Karl F. Ludwig, Jr.
Curriculum Vitae

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Education:

Cornell University	Physics	B.A. - 1980
"*Magna cum Laude* in Physics with Distinction in All Subjects"		
Stanford University	Applied Physics	M.S. - 1982
	Applied Physics	Ph.D.- 1986

Professional Employment:

1988- Boston University, Dept. of Physics
Chair, 2014-
Director of Academics, 2012-2013
Associate Chair for Condensed Matter Physics, 2006-2007
Associate Chair for Undergraduate Studies, 1993-96
Professor, 2000-
Associate Professor, 1994-2000
Assistant Professor, 1988-1994

1986-1988 IBM T. J. Watson Research Center, Physical Sciences Department
Postdoctoral Research Associate – Advisor: Dr. G.B. Stephenson

1981 IBM San Jose Research Center, Magnetic Recording Group
Summer Research Assistant

1980 Exxon Research and Engineering, Corporate Research Center
Summer Research Assistant

Professional Memberships:

- American Physical Society
- American Association for the Advancement of Science
- Materials Research Society

Professional Service:

2015-	Member, Participating User Team at NSLS-II ISR Beamline
2015-	Argonne National Lab. CNM Proposal Evaluation Board
2010-	Spokesperson, NSLS-II *In-Situ* Resonant (ISR) Beamline Advisory Team
2008-2015	Member, NSLS-II Coherent Hard X-ray (CHX) Beamline Advisory Team
2006-2014	Spokesperson, NSLS Surface Growth Processes Contributing User Group
2002-2014	Member, NSLS Scattering Proposal Review Panel
2013-2014	Member, Brookhaven Photon Sciences Users Executive Committee
2011-2013	Member, APS Directorate Review Panel (University of Chicago – ANL)
2006-2008	Chair, Advanced Photon Source Condensed Matter Review Panel
2005-2006	Member, Advanced Photon Source Condensed Matter Review Panel
2008	Organizer, *Workshop on Real-Time X-ray Studies of Materials* at NSLS Users Meeting
2008	Organizer, *Symposium on Grazing Incidence Small-Angle X-ray Scattering* at Fall MRS Meeting
2006	Co-Organizer, Spring 2006 Joint Meeting of the New England Section of APS
2006	Chair, Nominating Committee of the New England Section of APS
2005	Chair, New England Section of the American Physical Society
2004	Vice-Chair, New England Section of the American Physical Society
2004-2009	Member, Linear Coherent Light Source Nanoscale Dynamics Team
2002	Co-Organizer, *Workshop on Real-Time X-ray Studies of Materials* at NSLS Users Meeting
2002	Co-Organizer, *Synchrotron Applications* Session at Denver X-ray Conference

Current Ph.D. Students: C. Wagenbach, M. Mokhtarzadeh
Former Ph.D. Students: Y. Xie (Suzhou Inst., China), G. Morales, O. Malis (Purdue), X. Wang (Scotiabank), A. Özcan (IBM Research), Y. Wang (TSMC North America), G.Ozaydin-Ince (Sabanci Univ., Turkey), C. Sanborn (Athena), E. Anzenberg (SKOUT), J. Davis, G. Erdem Rainville (Lam Research)
Former Postdoctoral Researchers: N. Bouet (Brookhaven Natl. Lab.), L. Colakerol Arslan (Gebze Inst. Tech., Turkey), A. DeMasi (Signature Science)

PUBLICATIONS

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114. "A Case Study of ALD Encapsulation of Quantum Dots: Embedding Supported CdSe/CdS/ZnS Quantum Dots in a ZnO Matrix", K. Devloo-Casier, P. Geiregat, K. Ludwig, K. Van Stiphout, A. Vantomme, Z. Hens, C. Detavernier, J. Dendooven, *J. Phys. Chem. C* **120**, 18039 (2016).
113. "Chemical Characterization of Surface Precipitates in $La_{0.7}Sr_{0.3\ x}Co_{0.2}Fe_{0.8}O_{3-\delta}$ as Cathode Material for Solid Oxide Fuel Cells", Y. Yu, A. Nikiforov, T. Kasper, J. Woicik, K.F. Ludwig, S. Gopalan, U. Pal and S. Basu, *Journal of Power Sources* **333**, 247 (2016).
112. "Effect of Sr Content and Strain on Sr Surface Segregation of $La_{1-x}Sr_xCo_{0.2}Fe_{0.8}O_{3-\delta}$ as Cathode Material for Solid Oxide Fuel Cells, Y. Yu, K.F. Ludwig, J.C. Woicik, S. Gopalan, U. Pal, T.C. Kaspar and S.N. Basu, *ACS Applied Materials and Interfaces* **8**, 26704 (2016).
111. "Using Coherent X-rays to Directly Measure the Propagation Velocity of Defects During Thin Film Deposition", Jeffrey G. Ulbrandt, Meliha G. Rainville, Christa Hoskin, Suresh Narayanan, Alec R. Sandy, Hua Zhou, Karl F. Ludwig, Jr. and Randall L. Headrick**,** *Nature Physics* **12**, 794 (2016).
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109. "Vacancy Assisted SrO Formation on $La_{0.8}Sr_{0.2}Co_{0.2}\ Fe_{0.8}O_3$- Surfaces – A Synchrotron Photoemission Study", J. Kuyyalil, D. Newby, Jr., J. Laverock, Y. Yu, D. Cetin, S. Basu, K. Ludwig and K.E. Smith, *Surf. Sci*. **642**, 33 (2015).
108. "Surface Evolution of Lanthanum Strontium Cobalt Ferrite Thin Films at Low Temperatures", D. Newby Jr., J. Kuyyalil, J. Laverock, K.F. Ludwig, Y. Yu, J. Davis, S. Gopalan, U. Pal, S. Basu and K.E. Smith, *Thin Solid Films* **589**, 655 (2015).
107. "Ion beam nanopatterning of III-V semiconductors: consistency of experimental and simulation trends within a chemistry-driven theory", O. El-Atwani, S. Norris, K. Ludwig, S. Gonderman and J.P. Allain, *Scientific Reports* **5**, 18207 (2015).
106. "Real-Time X-ray Studies of Indium Island Growth Kinetics", A. DeMasi, M. Rainville and K.F. Ludwig, *J. Vac. Sci. and Technol. A* **33**, 021406 (2015).
105. "Atomic Layer Deposition-Based Tuning of the Pore Size in MesoPorous Thin Films Studied by In Situ Grazing Incidence Small Angle X-ray Scattering", J. Dendooven, K. Devloo-Casier, M. Ide, K. Grandfield, M. Kurttepeli, K.F. Ludwig, S. Bals, P. Van Der Voort and C. Detavernier, *Nanoscale* **6**, 14991 (2014).
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103. "Model-Independent Test of the Crater Function Theory of Surface Morphology Evolution during Ion Bombardment", E. Anzenberg, J. Perkinson, M. Aziz and K. Ludwig, *Phys. Rev. B* **89**, 115433 (2014).
102. "Effect of Atmospheric CO_2 on Surface Segregation and Phase Formation in $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-\delta}$ Thin Films", Yang Yu, Heng Luo, Deniz Cetin, Xi Lin, Karl Ludwig, Uday Pal, Srikanth Gopalan, Soumendra Basu, *Appl. Surf. Sci.* **323**, 71 (2014).

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100. "In-Situ Synchrotron Based X-ray Techniques as Monitoring Tools for Atomic Layer Deposition – A Review", K. Devloo-Casier, K.F. Ludwig, C. Detavernier and J. Dendooven, *J. Vac. Sci Technol. A* **32**, 010801 (2014).
99. "Atomic Layer Deposition of TiO_2 on Surface Modified Nanoporous Low-k Films", E. Levrau, K. Devloo-Casier, J. Dendooven, K. Ludwig, P. Verdonck, J. Meersschaut, M. Baklanov and C. Detavernier, *Langmuir* **29**, 12284 (2013).
98. "Nanopatterning of Metal-Coated Si Surfaces via Ion Beam Irradiation: Real Time X-ray Studies Reveal the Effect of Silicide Bonding", O. El-Atwani, A. Susova, A. DeMasi, S. Gonderman, J. Fowler, M. El-Atwani, K. Ludwig and J.P. Allain, *J. Appl. Phys.***113**, 124305 (2013).
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96. "Real Time X-ray Studies during Nanostructure Formation on Silicon via Low Energy Ion Beam Irradiation using Ultrathin Iron Films", Osman El-Atwani, Anastassiya Suslova, Alexander DeMasi, Sean Gonderman, Justin Fowler, Mohamad El-Atwani, Karl Ludwig, and Jean Paul Allain, *Appl. Phys. Lett.* **101**, 263104 (2012).
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81. "In Situ X-ray Studies of Native and Mo-Seeded Surface Nanostructuring during Ion Bombardment of Si(100)", G. Ozaydin-Ince and K.F. Ludwig, Jr., *J. Phys.: Condens. Matter*. **21**, 224008 (2009).
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79. "Effects of Mo Seeding on the Formation of Si Nanodots During Low-Energy Ion Bombardment", Gozde Ozaydin, Karl F. Ludwig, Jr., Hua Zhou and Randall L. Headrick, *Journal of Vacuum Science and Technology B* **26**, 551 (2008).
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77. "Transition Behavior of Surface Morphology Evolution of Si(100) During Low-Energy Normal-Incidence Ar^+ Ion Bombardment", Gozde Ozaydin, Karl F. Ludwig, Jr., Hua Zhou, Lan Zhou and Randall L. Headrick, *J. Appl. Phys.* **103**, 033512 (2008).
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73. "Experimental Methods: High-Resolution Scattering Methods and Time-Resolved Diffraction", B. Sepiol and K. Ludwig in *Alloy Physics A Comprehensive Reference*, W. Pfeiler, Ed. (Wiley, 2007).
72. "Growth of on-polar (11-20) and semi-polar (11-26) AlN and GaN films on R-Plane sapphire", R. Chandrasekaran, A.S. Ozcan, D. Deniz, K.F. Ludwig and T.D. Moustakas, *Phys. Stat. Sol. (c)* **4**, 1689 (2007).
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Wang, Lan Zhou, Randall L. Headrick, Ahmet S. Ozcan, Yiyi Wang, Gozde Ozaydin, and Karl F. Ludwig Jr., and D. Peter Siddons, *Phys. Rev. B* **75**, 155416 (2007).

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68. "Complex and Incommensurate Ordering in $Al_{0.72}Ga_{0.28}N$ Thin Films Grown by Plasma Assisted Molecular Beam Epitaxy", Y. Wang, A. S. Özcan, K. F. Ludwig, Jr., A. Bhattacharyya, T.D. Moustakas, L. Zhou and D. J. Smith, *Appl. Phys. Lett*. **88**, 181915 (2006).
67. "Real-Time X-ray Studies of Mo-Seeded Self-Organized Si Nanodot Formation During Low Energy Ar^+ Ion Bombardment", G. Ozaydin, A.S. Özcan, Y. Wang, Karl F. Ludwig, H. Zhou, R. L. Headrick and D.P. Siddons, *Appl. Phys. Lett*. **87**, 163104 (2005).
66. "Ordering Kinetics in the Long-Period Superlattice Alloy $Cu_{0.79}Pd_{0.21}$", X. Wang, J. Mainville, K. Ludwig, X. Flament, R. Caudron and A. Finel, *Phys. Rev. B* **72**, 024215 (2005).
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