr^{3+} centers in $LiNbO_3$*, S.A. Basun, A.A. Kaplyanskii, A.B. Kutsenko, **V. Dierolf**, T. Tröster, S. E. Kapphan, and K. Polgar, Applied Physics B 73, 453-61(2001).

83. *Site-selective spectroscopy of Er^{3+}:Ti:$LiNbO_3$ waveguides*, **V. Dierolf**, A.B. Kutsenko*, A Ostendorf*, W. von der Osten, W. Sohler, and H. Suche, Applied Physics B 72, 803-10 (2001).

84. *Dominant Cr^{3+} centers in $LiNbO_3$ under hydrostatic pressure*, S.A. Basun, A.A. Kaplyanskii, A.B. Kutsenko*, **V. Dierolf**, Th. Tröster, S.E. Kapphan, and K. Polgar, Fizika Tverdogo Tela, 2001. 43(6): p. 1010-17, translated in Journal of Solid State 43, 1043-1050 (2001).

85. *Crystal field analysis of different Er^{3+} sites in $LiNbO_3$*, **V. Dierolf**, C. Sandmann, A.B. Kutsenko and Th. Tröster, Radiat. Eff. Defects Solids 155, 253-8 (2001).

86. *Double-resonance excitation-emission spectroscopy on Er:Ti:$LiNbO_3$ waveguides*, **V. Dierolf** and A. Ostendorf*, Radiat. Eff. Defects Solids 155, 211-15(2001).

87. *The fine structure of spectral response of Cr^{3+} sites in $LiNbO_3$*, **V. Dierolf**, A.A. Kaplyanskii, S. Kapphan, and A.B. Kutsenko*, Radiat. Eff. Defects Solids 155, 241-6 (2001).

88. *Magneto-optical studies of Er^{3+} in $LiNbO_3$,* G. Corradi, Th. Lingner, A.B. Kutsenko*, **V. Dierolf**, K. Polgar, J.-M. Spaeth, and W. von der Osten, Radiat. Eff. Defects Solids 155, 223-7 (2001).

89. *Combined excitation emission spectroscopy of Er^{3+} ions in stoichiometric $LiNbO_3$: The site-selectivity of direct and up-conversion excitation processes,* **V. Dierolf** and M. Koerdt, Phys. Rev. B 61, 8043-52 (2000).

90. *Optical properties of strongly coupled Yb^{2+} and CN^- ions in alkali halide crystals: Electronic absorption and emission*, C. P. An, **V. Dierolf**, and F. Luty, Phys. Rev. B 61, 6565-73 (2000).

91. *High resolution site selective optical spectroscopy of rare earth and transition metal defects in insulators*, **V. Dierolf**, A.B. Kutsenko, C. Sandmann, Th. Tröster, and G. Corradi, J. Lumin. 87-89, 989-91 (2000).

Proceedings

92. Characterization of diced ridge waveguides in pure and Er-doped lithium-niobate-on-insulator (LNOI) substrates, CE Rüter, S Suntsov, D Kip, G Stone, V Dierolf, H Hu, W Sohler, SPIE OPTO, 89821G-89821G-8

93. Probing Laser Induced Space Charge Fields with Rare Earth Dopants Volkmar Dierolf, Greg Stone and Hosannah Odhner, Mater. Res. Soc. Symp. Proc. Vol. 1592 10.1557/opl.2013. (2014).

94. The Influence of Strain Induced Electric Fields on Magnetization in Erbium doped GaN thin films, N. T. Woodward, B. Mitchell, I. W. Feng, J. Li, H. X. Jiang, J. Y. Lin, J. M. Zavada, and V. Dierolf, extended abstract for NSF-Workshop:US-Japan Frontiers in Novel Photonic-Magnetic Devices Kasugano-so, Nara, Japan, September 20-23, 2013.

95. Local-structure Dependent Energy Transfer from the Host to Eu Ions in Eu-doped GaN, Y. Fujiwara, R. Wakamatsu, D. Lee, V. Dierolf, and A. Koizumi, extended abstract for NSF-Workshop:US-Japan Frontiers in Novel Photonic-Magnetic Devices Kasugano-so, Nara, Japan, September 20-23, 2013.

96. First-principle Investigation on Electron Induced Hydrogen Migration in Eu/Mg Co-doped GaN, Donghwa Lee, Brandon Mitchell, and V. Dierolf, extended abstract for NSF-Workshop:US-Japan Frontiers in Novel Photonic-Magnetic Devices Kasugano-so, Nara, Japan, September 20-23, 2013.

97. Discrepancies in the Optical and Magneto-Optical Spectra of Eu:GaN: What is the Nature of the Majority Site, B. Mitchell, Y. Fujiwara, and V. Dierolf, extended abstract for NSF-Workshop:US-Japan Frontiers in Novel Photonic-Magnetic Devices Kasugano-so, Nara, Japan, September 20-23, 2013

98. *Defect and Strain Engineering of Rare Doped Nitride Materials*, Volkmar Dierolf; extended abstract JSAP-MRS Joint Symposium, Kyoto, Sept. 2013.

99. *Distribution of luminescent sites in Eu-doped GaN grown on GaN and sapphire substrates by organometallic vapor phase epitaxy,* Ryuta Wakamatsu, Dong-gun Lee, Atsushi Koizumi, Volkmar Dierolf and Yasufumi Fujiwara; extended abstract JSAP-MRS Joint Symposium, Kyoto, Sept. 2013.

100. *Modification of Eu Incorporation Sites Induced by Electron Beam Irradiation in Eu and Mg co-doped GaN*, Brandon Mitchell, D Lee, R Wakamatsu, A Koizumi, Yasufumi Fujiwara and Volkmar Dierolf, extended abstract JSAP-MRS Joint Symposium, Kyoto, Sept. 2013

101. *First-principle investigation on electron induced hydrogen migration in Eu/Mg codoped GaN*, Donghwa Lee, Brandon Mitchell and Volkmar Dierolf; extended abstract JSAP-MRS Joint Symposium, Kyoto, Sept. 2013.

102. *Spectroscopic Study of Erbium Doped Crystal-in-Glass Architectures*, Brian Knorr, Adam Stone, Himanshu Jain and Volkmar Dierolf; extended abstract JSAP-MRS Joint Symposium, Kyoto, Sept. 2013.

103. *Dissociation Of Hydrogen Defect Complexes In Mg and Eu Co-Doped Gallium Nitride*, B. Mitchell, J. Poplawsky, Y. Fujiwara, and V. Dierolf, CE1-4 Proceedings CLEOEurope Munich, May 2013.

104. *Fluorescence in Planar and RidgeWaveguides Fabricated in Erbium-Doped Lithium-Niobate-On-Insulator (Er:LNOI)*, C.E. Rüter, D. Kip, G. Stone, V. Dierolf, H. Hu, and W. Sohler, CK-P 8, Proceedings CLEOEurope Munich, May 2013.

105. *Nonlinear-optical response and Raman signals of nanocrystalline lithium niobate*, B. Knabe, K. Buse, G. Stone, and V. Dierolf, CD-P35, Proceedings CLEOEurope Munich, May 2013.

106. *Investigation of Eu3+ emission centers in Eu-doped ZnO by combined excitation emission spectroscopy*, T.Tsuji, Y. Terai, W. Miao, V. Dierolf, and Y. Fujiwara, Extended Abstract for JSAP Fall meeting 2012.

107. *Luminescence properties of Eu-doped GaN grown on GaN substrate*, R. Wakamatsu, D. Lee, A. Koizumi, V. Dierolf, Y. Terai and Y. Fujiwara, Extended Abstract for JSAP Fall meeting 2012.

108. *Role of hydrogen on Eu-Mg optical centers in GaN:Eu,Mg D.Lee, R. Wakamatsu, A. Koizumi, Y. Terai, V. Dierolf, and Y. Fujiwara*, Extended Abstract for JSAP Fall meeting 2012.

109. MOCVD growth and temperature-dependent electroluminescence of staggered InGaN quantum wells light-emitting diodes, G Liu, JD Poplawsky, J Zhang, V Dierolf, H Zhao, N Tansu, Proceedings of SPIE 8278, 82780K (2012).

110. Optical and magneto-optical properties of neodymium and erbium doped gallium nitride epilayers N Woodward, HX Jiang, JY Lin, JM Zavada, E Readinger, V Dierolf, Lasers and Electro-Optics Europe (CLEO EUROPE/EQEC), Munich, 2011.

111. Domain Walls in lithium Niobate and Lithium Tantalate: Local Structure and Properties V Gopalan, V Dierolf, L Chen, S Phillpot, Lasers and Electro-Optics Europe (CLEO EUROPE/EQEC), Munich, 2011

112. Cathodoluminescence characteristics of linearly shaped staggered InGaN quantum wells light-emitting diodes, H. Zhao, J. Zhang, T. Toma, G. Liu, J. D. Poplawsky, V. Dierolf and N. Tansu, in Proc. of the SPIE Photonics West 2011, Gallium Nitride Materials and Devices VI, Paper 7939-4, San Francisco, CA, Jan 2011.

113. Intrinsic Defects Pinned at the Domain Wall in Lithium Niobate, G Stone, H Steigerwald, K Buse, W Sohler, V Gopalan, S Phillpot, V Dierolf, Lasers and Electro-Optics Europe (CLEO EUROPE/EQEC), Munich, 2011

114. Nature and Excitation Mechanism of the Emission-dominating Minority Eu-center in GaN Grown by Organometallic Vapor-phase Epitaxy, J Poplawsky, N Woodward, A Nishikawa, Y Fujiwara, V Dierolf, MRS Proceedings 1342 (1) pg 21 (2011).

115. Site Selective Magneto-Optical Studies of Eu Ions in Gallium Nitride, N. Woodward, A. Nishikawa, Y. Fujiwara, V. Dierolf, MRS Proceedings 1342 (1) pg 111 (2011).

116. Direct Observations of UV Extraordinary Optical Transmission and Localized field enhancement through Nanoslits, Q. Gan, L. Zhou, V. Dierolf, and F. J. Bartoli, Proceedings, CLEO/QELS 2010, JThE23.

117. "Cathodoluminescence Characteristics of Linearly-Shaped Staggered InGaN Quantum Wells Light-Emitting Diodes," H. Zhao, J. Zhang, T. Toma, G. Y. Liu, J. D. Poplawsky, V. Dierolf, and N. Tansu, in Proc. of the 23rd Annual Meeting of the IEEE Photonics Society, Paper WY4, Denver, CO, November 2010.

118. H. Zhao, J. Zhang, T. Toma, G. Liu, J. D. Poplawsky, V. Dierolf and N. Tansu, "MOCVD Growths of Linearly- Shaped Staggered InGaN Quantum Wells Light-Emitting Diodes at Green Spectral Regime," in Proc. of the SPIE Photonics West 2011, Gallium Nitride Materials and Devices VI, San Francisco, CA, January 2011

119. Excitation Pathways of Rare Earth Ions by Energetic Electrons V. Dierolf, S. Penn Tafon, Z. Fleischman, L. Maurer, in Rare-Earth Doping of Advanced Materials for Photonic Applications, edited by V. Dierolf, Y. Fujiwara, U. Hommerich, P. Ruterana, J. Zavada (Mater. Res. Soc. Symp. Proc. Volume 1111, Warrendale, PA, 2009), D03-09.

120. Combined Excitation Emission Spectroscopy Studies on Erbium Ions in Stoichiometric Lithium Tantalate, V. Dierolf, N. Woodward, K. Miyahara, A.Toulouse, P. Capek, in Rare-Earth Doping of Advanced Materials for Photonic Applications, edited by V. Dierolf, Y. Fujiwara, U. Hommerich, P. Ruterana, J. Zavada (Mater. Res. Soc. Symp. Proc. Volume 1111, Warrendale, PA, 2009), D07-09.

121. *GaN Doped with Neodymium by Plasma-Assisted Molecular Beam Epitaxy for Potential Lasing Applications*, E. Readinger, G. Metcalfe, H. Shen, N. Woodward, N. Jha, V. Dierolf, Michael Wraback in Rare-Earth Doping of Advanced Materials for Photonic Applications, edited by V. Dierolf, Y. Fujiwara, U. Hommerich, P. Ruterana, J. Zavada (Mater. Res. Soc. Symp. Proc. Volume 1111, Warrendale, PA, 2009), D02-04.

122. *Spatially Resolved Site Selective Optical Spectroscopy on Nd Doped GaN Epitaxial Layers*, **V. Dierolf**, N. Woodward, N. Jha, G. Metcalfe, E. Readinger, M. Wraback, in Rare-Earth Doping of Advanced Materials for Photonic Applications, edited by V. Dierolf, Y. Fujiwara, U. Hommerich, P. Ruterana, J. Zavada (Mater. Res. Soc. Symp. Proc. Volume 1111, Warrendale, PA, 2009), D02-06.

123. *UV extraordinary optical transmission through nanoslits*, Q. Gan, L. Zhou, **V. Dierolf**, F. Bartoli, LEOS Annual Meeting Conference Proceedings, 2009. LEOS '09. IEEE.

124. *Growths of staggered InGaN quantum wells light-emitting diodes emitting at 520–525 nm employing graded-temperature profile,* Hongping Zhao, Guangyu Liu, Xiaohang Li, G. Huang, S. Penn, **V. Dierolf**, N. Tansu, Lasers and Electro-Optics, 2009 and 2009 Conference on Quantum electronics and Laser Science Conference. CLEO/QELS 2009, June 2009.

125. *Raman enhancement across the domain wall in ferroelectric Lithium Niobate*,G Stone, **V Dierolf**, Proceedings of Lasers and Electro-Optics 2009 and the European Quantum Electronics Conference. CLEO Europe - EQEC 2009, June 2009.

126. *Direct UV near-field optical imaging of a metallic nano bowtie antenna,* L. Zhou, Q. Gan, F. Bartoli, **V. Dierolf**, in Conference on Lasers and Electro-Optics/International Quantum Electronics Conference, OSA Technical Digest (CD) (Optical Society of America, 2009), paper IMD2.

127. *Characteristics of staggered InGaN quantum wells light-emitting diodes emitting at 480–525 nm*, H Zhao and G Huang and G Liu and X Li and JD Poplawsky and S Penn and **V. Dierolf** and N. Tansu, Proceedings of Device Research Conference, 2009. DRC 2009.

128. *Observation of UV Surface Plasmon Interference*, Q Gan, L Zhou, V Dierolf, F Bartoli, in Conference on Lasers and Electro-Optics/International Quantum Electronics Conference, OSA Technical Digest (CD) (Optical Society of America, 2009), paper IFC2.

129. *Direct Mapping of UV Surface Plasmon Interference*, Q. Gan., L. Zhou, **V. Dierolf**, and F. J. Bartoli. Asia Communications and Photonics Conference and Exhibition (ACP) 2009 paper: TuD1

130. *Direct Mapping of UV Surface Plasmons Interference at the Al2O3/Al Surface*, Q. Gan*, L. Zhou, V. Dierolf, and Filbert J. Bartoli , in Proc. of the 20th IEEE Laser and Electro-Optics Society (LEOS) Annual Meeting 2008, post-deadline paper.

131. *Energy levels of Nd^{3+} ions in GaN*, G. D. Metcalfe, Eric D. Readinger, H. Shen, V. Dierolf, and M. Wraback, Proc. Int. Workshop on Nitride Semiconductor, Oct. 2008.

132. *Spontaneous Recombination Rate andLuminescence Efficiency of Staggered InGaN Quantum Wells Light Emitting Diodes*, R. A. Arif, H. Zhao, Y. K. Ee, S. T. Penn, V. Dierolf, and N. Tansu, "," in Proc. of the IEEE/OSA, Conference on Lasers and Electro-Optics (CLEO) 2008, paper CMAA2, San Jose, CA, May 2008.

133. *Physical and Optical Characterization of GaN Doped with Neodymium grown by Plasma-Assisted Molecular Beam Epitaxy,* Eric D. Readinger, Grace D. Chern-Metcalfe, Hongen Shen, Mark Wood, Michael Wrabacka, N. Jha, P. Capek, and Volkmar Dierolf, , Proc. of International Semiconductor Research Symposium, College Park,MD Dec 2007.

134. H. Li, J. T. Perkins, S. Dutta, H. M. Chan, R. P. Vinci, Y. K. Ee, R. A. Arif, N. Tansu, P. Capek, N. K. Jha, and V. Dierolf, *"Sapphire Nano-Patterning and GaN Nano-Heteroepitaxy,"* in Proc. of the MRS Fall Meeting 2007: Symposium I: Advances in III-V Nitride Semiconductor Materials and Devices, Boston, MA, USA, November-December 2007

135. I*mproved Photoluminescence of InGaN Quantum Wells Grown on Nano-Patterned AGOG Sapphire Substrate by Metalorganic Vapor Phase Epitaxy, Y. K. Ee, R. A. Arif, N. Tansu, H. Li, H. M. Chan, R. P. Vinci, P. Capek, N. K. Jha, and V. Dierolf,* "Improved Photoluminescence of InGaN Quantum Wells Grown on Nano-Patterned AGOG Sapphire Substrate by Metalorganic Vapor Phase Epitaxy,*"* in Proc. of the 20th IEEE Laser and Electro-Optics Society (LEOS) Annual Meeting 2007, Lake Buena Vista, FL, October 2007.

136. *Luminescence and Raman Based Real Time Imaging of Ferroelectric Domain Walls*
V. Dierolf, P. Capek, C Sandmann, MRS-Symp. Proc., Vol 966E (2007) 0966-T08-03

137. *Near field optical imaging of carrier localization in $Al_xGa_{1-x}N$ alloys*, **V. Dierolf**, P. Capek, L. Zhou, N. Jha, M. Wraback, A.V Sampath, CLEOEurope, Munich, 2007,

138. *The site selectivity of the E-beam excitation of Eu ion in GaN* , S. Tafon Penn, V. Dierolf, Z. Fleischman, CLEOEurope, Munich 2007.

139. Near Field Optical Spectroscopy Studies of Carrier Localization in $Al_xGa_{1-x}N$ Alloys, P.Capek, N. Jha, L. Zhou, **V. Dierolf,** A. V. Sampath, M. Wraback, CLEO, Baltimore, 2007.

140. *A Silicon-based Light Emitter,* Y. Zhang, Y. Zhao, I. Wildeson, M. H. White, Z. Fleischman, V. Dierolf, Proceedings of International Semiconductor Device Research Symposium 2005

141. *Combined Excitation Emission Spectroscopy of Europium Ions in GaN and AlGaN films*, **V. Dierolf,** Z. Fleischman*, C. Sandmann*, C. Munasinghe, A. Steckl, MRS-Symp. Proc., Vol 866 (2005) pg 67.

142. *Multistep resonant excitation of Erbium Ions in Thin Silicon Oxide Layers*,Z. Fleischman*, Chr. Sandmann, **V. Dierolf,** M. White, Y. Zhao, J. Michel, M.A. Stolfi, L. Dal Negro. MRS-Symp. Proc., Vol 866, pg. 25 (2005)

143. *Interrupted Growth Epitaxy: Thin Film Growth and Electroluminescent Devices*, C. Munasinghe, A. Steckl, Ei Ei Nyein, U. Hömmerich, H. Peng and H. Everitt, Z. Fleischman*, **V. Dierolf**, J. Zavada, MRS-Symp. Proc., Vol 866 pg 41 (2005).

144. I*n-situ Observation of Domain Wall Motion In Lithium Niobate Using Confocal Luminescence Microscopy,* C. Sandmann*, S. Tafon Penn*, and **V. Dierolf**, *Proceedings* ECIO 2005.

145. *Site Selective Spectroscopy of Eu-doped GaN*, **V. Dierolf,** Z. Fleischman*, and C. Sandmann*, C. Munasinghe and A. Steckl, CLEO Baltimore 2005.

146. *Real-time diagnostic of the defect-domain wall interaction in $LiNbO_3$ during domain inversion*, C. Sandmann*, S. Tafon Penn*, and **V. Dierolf**, Proceedings CLEO, Baltimore 2005.

147. *Combined Excitation Emission Spectroscopy of Eu-doped GaN,* **V. Dierolf,** Z. Fleischman*, and C. Sandmann*, Ch. Munasinghe and A. Steckl, Proceedings CLEOEurope Munich 2005.

148. *In-situ confocal luminescence microscopy study of lithium niobate during domain inversion*, C. Sandmann, S. Tafon Penn*, and **V. Dierolf**, Proceedings CLEOEurope Munich 2005

149. *High Efficiency Light Emission Through Carrier Localization In AlGaN Alloys And Active Regions: Toward Viable Ultraviolet Light Sources For The Objective Force Warrior,* M. Wraback, H. Shen, C.J. Collins, A.V. Sampath, G.A. Garrett, W.L. Sarney, A.Y. Nikiforov, G.S. Cargill, and **V. Dierolf**, Army Science Conference, Dec. 2004.

150. *Site selective spectroscopy of energy transfer processes in Er doped GaN*, **V. Dierolf**, C. Sandmann*, J.M. Zavada, P. Chow and B. Hertog, CLEO 2004.

151. *Comparison of Er absorption-emission properties in tellurite and ultra highly doped Al-silica fibers*, S. Marjanovic, J. Toulouse, C. Sandmann, Z. Fleischmann, **V. Dierolf**, M. F. Yan, V. S. Johnson, P. Wisk, A.R. Kortan, and N. Kopylov, CLEO2004.

152. *Light-induced direct-write patterning of inverted domains in $LiNbO_3$,* **V. Dierolf** and C. Sandmann, CLEO2004.

153. *Characterization of highly erbium-doped fibers using confocal luminescence microscopy*, **V. Dierolf**, T. Morgus*, Z. Fleischman*, Chr. Sandmann*, A. Claesson, W. Margulis, OFC 2004.

154. *Confocal Luminescence Microscopy: Application to Periodically Poled $LiNbO_3$ Devices*, **V. Dierolf**, C. Sandmann*, ECIO'03, Praha 2003, pg. 119.

155. *Erbium Incorporation and Optical Properties of Er^{3+} ions in APE Er:$LiNbO_3$ Waveguides*. P. Capek, J.Schrofel R. Groetzschel, **V. Dierolf,** C. Sandmann*, P. Nekvindov, J. Spirkova, P. Machac, , Proceedings. ECIO'03, Praha 2003, pg. 289.

156. *Study of Poled Lithium Niobate Waveguide Devices By Confocal Defect Spectroscopy*, V. Dierolf and Chr. Sandmann*, Proceedings, CLEOEurope2003, Munich, June 2003.

157. *Microscopy Studies of Lithium Niobate Waveguide Devices Using Spatially Dependent Fluorescence Line Narrowing*, **V. Dierolf,** C. Sandmann , Proceedings, HBSM 2003, Bozeman, Montana, July 2003.

158. *Confocal Photoluminescence and Cathodoluminescence in AlGaN*, **V. Dierolf**, O. Svitelskiy*, G. S. Cargill-III, A. Yu. Nikiforov*, J. Redwing, and J. Acord, MRS Symp. Proc. 798, Y5.64 (2003).

159. *Spectroscopic Characterization of Dominant Cr^{3+} Centers in $LiNbO_3$ crystals*, S.A., Basun, A.A. Kaplyanskii, A.B. Kutsenko, V. Dierolf, T. Tröster, S.E. Kapphan, and K. Polgar,. Proceedings of 10th European conference on Integrated Optics, 2001: pg. 321.

160. *High resolution optical spectroscopy on Er^{3+} ions in Ti:Er:$LiNbO_3$ waveguides at low temperatures*, V. Dierolf, A. Ostendorf, and C. Sandmann, Proceedings. Proceedings of 10th European conference on Integrated Optics, pg. 317.

Submitted or in print

161. *Laser-induced growth of oriented Sb2S3 single crystal dots on the surface of 82SbSI-18Sb2S3 glasses,* Dmytro Savytskyy, Brian Knorr, Volkmar Dierolf, Himanshu Jain, J. Non-Cryst. Solids, under review (2014)

162. *Direct laser-writing of ferroelectric single-crystal waveguide architectures in glass for 3D integrated optics,* Adam Stone, Himanshu Jain*, Volkmar Dierolf, Masaaki Sakakura, Yasuhiko Shimotsuma4, Kiyotaka Miura, Kazuyuki Hirao, Jerome Lapointe, and Raman Kashyap, Scientific reports 2014, under review.

3) Other Publications

163. *Photorefractive Damage and Waveguides from a Defect Perspective,* Technology Report for Industrial Partner (confidential).

164. *Confocal Luminescence Microscopy,* term explanation in Photonics Dictionary 2006 edition.

165. *The Wideband Gap Semiconductor Thrust at Lehigh University,* Information material of the Center for Optical Technologies (yearly updates).

In the News and on the Web

★ *Flawless Imperfections* *Acumen, Fall 2014*

- ★ *KUDOS FOR A GROUNDBREAKING SUMMER PROGRAM, Lehigh News, March 21, 2014):*
- ★ *V. Dierolf and al: Top 5 Physics Paper, Science Watch, January 2014*
- ★ *Physics students take on a summer challenge, Lehigh WebSite*
- ★ *Hurricane Sandy sparks panel discussion at Lehigh,* Brown and White, November 2012
- ★ Harnessing the electron spin, Lehigh Alumni Magazine Fall 2011
- ★ *Imaging the spot of UV light produced by a "bow tie" nano-antenna*, Resolve magazine, Vol 1.2011, Lehigh University, see also here
- ★ *Bridging the "green" LED gap to provide greener lighting,* Lehigh News Story, http://www3.lehigh.edu/News/V2news_story.asp?iNewsID=2708&strBack=%2Fnews%2FV2news%5Fsearchresults%2Easp%3FiCurPg%3D1
- ★ *Illuminating Ideas: Innovations in Solid-State Lighting*" in US Department of Energy (DOE) – National Energy Technology Laboratory (NETL) Press Release, February 2009.http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/ssl_illumbrch_09_final.pdf
- ★ *GAANN grant provides support for Lehigh graduate fellows,* Lehigh News Story, http://www3.lehigh.edu/News/V2news_story.asp?iNewsID=2611&strBack=%2Fnews%2FV2news%5Fsearchresults%2Easp%3FiCurPg%3D1
- ★ *Bridging the "green" LED gap to provide greener lighting,* The All I Need, June 2008, http://www.theallineed.com/engineering/08050101.htm
- ★ *Bridging the "green" LED gap to provide greener lighting, Se*lected Science News, April 2008,http://www.scitech-news.com/ssn/index.php?option=com_content&view=article&id=64:bridging-the-green-led-gap-to-provide-greener-lighting&catid=43:engineering&Itemid=63
- ★ *Wide bandgap group takes aim at defects,* Article in Resolve, Lehigh University, PC. College of Eng. and Appl. Science, Vol. 1,2008
- ★ *Bridging the "Green" LED Gap,* Article in Resolve, Lehigh University, PC. College of Eng. and Appl. Science, Vol. 2,2008.
- ★ *DOE Announces Selections for SSL Core Technology and Product Development Funding Opportunities (Round 4)" in US Department of Energy (DOE) – National Energy Technology Laboratory (NETL) Press Release, February 2008. http://www.netl.doe.gov/ssl/021108.html*
- ★ *U. S. Department of Energy to Invest up to $20.6 Million for Solid-State Lighting Research and Development Projects" i*n US Department of Energy (DOE) Office of Public Affairs Press Release, February 2008. *http://www.energy.gov/print/5983.htm*
- ★ *Wide bandgap group takes aim at defects,* Article in Resolve, PC. College of Eng. and Appl. Science Vol 1, 2008.
- ★ *Making a big deal out of the little things,* Feature Article in Acumen (the Lehigh Arts&Science College research magazine), Fall 2007, pg 22
- ★ *Optical center awarded grants to fund research,* The Brown and White, Lehigh 10/5/07 http://media.www.thebrownandwhite.com/media/storage/paper1233/news/2007/10/05/News/Optical.Center.Awarded.Grants.To.Fund.Research-3012082.shtml

★ *NSF, DARPA see the light on Lehigh's wide bandgap semiconductor research,* Lehigh News Stories http://www3.lehigh.edu/News/V2news_story.asp?iNewsID=2387

★ *International Extension of DFG Research Group in Integrated Optics (in German*), Paderborner Universitätszeitschrift, Issue 2, pg. 22 (2004). http://www.uni-paderborn.de/fileadmin/hochschulmarketing/puz/puz2004.2b.pdf

★ *Profs. Dierolf and Cargill use gallium-nitride to develop light-emitting semiconductors,* P.C. Rossin College of Engineering&Applied Science News. *http://www3.lehigh.edu/engineering/news/dierolfandcargillsemiconductors.asp)*

★ *Grad student most outstanding at Latvia conference*, Lehigh News Stories, http://www3.lehigh.edu/News/news_story.asp?iNewsID=901

★ *Materials World Network grant funds ferroelectric research*, Lehigh News Stories, http://www3.lehigh.edu/News/RCEASnews_story.asp?iNewsID=1952

★ *Universities Receive US-German Grant To Study The Nanostructure Of Ferroelectric Domains*, Space Marts, Nanp Tech http://www.spacemart.com/reports/Universities_Receive_US_German_Grant_To_Study_The_Nanostructure_Of_Ferroelectric_Domains_999.html

★ *Group receives US-German grant to study the nanostructure of ferroelectric domains*, EurekAlert 11-2006 http://www.eurekalert.org/pub_releases/2006-11/lu-gru111706.php

★ *Prof receives ferroelectrics grant money, The Brown and White, Lehigh 12/04/06*

★ *H. Metcalf reports on the Symposium on Undergraduate Research at LS-XXII in Rochester,* APS Division of Laser Science Newsletter, April 2007 http://units.aps.org/units/dls/newsletters/april07.cfm

★ *Laser Writes Ferroelectric Domains in a Confocal Microscope*, C. Sandmann*, **V. Dierolf,** Photonics Spectra, August 2004, pg. 68-9 (invited).

★ *Ferroelectric domain patterns are directly written into lithium niobate*, **V. Dierolf**, News Breaks, Laser Focus World, July 2004, pg. 13 (invited).

Professional Presentations (since 2000)

1) Invited Talks, Colloquia and Other Invited Presentations

I have presented the work of my group in Colloquia and Seminars worldwide and as invited talks during meetings

1. *Magneto-optical Properties of Rare Earth Ions in Gallium Nitride and Lithium Tantalate: The Role of Defects and Strain,* 2015 WORKSHOP ON MULTIFUNCTIONAL NANOMATERIALS (WMN-15) JANUARY 14-16, 2015, CARIBE HILTON HOTEL SAN JUAN, PR, USA

2. *Eu Luminescence as a Probe of Mg Acceptors in GaN,* Gordon Conference on Defects in Semiconductors, Power, Efficiency, and Functionality, August 3-8, 2014, Bentley University, Waltham, MA
3. *Raman Spectroscopy in Lithium Niobate: Artifacts and Real Effects,* Seminar Physics Department University of Paderborn (July 2013).
4. *Defect and Strain Engineering of Rare Doped Nitride Materials,* JSAP-MRS Joint Symposium, Kyoto, Sept. 2013.
5. *The Influence of Strain Induced Electric Fields on Magnetization in Erbium doped GaN thin films,* NSF-Workshop:US-Japan Frontiers in Novel Photonic-Magnetic Devices Kasugano-so, Nara, Japan, September 20-23, 2013.
6. *Optical Microscopy and Spectroscopy of Solid State Materials:* REU seminar*,* Lehigh University, Physics Department, July 2013.
7. *Solar Panel based Back-Up systems for your home,* Panel Discussion on Hurricane Sandy, Lehigh University Nov. 2012.
8. *Optical Microscopy and Spectroscopy of Solid State Materials: Playing Pool with Quasi Particles and Other Cool Stuff,* REU seminar*,* Lehigh University, Physics Department, July 2012.
9. *Raman studies of the Interaction of defects and domain walls, MWN-Workshop, Hamburg April 2012.*
10. *Rare Earth Ions in GaN: Insights from Site Selective Spectroscopy, E-MRS meeting, Warzaw, September 2011.*
11. *Optical spectroscopy for nanoscale characterization of photonic structures and devices,* REU seminar*,* Lehigh University, Physics Department, July 2011.
12. *Raman studies of the Interaction of defects and domain walls, MWN-Workshop, June 2011.*
13. *Raman studies of ferroelectric domain walls in $LiNbO_3$,* MWN-Workshop, Bonn October 2010
14. Spectroscopic Imaging of ferroelectric domain walls, International Materials Congress, Cancun, August 2010.
15. *Optical spectroscopy for nanoscale characterization of photonic structures and devices,* Seminar, Department of Material Chemistry, Graduate School of. Engineering, Kyoto-University, Japan, August 2009.
16. *Raman characterization of ferroelectric domain walls*, MWN-Workshop on the Nanoscale structure and shaping of Ferroelectric Domain Walls in $LiNbO_3$, Penn State University, July 2009.
17. *Optical spectroscopy for nanoscale characterization of photonic structures and devices,* REU seminar*,* Lehigh University, Physics Department, July 2009.
18. *Optical spectroscopy for nanoscale characterization of photonic structures and devices,* ORC Seminar Series, University of Southampton, UK, March 2009.
19. *Optical spectroscopy for nanoscale characterization of photonic structures and devices,* Colloquium, Van der Waals - Zeeman Institute, University of Amsterdam, March 2009.

20. *Nanoscale Properties of ferroelectric domain walls, MWN*-Workshop on the Nanoscale structure and shaping of Ferroelectric Domain Walls in $LiNbO_3$, University of Bonn, October 2008,
21. *Magnetic Properties of Er in GaN: the optical spectroscopy point of view*, September 2008, University of Paderborn.
22. *Excitation Pathways of Rare Earth Ions by Energetic Electrons*, September 2008, University of Paderborn.
23. *UV-light sources and solar-blind detectors, CERDEC, Fort Monmouth, NJ, January 2008.*
24. *Nanoscale imaging of ferroelectric domain walls,* MWN-Workshop on the Structure of Ferroelectric Domain Walls in $LiNbO_3$, February 2008, Lehigh University.
25. *Site-Selective Spectroscopy of Rare Earth Excitation Mechanisms, 6th Annual COT Open House, Workshop on Nano Photonics, Lehigh University, October 2007.*
26. *Raman-based imaging of ferroelectric domain walls, MWN*-Workshop on the Structure of Ferroelectric Domain Walls in $LiNbO_3$, August 2007, Lehigh University.
27. *Wideband Gap Semiconductor Research at Lehigh, ARL-Lehigh Workshop, Adephi, MD, August 2007.*
28. *Optical spectroscopy of rare earth doped semiconductors, Wideband-Gap Semiconductor Workshop, Adephi, MD, August 2007*
29. *Rare Earth Ions as Active Ions and Probes in Semiconductors and Ferroelectrics, Invited lecture, in the series REU student lectures, Lehigh University, July 2007.*
30. *Nanoscale Localization in AlGaN Using UV NSOM & Site-selective spectroscopy", 6th Annual COT Open House, Workshop on Nano Photonics, Lehigh University, October 2007.*
31. *Rare Earth Ions as Active Ions and Probes in Semiconductors and Ferroelectrics,* Invited lecture, in the series *Graduate Lecture Optoelectronics and Photonics,* University Paderborn, June 2007.
32. *Luminescence and Raman Based Real Time Imaging of Ferroelectric Domain Walls,* Invited talk at MRS Fall meeting 2006, Boston December 2006
33. *Combined excitation-emission spectroscopy studies on rare earth ions in gallium nitride,* Workshop on Impurity based Electroluminescent Devices and Materials, Wakayama University, Japan, October 2006.
34. *Site Selective spectroscopy and microscopy on rare earth doped materials,* Seminar, Wakayama University, Japan, October 2006
35. *Photorefractive Damage and Waveguides from a Defect Perspective,* Presentation to Business Group, Corning Inc. Corning, NY, September 2006.
36. *Optical Methods in Investigation of Point Defects and Their Application to Integrated Optics,* in the lectures series for REU students, Lehigh, July 2006.
37. *Wide Band Gap Semiconductor Research at Lehigh,* oral presentation at the ARL/COT Workshop, Adelphi, MD, July 2006.
38. *Defect-based real time diagnostics of ferroelectric domain inversion, invited keynote lecture,* Europhysical Conference on Defects in Insulating Materials (EuroDim) 2006, Milano July 2006.

39. *Nanoscale domain engineering,* Kick-off meeting of MWN on Nanoscale structure and shaping of ferroelectric domains, Paderborn June 2006
40. *Ferrolektrische Nanostrukturen, Colloquium, University of Paderborn, Physics Dept., June 2006*
41. *Wide Band Gap Semiconductor Thrust,* oral presentation during the Open House of the Center for Optical Technologies, May 2006
42. *Luminescence and Raman based real time imaging of ferroelectric domain walls,* APS meeting, Baltimore, March 2006.
43. *The role of extrinsic defects in ferroelectric domain inversion of lithium niobate,* invited talk, 6th Pacific Rim Conference, PacRim6 organized by the American Ceramic Society, Maui Hawaii, Sept. 2005.
44. *Optical Methods in Investigation of Point Defects and Their Application to Integrated Optics,* in the lectures series for REU students, Lehigh, July 2005
45. *Wide Band Gap Semiconductor Thrust,* oral presentation during the Open House of the Center for Optical Technologies, May 2005
46. *Luminescence based techniques for real time diagnostics and light induced writing of ferroelectric domain pattern,* invited talk, Workshop on Integrated Optics in lithium niobate, Paderborn Germany, April 2005
47. *Combined Excitation Emission Spectroscopy of Rare Earth Ions in GaN and AlGaN films*, invited talk MRS meeting Spring 2005
48. *Confocal Luminescence Microscopy and its Application to Optoelectronic and Integrated Optical Devices,* Physics Colloquium, Lehigh University, March 2005
49. *Light induced domain patterning of lithium niobate for nonlinear devices, University Bonn,* Physics Seminar, January 2005
50. *Site Selective Spectroscopy of Er in GaN*, Invited talk, Workshop on Rare Earth Ions in III-V materials, Pittsburgh, July 2004.
51. *Light Induced Domain Patterning of Lithium Niobate for Non-Linear Devices*, Seminar of the Tri-State Chapter of the Optical Society of America, Sept. 2004.
52. *Wideband Gap Semiconductors for UV light sources, ARL workshop, Adelphi, Nov. 2004*
53. *Optical Methods in Investigation of Point Defects and Their Application to Integrated Optics,* in the lectures series for REU students, Lehigh, July 2004
54. *Defect application in integrated optics*, Invited Keynote lecture, Intern. Conf. Defects in Insulating Materials (ICDIM 2004), Riga, Latvia, July 2004.
55. *Optical methods in the investigation of the point defects*. Invited Tutorial, Intern. Conf. Defects in Insulating Materials (ICDIM 2004), Riga, Latvia, July 2004.
56. *Wide Band Gap Semiconductor Thrust,* oral presentation during the Open House of the Center for Optical Technologies, May 2004
57. *Light induced domain inversion in $LiNbO_3$*, oral presentation (through WebCast) for the DFG – Forschergruppe Workshop, April 2004

58. *Optical Spectroscopy and Microscopy of waveguide devices and wide bandgap semiconductors,* Colloquium, Physics Dept., Montana State University, April 2003 (I had to cancel).
59. *Integrated Optics in $LiNbO_3$: Why are defects so important?,* Pizza Seminar Series, Dept. Physics, Moravian College, April 2003.
60. *All optical fiber network thrust*, oral presentation during the Open House of the Center for Optical Technologies, May 2003.
61. *Integrated optics in $LiNbO_3$*", in the lectures series for REU students, Lehigh, July 2003**.**
62. *Optical Spectroscopy and Microscopy of waveguide devices and wide bandgap semiconductors*, Seminar, Physics Department, Duke University, July 2003
63. *Integrated Optics in $LiNbO_3$: Why are defects so important?,* Colloquium Physics Department University of Delaware, Dec. 2002.
64. *Growth and characterization of active regions for LEDs and lasers at 280nm and 340nm*, Center for Optical Technologies, Lehigh, Nov. 2002.
65. *Optical spectroscopy and microscopy on domain structures*, Seminar Appl. Physics, University of Paderborn, Nov. 2002.
66. *Optical spectroscopy and microscopy of nanostructures,* Nanotechnology Survey for ONR, Lehigh University, Nov. 2002.
67. *Rare earth ions in integrated optical devices*, New Laser Scientist Conference, Orlando, FL, Sept. 2002.
68. *Integrated optics in $LiNbO_3$,* in the lectures series for REU students, July 2002.
69. *Optical devices and integrated optics in $LiNbO_3$,* COT presentation at Industry Day of the COT, Lehigh, April 2002.
70. *Optical devices and integrated optics in $LiNbO_3$,* COT presentation at Army Research Lab in Adelphi, March 2002.
71. *Optical devices and integrated optics in $LiNbO_3$,* COT presentation at Army Research Lab in Fort Manmouth, Jan. 2002.
72. *Defects in $LiNbO_3$ waveguide devices: characterization by high-resolution optical spectroscopy*, Colloquium at the Institute for Applied Physics Bonn, December 2001.
73. *Integrated optics in $LiNbO_3$,* in the lectures series for REU students, Phys. Dept, Lehigh July 2001.
74. *Interaction effects in Er:Ti:$LiNbO_3$ waveguide devices,* Cost P2 Meeting, Budapest, Mai 2001.
75. *Optical tweezers*, Colloquium, Physics Department, Universität Paderborn, December 2000.
76. *Science of quantum information*, Lehigh University, December 2000.
77. *Spectroscopic characterization of Er^{3+}-doped waveguides*, Invited lecture, German-Russian Seminar on Point Defects in Insulator and deep-level centers in semiconductors, Erlangen, Germany, October 2000.

2) Conference Contributions (>200 since 2000)

3) Chaired Session and organized workshops

- Organizer of NSF-Workshop: US-Japan Frontiers in Novel Photonic-Magnetic Devices Lehigh University, May 20-22, 2014.
- Organizer of NSF-Workshop:US-Japan Frontiers in Novel Photonic-Magnetic Devices Kasugano-so, Nara, Japan, September 20-23, 2013.
- Co-organizer of Symposium on R*are-Earth-Doped Advanced Materials for Photonic Applications* at JSAP-MRS Joint Symposium, Kyoto, Sept. 2013.
- Lead Organizer of Symposium on *Rare-Earth Doping of Advanced Materials for Photonic Applications* at Spring Meeting of MRS, San Francisco April. 2011.
- Co-organizer of Symposium on *Rare earth doped materials for optical based technologies,* at the Spring Meeting of E-MRS, Strasbourg, June 2010
- Session Chair Session P25: Focus Session: Dopants and Defects in Semiconductors - III-V's , APS March meeting, Portland, March 2010.
- Member of the International Advising and Program Committee for the Intern. Conf. Defects in Insulating Materials (ICDIM 2012).
- Member of the International Advising and Program Committee for the European. Conf. Defects in Insulating Materials (EURODIM 2010).
- Lead Organizer of Symposium on *Rare earth doping of advanced materials for photonic applications* at Fall Meeting of MRS, Boston Dec. 2008.
- Organizer of International MWN-workshop on Nanoscale structure and Manipulation of ferroelectric domains, Lehigh, February 2008.
- Session Chair, MRS-Fall Meeting, Dec. 2008.
- Organizer of the Materials World Network Workshop on the Structure of Ferroelectric Domain Walls in $LiNbO_3$, Lehigh University August 2007.
- Co-Organizer of *Wideband-Gap Semiconductor Workshop,* Army Research Lab,Adephi, MD, *August 2007.*
- Member of Organizing Committee for Workshop on Impurity based Electroluminescent Devices and Materials
- Member of the International Advising and Program Committee for the Intern. Conf. Defects in Insulating Materials (ICDIM 2008)
- Session chair, Spring Meeting, E-MRS, Strassbourg May 2007
- Session chair, Europhysical Conference on Defects in Insulating Materials (EuroDim) 2006
- Session chair, Annual DLS-APS Rochester 2006 (Research Symposium for Undergraduates)
- Session chair Workshop on Impurity based Electroluminescent Devices and Materials, Wakayama, Japan, October 2006,
- Web-based Workshop on Domain Engineering in $LiNbO_3$, Organizer, November 2006
- Session chair, Intern. Conf. Defects in Insulating Materials (ICDIM 2004), Riga, Latvia, July 2004.
- Workshop "*Bridging length scales in ferroelectrics*", Lehigh June 2002, Organizer

- Session chair, *Glass and disordered systems*, at Europhysical Conference on Defects in Insulating materials, July 2002.

Research Proposals and Funding

My track record in proposal writing and awarded grants reflect my strong believe in teamwork. I established a good mixture of projects in which I' m leading the program and some in which I' m contributing to the overall effort. My current external currently support support three graduate students and 1 post-docs..

Current external competitive funding

(4 new in 2008, 2 new in 2009, 3 new in 2010, 1 new 2011, 2 supplements in 2012, 1 new in 2013, 1 new, 1 renewed 2014, one supplement) totaling >3M$

(1) REU Site: Research Experience for Undergraduates in Physics at Lehigh University
- Role: **PI**
- NSF Physics Education & Interdisciplinary Research
- Budget: $717,018
- Period: 03/01.14-02/28/2019

(2) NSF Workshop on US-Japan Frontiers in Novel Photonic-Magnetic Devices
- Role: PI
- NSF-Directorate for Engineering
- Budget: $42,186 +$8,192.00 supplement
- Period: 8/1/2013-01/31/2015

(3) EAGER - Exploiting Strain-Induced Coupling between Rare Earth Ions and the GaN Host for Improved Electroluminescence and Magnetic Devices
- Role: **PI**
- NSF-ECCS
- Budget: $158,898
- Period: 08/15/2011-01/31/2014

(4) Materials World Network: Novel Material Platforms with Reduced Dimensionality for Next Generation Ferroelectric Photonics
- Role: **PI**
- NSF-DMR
- Budget: $336,506
- Period: 07/01/2010-06/30/2015

(5) USDE-GAANN: Fellowship Program in Physics at Lehigh University
- Role:**PI**
- Dept of Education
- Budget: $393,795
- Period: 01/08/2010-7/31/2014

(6) Laser Fabrication of Active Single-Crystal Architecture in Glass
- Role: **Co-PI** with H. Jain
- DOE-Office of Science
- Budget $1000,000
- Period: 05/01/2010-4/30/2016 (renewed in 2014)

(7) *Multifunctional Ferroelectric Single-crystal Architecture in Glass: Fabrication, Optical Properties, and Nanoscale Polar Order*

- Role: **Co-PI** with H. Jain
- NSF-DMR
- Budget: $699,000
- 8/1/09 – 7/31/15

(8) MRI: Development of Spectroscopic Imaging Optical Bottles for Analysis of Nanoparticles in Confinement

- Role: **Co-PI** with D. Ou-Yang and I. Biaggio
- NSF-DMR
- Budget: $427,520
- 10/1/09 – 9/30/13

Expired grants

32 total grant with 18 as PI from NSF (5), Army Research Office (3), Army Research Lab (5), German Science Foundation (1), US-Dept of Education (1), US-Dept of Energy (1), State of Pennsylvania (14), totaling $9M.