

Ágúst Valfells

Curriculum Vitae

Personal Data

Date of Birth: January 8th 1970.
Nationality: Icelandic.
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Address: Reykjavík University, Menntavegi 1, 101 Reykjavík, Iceland.

Areas of competence and interest:

Sustainable energy: Optimal use of geothermal resources; Energy carriers for transport.
Plasma and beam physics: Space-charge dominated beams, accelerator diagnostics, vacuum nanoelectronics.

Education:

Ph.D., Nuclear Engineering, University of Michigan, 2000.
C.S., Mechanical Engineering, University of Iceland, 1993.

Employment:

Reykjavík University, *Assistant Professor* (2005-2011), *Associate Professor* (2011-present date).
National Energy Authority (Orkustofnun), *Project Leader* „Vettvangur um vistvænt eldsneyti.“ (2004-2005). Advisory role on policy development and implementation for alternative energy carriers in transport.
University of Maryland, Institute for Research in Electronics and Applied Physics, Research Associate (2000-2003). Theoretical and experimental work on UMER; secondary electron emission model development and coding for depressed collector design software (BSCAT).
University of Michigan, *Graduate Research Assistant* (1996 – 2000), *Teaching Assistant* (1997). High power microwave research, TA for NERS 575 Plasma Generation and Diagnostics Laboratory.
Silfurtún ehf, *Mechanical Engineer* (1993-1995). Mechanical engineering design of paper pulp molding machinery.

Research:

My main research interest has been in theoretical, computational and experimental work on vacuum electronics –primarily concerning space charge effects and phenomena associated with secondary electron emission. I have also developed devices for electron beam diagnostics. I underwent a hiatus from research from 2003 – 2009 when my primary role was in administration and teaching. Since then my research has been on sustainable energy systems, e.g. geothermal reservoir utilization and modelling possibilities for electric vehicle use; and on vacuum nano- and microelectronics. I have been co-PI for several research projects funded by competitive grants.

I am the author of 18 peer reviewed journal papers and over 50 conference and workshop papers and presentations.

Research grants:

1. Landsvirkjun Energy Research Fund, 2.000.000 ISK (1 year), *Aðgerðarannsóknir á vinnslu jarðhita (Operations research in geothermal energy production)*. 2014.
2. The Technology Development Fund (Tækniþróunarsjóður) -9.587.000 ISK (1 year) – *EVA Greiningarkerfið (The EVA analysis system)* -in cooperation with RAMP ehf. 2012.
3. The Icelandic Research Fund, 19.872.000 ISK (3 years) – *Properties of microscopic vacuum electronic devices*. 2011.
4. Reykjavík Energy Environmental and Energy Research Fund, 3.000.000 ISK (1 year), *Possible scenarios for rules concerning greenhouse gas emissions and their effects*. 2008.
5. RANNÍS Equipment Fund, 1.900.000 ISK, *Possible scenarios for rules concerning greenhouse gas emissions and their effects*. 2008.
6. Reykjavík Energy Environmental and Energy Research Fund, 1.800.000 ISK (1 year), *Possible scenarios for rules concerning greenhouse gas emissions and their effects*. 2007.
7. Reykjavík Energy Environmental and Energy Research Fund, 3.750.000 ISK (1 year), *Decision making for utilization of high-temperature geothermal areas*. 2007.

Journal papers:

1. S.R. Sigurðardóttir, **A. Valfells**, H. Pálsson, H. Stefánsson, "Mixed Integer Optimization Model for Harvesting of a Geothermal Reservoir", submitted to *Geothermics*.
2. Y.B. Zhu, P. Zhang, **A. Valfells**, L.K. Ang, Y.Y. Lau, "Novel Scaling Laws for the Langmuir-Blodgett Solutions in Spherical and Cylindrical Diodes", *Phys. Rev. Lett.*, **110**, 265007 (2013)
3. P. Jónsson, M. Ilkov, A. Manolescu, A. Pedersen, **A. Valfells**, "Tunability of the Terahertz Space-Charge Modulation in a Vacuum Microdiode", *Phys. Plasmas*, **20**, 023107 (2013).
4. A. Pedersen, A. Manolescu, **A. Valfells**, "Space-Charge Modulation in Vacuum Microdiodes at THz Frequencies", *Phys. Rev. Lett.*, **104**, 175002 (2010)
5. S. Bernal, et al., "Intense Beam Transport Experiments in a Multi-Bend System at the University of Maryland Electron Ring (UMER)", *Nucl. Inst. and Meth. A*, 519, 380 (2004).
6. Y. Cui, Y. Zou, **A. Valfells**, et al., "Design and Operation of a Retarding Field Energy Analyzer with Variable Focusing for Space-Charge Dominated Electron Beams", *Review of Scientific Instruments*, 75, 2736 (2004).
7. A. Singh, **A. Valfells**, et al., "Improvements in depressed collector performance by modifications to electrode geometry vis-à-vis trajectories of backscattered electrons", *IEEE Trans. Plasma Sci.*, 32, 1267 (2004)
8. C.M. Celata, et al., "Progress in Heavy Ion Fusion Research", *Phys. Plasmas*, 10, 2064 (2003). (INVITED)
9. P.G. O'Shea, et al. "Experiments with Space-Charge Dominated Beams for Heavy Ion Fusion Applications", *Laser and Particle Beams*, 20, 599 (2002). (INVITED)
10. Y. Zou, Y. Cui, V. Yun, **A. Valfells**, et al., "Compact High-Resolution Retarding Field Analyzer for Space-Charge Dominated Electron Beams", *Phys. Rev ST Accel. Beams*, 5, 72801 (2002).
11. **A. Valfells**, A. Singh, M.J. Kolander, V.L. Granatstein, "Advancements in Codes for Computer Aided Design of Depressed Collectors and Tracing of Backscattered Electrons-Part II:

- Improvements in the Modeling of the Physics of Secondary Electron Emission and Backscattering”, *IEEE Trans. Plasma Sci.*, 30, 1271 (2002).
12. A. Singh, **A. Valfells**, C.B. Robey, J. Goldstein, M.J. Kolander, V.L. Granatstein, “Advancements in Codes for Computer Aided Design of Depressed Collectors and Tracing of Backscattered Electrons-Part I: Optimization of Depressed Potentials and Tracking of Multiple Orders of Backscatter”, *IEEE Trans. Plasma Sci.*, 30, 1265 (2002).
 13. **A. Valfells**, D.W. Feldman, M. Virgo, P.G. O’Shea, “Effects of Pulse-Length and Emitter Area on Virtual Cathode Formation in Electron Guns”, *Phys. Plasmas*, 9, 2377 (2002). (INVITED).
 14. R.B. Anderson, W.D. Getty, M.L. Brake, Y.Y. Lau, R.M. Gilgenbach, **A. Valfells**, “Multipactor Experiment on a Dielectric Surface”, *Rev. Sci. Instr.*, 72, 3095 (2001).
 15. **A. Valfells**, J.P. Verboncoeur, Y.Y. Lau, “Space-Charge Effects on Multipactor on a Dielectric”, *IEEE Trans. Plasma Sci.*, 28, 529 (2000).
 16. **A. Valfells**, L.K. Ang, Y.Y. Lau, R.M. Gilgenbach, “Effects of an External Magnetic Field, and of Oblique Radio-Frequency Electric Fields on Multipactor Discharge on a Dielectric”, *Phys. Plasmas*, 7, 750 (2000).
 17. R.A. Kishek, Y.Y. Lau, L.K. Ang, **A. Valfells**, R.M. Gilgenbach, “Multipactor Discharges on Metals and Dielectrics: Historical Review and Recent Theories”, *Phys. Plasmas*, 5, 2120 (1998). (INVITED)
 18. **A. Valfells**, R. A. Kishek, Y.Y. Lau, “Frequency Response of Multipactor Discharge”, *Phys. Plasmas*, 5, 300 (1998).
 19. J.W. Luginsland, **A. Valfells**, Y.Y. Lau, “Effects of a Series Resistor on Electron Emission from a Field Emitter”, *Appl. Phys. Lett.*, 69, 2770 (1996).

Conference and workshop presentations:

1. M. Ilkov, A. Manolescu, **A. Valfells**, “Simulation of Self Organized Electron Beams in Vacuum microdiodes”, Simultech 2013, Reykjavík, July 29-31 2013.
2. M. Ilkov, A. Manolescu, **A. Valfells**, A. Pedersen, “Vacuum Microdiodes as Tunable THz Oscillators”, PPS 2013, San Francisco, June 16-21 2013.
3. Y.B. Zhu, P. Zhang, **A. Valfells**, L.K. Ang, Y.Y. Lau, “Transit Time Model for Space Charge Limited Current”, PPS 2013, San Francisco, June 16-21 2013.
4. Y.B. Zhu, P. Zhang, **A. Valfells**, L.K. Ang, Y.Y. Lau, “Novel Scaling Laws for the Langmuir-Blodgett Solutions in Cylindrical and Spherical Diode”, IVEC 2013, Paris, May 21-23 2013.
5. **A. Valfells**, P. Jonsson, A. Manolescu, A. Pedersen, “Parametric Survey of Space-Charge Modulations in Vacuum Microdiodes”, ICOPS 2012, Edinburgh, July 8-12 2012.
6. G.P. Hauksson, H. Stefánsson, **A. Valfells**, “Methodology Design for Quantitative Analysis of the Potential of Electric Vehicle Utilization”, IEEE FISTS 2011, Vienna, June 29 – July 1 2011.
7. G.P. Hauksson, **A. Valfells**, H. Stefánsson, “Quantitative Analysis of the Potential of Electric Vehicle Utilization: Preliminary Study from Iceland”, 8th European ITS Congress, Lyon, June 6-9 2011.
8. S.R. Sigurðardóttir, H. Pálsson, **A. Valfells**, H. Stefánsson, “Optimizing Revenue of a Geothermal System with respect to operation and expansion”, World Geothermal Congress, Bali April 25-30 2010.
9. L. Thorvaldsson, H. Pálsson, H. Stefánsson, **A. Valfells**, “Tools to Evaluate Strategies for Utilization of Low Temperature Geothermal Resources”, World Geothermal Congress, Bali April 25-30 2010.
10. **A. Valfells**, “Practical pathways toward a 'hydrogen economy' -a view from Iceland”, Hydrogen Fuel Cells and Alternatives in the Transport Sector: Issues for Developing Countries; United Nations University International Conference, Maastricht, The Netherlands, 7-9 November 2005.

11. **A. Valfells**, I.B. Fridleifsson, T. Helgason, J. Ingimarsson, F. Sophusson, G. Thoroddsson, "Sustainable Generation and Utilization of Energy –The Case of Iceland", 19th World Energy Congress, Sydney, Australia, September 5-9 2004
12. A. Singh, **A. Valfells**, M. Kolander, and V.L. Granatstein, "Computer Aided Design of Depressed Collectors", AIP Conf. Proc. 691, 127 (2003)
13. J. Harris, **A. Valfells**, B. Quinn, S. Bernal, I. Haber, M. Walter, A. Diep, M. Reiser, and P. G. O'Shea, "Initial Studies of Longitudinal Beam Dynamics on UMER", Proceedings of the 2003 IEEE Particle Accelerator Conference, Portland OR, ed. J. Chew, P. Lucas, S. Webber, IEEE Cat. No. 03CH37423C, 2312 (2003).
14. M. Walter, S. Bernal, A. Diep, M. Glanzer, I. Haber, J. Harris, R.A. Kishek, D. Lamb, W. Lee, H. Li, B. Quinn, M. Qurius, **A. Valfells**, M. Reiser, and P.G. O'Shea, "Alignment of Components at the University of Maryland Electron Ring", Proceedings of the 2003 IEEE Particle Accelerator Conference, Portland OR, ed. J. Chew, P. Lucas, S. Webber, IEEE Cat. No. 03CH37423C, 2577 (2003)
15. M. Walter, D. Lamb, S. Bernal, I. Haber, R.A. Kishek, H. Li, B. Quinn, M. Snowel, **A. Valfells**, M. Reiser, and P.G. O'Shea, "Time Resolved Emittance Measurement in the University of Maryland Electron Ring", Proceedings of the 2003 IEEE Particle Accelerator Conference, Portland OR, ed. J. Chew, P. Lucas, S. Webber, IEEE Cat. No. 03CH37423C, 2574 (2003).
16. M. Walter, S. Bernal, T. Godlove, I. Haber, R.A. Kishek, H. Li, B. Quinn, **A. Valfells**, Y. Zou, M. Reiser, and P.G. O'Shea, "Electro-Mechanical Design for Injection in the University of Maryland Electron Ring", Proceedings of the 2003 IEEE Particle Accelerator Conference, Portland OR, ed. J. Chew, P. Lucas, S. Webber, IEEE Cat. No. 03CH37423C, 1673 (2003).
17. S. Bernal, B. Beaudoin, Y. Cui, A. Diep, T. Godlove, I. Haber, J. Harris, R.A. Kishek, D. Lamb, H. Li, M. Glanzer, B. Quinn, M. Reiser, **A. Valfells**, M. Walter, M. Wilson, R. Yun, Y. Zou, and P.G. O'Shea, "Beam Transport Experiments over a Single Turn at the University of Maryland Electron Ring", Proceedings of the 2003 IEEE Particle Accelerator Conference, Portland OR, ed. J. Chew, P. Lucas, S. Webber, IEEE Cat. No. 03CH37423C, 426 (2003).
18. Y. Cui, Y. Zou, I. Haber, R. Kishek, **A. Valfells**, M. Reiser, and P.G. O'Shea, "Experimental Study of Beam Energy Spread in the Space-Charge Dominated Beams", Proceedings of the 2003 IEEE Particle Accelerator Conference, Portland OR, ed. J. Chew, P. Lucas, S. Webber, IEEE Cat. No. 03CH37423C, 3156 (2003).
19. **Á. Valfells**, et al., "Space charge studies on the University of Maryland Electron Ring", ICFA Beam Dynamics Mini-Workshop on Space Charge Simulation, Trinity College, Oxford, April 2-4 2003.
20. A. Singh, **A. Valfells**, M. Kolander, V.L. Granatstein, "Effects of Successive Generations of Backscattered Electrons on the Performance of Depressed Collectors in Megawatt Class Gyrotrons", Infrared and Millimeter Waves, 2002. Conference Digest (2002).
21. A. Singh, **A. Valfells**, M. Kolander, V.L. Granatstein, "Improved Modeling of Backscattered Electron Effects in a Code for Depressed Collector Design "Third IEEE International Vacuum Electronics Conference, (2002)
22. P.G. O'Shea, B. Beaudoin, S. Bernal, Y. Cui, A. Diep, D. Feldman, M. Glanzer, T.F. Godlove, I. Haber, J. Harris, M. Holloway, D. Lamb, R.A. Kishek, H. Li, W. Lee, S. Martin, J. Neumann, B. Quinn, P.G. O'Shea, M. Qurius, M. Reiser, M. Snowel, **A. Valfells**, M. Virgo, M. Walter, R. Yun, and Y. Zou, "Intense Beam Experiments at the University of Maryland Electron Ring,"

- Proceedings of the Workshop on Advanced Accelerator Concepts, Mandalay Beach, Oxnard, CA, June 2002 (2002).
23. Y. Cui, Y. Zou, R.A. Kishek, and **A. Valfells**, "*New Energy Analyzer Design and Preliminary Study on the Space-Charge Effect in the Energy Analyzer*," Proceedings of the Workshop on Advanced Accelerator Concepts, Mandalay Beach, Oxnard, CA, June 2002 (2002).
 24. R.A. Kishek, P.G. O'Shea, M. Reiser, B. Beaudoin, S. Bernal, Y. Cui, A. Diep, D. Feldman, M. Glanzer, T. F. Godlove, I. Haber, J. Harris, H. Li, J. Neumann, B. Quinn, M. Qurius, M. Snowel, **A. Valfells**, M. Virgo, M. Walter, R. Yun, and Y. Zou, "*Intense Beam Experiments at the University of Maryland Electron Ring (UMER)*," 20th ICFA Advanced Beam Dynamics Workshop on High Intensity & High Brightness Hadron Beams, Fermilab, Batavia, IL, April 2002, ed., W. Chou, Y. Mori, D. Neuffer, and J. Ostiguy, (New York: AIP Press 642, 2002), p. 319.
 25. S. Bernal, B. Beaudoin, Y. Cui, M. Glanzer, T. F. Godlove, J. Harris, M. Holloway, I. Haber, R.A. Kishek, W-T. Lee, H. Li, D. Lamb, B. Quinn, M. Qurius, M. Reiser, **A. Valfells**, M. Walter, M. Wilson, R. Yun, Y. Zou, P.G. O'Shea, "*Intense Beam Transport Experiments in a Multi-Bend System at the University of Maryland Electron Ring (UMER)*", ", 44th Annual Meeting of the Division of Plasma Physics of the American Physical Society, November 2002.
 26. P.G. O'Shea, B. Beaudoin, S. Bernal, Y. Cui, A. Diep, D. Feldman, M. Glanzer, T.F. Godlove, I. Haber, J. Harris, R.A. Kishek, H. Li, J. Neumann, B. Quinn, M. Qurius, M. Reiser, M. Snowel, **A. Valfells**, M. Virgo, M. Walter, R. Yun, Y. Zou, "*Intense Beam Experiments on the University of Maryland Electron Ring (UMER)*", Proc. LINAC 2002, Gyeongju, Korea, August 2002.
 27. R.A. Kishek, S. Bernal, Y. Cui, D. Feldman, T.F. Godlove, I. Haber, H. Li, P.G. O'Shea, B. Quinn, M. Reiser, **A. Valfells**, M. Virgo, M. Walter, Y. Zou, "*Simulations of Intense Beam Experiments at the University of Maryland*", Proc. LINAC 2002, Gyeongju, Korea, August 2002.
 28. R.A. Kishek, S. Bernal, Y. Cui, D. Feldman, T.F. Godlove, I. Haber, H. Li, P.G. O'Shea, B. Quinn, M. Reiser, **A. Valfells**, M. Virgo, M. Walter, Y. Zou, "*Scaled Experiments with Electrons at the University of Maryland*", Snowmass Fusion Summer Study, Snowmass, Colorado, July 2002.
 29. P.G. O'Shea, S. Bernal, Y. Cui, D. Feldman, M. Glanzer, T. Godlove, J. Harris, I. Haber, H. Li, R.A. Kishek, B. Quinn, M. Reiser, **A. Valfells**, M. Virgo, M. Walter, M. Wilson, R. Yun, "*Experimental Studies of Space-Charge Dominated Beams for Heavy Ion Inertial Fusion (HIF)*", Innovative Confinement Concepts Workshop (ICC2002), Adelphi, Maryland, January 2002.
 30. **A. Valfells**, S. Bernal, Y.P. Cui, R.A. Kishek, P.G. O'Shea, B. Quinn, M. Reiser, M. Virgo, V. Yun, and M. Nishiura, "*Energy Analyzer Experiments for the University of Maryland Electron Ring*", Proceedings of the 2001 Particle Accelerator Conference, Chicago, IL, ed. P. Lucas and S. Weber, IEEE Cat. No. 01CH37268, 3582 (2001).
 31. D.W. Feldman, **A. Valfells**, J. Neumann, J. Harris, B. Beaudoin, and P.G. O'Shea, "*Combined Thermionic and Photoelectric Emission from Dispenser Cathodes*", Proceedings of the 2001 Particle Accelerator Conference, Chicago, IL, ed. P. Lucas and S. Weber, IEEE Cat. No. 01CH372681, 2132 (2001).
 32. I. Haber, S. Bernal, R.A. Kishek, P.G. O'Shea, M. Reiser, **A. Valfells**, and D.P. Grote, "*Computer Simulation of the UMER Electron Gun*", Proceedings of the 2001 Particle Accelerator Conference, Chicago, IL, ed. P. Lucas and S. Weber, IEEE Cat. No. 01CH37268, 2952 (2001).
 33. P.G. O'Shea, B. Beaudoin, S. Bernal, Y.P. Cui, D.W. Feldman, M. Glanzer, T.F. Godlove, J. Harris, M. Holland, R.A. Kishek, H. Li, B. Quinn, N. Rahimi, M. Reiser, **A. Valfells**, M. Virgo, M. Walter, R. Yun, V. Yun, D. Kehne, and I. Haber, "*The University of Maryland Electron Ring*",

- Proceedings of the 2001 Particle Accelerator Conference, Chicago, IL, ed. P. Lucas and S. Weber, IEEE Cat. No. 01CH37268, 159 (2001). (INVITED)
34. S. Bernal, H. Li, M. Virgo, S.P. Kwon, M. Holland, R.A. Kishek, **A. Valfells**, T. Godlove, P.G. O'Shea, M. Reiser and V. Yun, and D. Kehne, "*Beam Test of the 10keV Injector for the University of Maryland Electron Ring (UMER)*", Proceedings of the 2001 Particle Accelerator Conference, Chicago, IL, ed. P. Lucas and S. Weber, IEEE Cat. No. 01CH37268, 2129 (2001).
 35. Y. Cui, S. Bernal, R.A. Kishek, P.G. O'Shea, N. Rahimi, M. Reiser, **A. Valfells**, and V. Yun, "*Design Studies for an Experiment to Measure Energy Spread Evolution Through a Solenoidal Focusing System*", Proceedings of the 2001 Particle Accelerator Conference, Chicago, IL, ed. P. Lucas and S. Weber, IEEE Cat. No. 01CH37268, 2976 (2001).
 36. **A. Valfells**, A. Singh, M. Kolander, V. Granatstein, "*Improvements in Modeling of Backscatter of Electrons in a Code for Tracing their Trajectories*", IRMMW 2001, Toulouse, France, September 2001.
 37. Y.P. Cui, S. Bernal, R.A. Kishek, P.G. O'Shea, M. Reiser, and **A. Valfells**, "*Experiments on Energy Spread Evolution in Space-Charge Dominated Electron Beams*", 43rd Annual Meeting of the Division of Plasma Physics of the American Physical Society, November 2001.
 38. I. Haber, D.P. Grote, S. Bernal, R.A. Kishek, M. Reiser, P.G. O'Shea, and A. Valfells, "*Computer Simulation of the UMER electron Gun*", 43rd Annual Meeting of the Division of Plasma Physics of the American Physical Society, November 2001.
 39. P.G. O'Shea, S. Bernal, Y.P. Cui, T. Godlove, J. Harris, H. Li, R.A. Kishek, B. Quinn, M. Reiser, A. Valfells, M. Virgo, M. Walter, and I. Haber, "*The University of Maryland Electron Ring (UMER) –Progress Report*", 43rd Annual Meeting of the Division of Plasma Physics of the American Physical Society, November 2001.
 40. **A. Valfells**, D.W. Feldman, Y.Y. Lau, M. Virgo, P.G. O'Shea, "*Three Dimensional Effects on Virtual Cathode Formation in Electron Guns*", 43rd Annual Meeting of the Division of Plasma Physics of the American Physical Society, November 2001. (INVITED)
 41. **A. Valfells**, J.P. Verboncoeur, Y.Y. Lau, R.B. Anderson, R.M. Gilgenbach, "*Space charge effects on multipactor on dielectric*", Proc. SPIE Vol. 4031, p. 65-74, Intense Microwave Pulses VII, Howard E. Brandt; Ed.
 42. R. Anderson, W. Getty, Y.Y. Lau, M.L. Brake, **A. Valfells**, R.M. Gilgenbach, "*A Design for a Multipactor Experiment on a Dielectric Surface*", 2000 IEEE International Conference on Plasma Science.
 43. L.K. Ang, **A. Valfells**, Y.Y. Lau, R.M. Gilgenbach, "*Susceptibility Diagram of Multipactor Discharge on a Dielectric -Effects of Oblique Magnetic and Electric Fields on Dielectric Multipactor Discharge*", 1999 IEEE International Conference on Plasma Science.
 44. **A. Valfells**, L. K. Ang, Y. Y. Lau, R. M. Gilgenbach, R. A. Kishek, J. Verboncoeur, A. Neuber, H. Krompholz, and L. L. Hatfield, "*A Theory of RF Window Failure*", 1999 IEEE International Conference on Plasma Science.
 45. **A. Valfells**, L. K. Ang, Y. Y. Lau, R. M. Gilgenbach, R. A. Kishek, J. Verboncoeur, A. Neuber, H. Krompholz, and L. L. Hatfield, "*A Theory of RF Window Failure*", 40th Annual Meeting of the Division of Plasma Physics of the American Physical Society, November 1998.
 46. Y.Y. Lau, R.A. Kishek, L.K. Ang, R.M. Gilgenbach, **A. Valfells**, "*Multipactor Discharge on a Dielectric*", 1998 IEEE International Conference on Plasma Science.

47. **A. Valfells**, R. Kishek, Y.Y. Lau, R.M. Gilgenbach, "*Suppression of Multipactor Discharge by Use of an Auxiliary RF Signal*", 39th Annual Meeting of the Division of Plasma Physics of the American Physical Society, November 1997.
48. **A. Valfells**, R.A. Kishek, Y.Y. Lau, R.M. Gilgenbach, "*Frequency Response in Multipactor Discharge*", 1997 IEEE International Conference on Plasma Science.
49. **A. Valfells**, R.A. Kishek, Y.Y. Lau, R.M. Gilgenbach, "*Frequency Response in Multipactor Discharge*", 38th Annual Meeting of the Division of Plasma Physics of the American Physical Society, November 1996.
50. Y.Y. Lau, J.W. Luginsland, **A. Valfells**, "*Effects of a Base Resistor on Electron Emission from a Field Emitter*", 38th Annual Meeting of the Division of Plasma Physics of the American Physical Society, November 1996.
51. J.W. Luginsland, **A. Valfells**, Y.Y. Lau, "*Effects of a Base Resistor on Electron Emission from a Field Emitter*", 1996 IEEE International Conference on Plasma Science.

Teaching:

I have taught undergraduate courses on thermodynamics, circuit theory, programming, electromagnetics, energy economics and sustainable systems. In addition I have developed and co-taught a practical project course for undergraduate engineering students and mechanical vibrations. I have taught graduate courses on energy storage, energy systems and technology; plasma physics; and modelling. I have served as advisor, examiner and mentor to a number of graduate and undergraduate students.

Courses taught:

1. R-E1 Energy Transmission and Storage. Fall 2013.
2. T-104-RAFF Circuit Analysis. Fall 2013.
3. R-M1 Introductory Field Trip. Fall 2013.
4. T-638-SUST Sustainable Systems (co-taught). Summer 2013.
5. T-507-VARM Thermodynamics. Spring 2013.
6. R-M1 Introductory Field Trip. Fall 2012.
7. T-638-SUST Sustainable Systems (co-taught). Summer 2012.
8. R-M1 Introductory Field Trip. Fall 2011.
9. R-M3 Introduction to Energy Technology. Fall 2011.
10. T-862-PHYS Plasma Physics (independent study). Fall 2011.
11. R-M1 Introductory Field Trip. Fall 2010.
12. T-104-RAFF Circuit Analysis. Fall 2010.
13. R-E1 Energy Transmission and Storage. Fall 2010.
14. R-M1 Introductory Field Trip (co-taught). Fall 2009.
15. T-868-DEMO Design and Modelling (co-taught). Fall 2009.
16. T-104-RAFF Circuit Analysis. Fall 2009.
17. T-108-HFOR Practical Programming. Fall 2009.
18. AT FOR1003 Practical Programming. Fall 2009.
19. RT LOK1012 Final Project. Fall 2009.
20. T-420-HONX Design X (co-taught). Spring 2008.
21. RT EXH1003 Electromagnetics. Spring 2008.
22. RT OEC1003 Energy Economics. Spring 2008.
23. RT LOK1012 Final Project. Spring 2008.
24. T-507-VARM Thermodynamics. Fall 2007.

25. VT SVF1003 Mechanical Vibrations (co-taught). Fall 2007.
26. RT LOK2012 Final Project. Fall 2007.
27. AT AÐF1003 Research Methods (co-taught). Spring 2007.
28. RT EXH1003 Electromagnetics. Spring 2007.
29. RT OEC1003 Energy Economics. Spring 2007.
30. RT LOK1012 Final Project. Spring 2007.
31. AT AÐF1003 Research Methods (co-taught). Fall 2006.
32. RT RAF1003 Circuit Analysis. Fall 2006.
33. RT LOK1012 Final Project. Fall 2006.
34. RT EXH1003 Electromagnetics. Spring 2006.
35. RT OEC1003 Energy Economics. Spring 2006.
36. RT LOK1012 Final Project. Spring 2006.
37. RT RAF1003 Circuit Analysis. Fall 2005.
38. T-104-RAFF Circuit Analysis. Fall 2005.
39. AT STÆ1003 Calculus I (co-taught). Fall 2005.

Supervising experience:

Post-doctoral researchers:

1. Kristinn Torfason, *vacuum microelectronics* (2013 – present).
2. Andreas Pedersen, *vacuum microelectronics* (2009).

Ph.D. students:

1. Marjan Ilkov, *vacuum microelectronics* (2012 – present).
2. Silja Rán Sigurðardóttir, *Optimization methods and strategies for utilization of geothermal reservoirs* (2009-2013).

Masters students:

1. Nina Victoria Rangel Ortiz, *Electrifying Straetó: How to Make it Happen* (2014).
2. Elín Adda Steinarsdóttir, *Hypofractionated stereotactic radiation therapy for brain tumor in linac* (2011-2012).
3. Pálmar Jónsson, *High resolution simulation of a vacuum diode* (2011-2012).
4. Kristbjörn Helgason, *Selecting optimum location and type of wind turbines in Iceland* (2012).
5. Marco Binotto, *Greenhouse climate model: An aid to estimate the influence of supplemental lighting on greenhouse climate* (2011-2012).
6. Björn Sveinbjörnsson, *A lumped parameter modelling method for high-temperature geothermal reservoirs*, M.S. Thesis, University of Iceland & University of Akureyri (2010)
7. Gunnar Pétur Hauksson, *Quantitative analysis of the potential of electric vehicle utilization: methodology design and preliminary study* (2010)
8. Timo Koivumäki, *Nuclear power plants and sustainability* (2010)
9. Lárus Þorvaldsson, M.Sc. student University of Iceland, *Optimal decision making of geothermal utilization for district heating under uncertainty* (2007 - 2008).

Thesis examiner:

1. Liu Yangjie, Ph.D. thesis in Electrical & Electronic Engineering at Nanyang Technological University, Singapore. 2013.
2. Monika Chrusciak, *Modeling and integration of a closed loop system for production of SNG from microalgae*, M.S. thesis completed at RES in affiliation with EPFL (Lausanne). 2011.

3. Daria Bandurowicz, *A study of wind energy generation and storage system installed at Dundalk Institute of Technology*, Ireland, M.S. thesis completed at RES in affiliation with University of Iceland & University of Akureyri. 2011.
4. Michael Hoban, *Integrated thermo-economic modeling of geothermal resources for optimal exploitation scheme identification*, M.S. thesis completed at RES in affiliation with EPFL (Lausanne). 2010.
5. Jure Vetrsek, *District heating system optimization with integration of distributed heat generation from renewable sources and demand side measures*, M.S. thesis completed at RES in affiliation with University of Iceland & University of Akureyri. 2010.
6. Árni V. Pálmason, *Profitability assessment for wind power pumped storage system for hydro power plants*, M.S. thesis completed at REYST. 2009.
7. Eypór Gíslason, *A global (volume averaged) model of the nitrogen discharge*, M.S. Thesis University of Iceland. 2008.

Administration and service:

Iceland School of Energy (formerly REYST):

2006 – 2007: Helped organize and initiate the Reykjavík Energy Graduate School of Sustainable Systems (REYST).

2007 – 2009: Alternate member of governing board.

2007 – 2011 & 2013 – present: Member of academic council.

2011 – 2013: *Director*.

RU Department of Mechanical and Electrical Engineering:

2007 – 2009: Department head.

2007 – 2012: Member of hiring committee.

2007 – present: Various outreach and student recruitment programs, e.g. HR-áskorunin, Hringekjan.

2011: Evaluation committee for hiring of Dean of School of Science and Engineering.

2013: Chairman of evaluation committee for promotion of Dr. Leifur Þór Leifsson.

2013: Chairman of evaluation committee for promotion of Dr. Ármann Gylfason.

Outside RU:

2004-2005: Executive committee International Energy Agency Hydrogen Implementation Agreement.

2004-2005: Executive committee International Partnership for the Hydrogen Economy.

2007 – 2009: National expert for EU FP7 (energy).

2010 – 2012: Steering of Work Package 6 in GEORG geothermal consortium..

2010 - present: Trainer for the Icelandic team participating in Physics Olympiad.

2011: Evaluation committee for hiring of Dean of School of Science and Engineering.

2013: Chairman of evaluation committee for promotion of Dr. Leifur Þór Leifsson.

2013: Chairman of evaluation committee for promotion of Dr. Ármann Gylfason.

2007 – present: Various outreach and student recruitment programs, e.g. HR-áskorunin, Hringekjan.