Dr. Katherine L. Hall

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Education

- Massachusetts Institute of Technology, M.S. (1990), Ph. D., (1993)
- Wellesley College, B.A., (1984)

Employment

- Visiting Lecturer, Physics Department, Wellesley College, 2017-present
- Chief Executive Officer, Endeveo Corporation, 2016-present
- Founder, Cutter Hill Consulting, LLC, 2013-present
- Chief Intellectual Property Officer, Speedy Packets, Inc., 2014-2016
- Chief Strategy Officer, Origin Wireless, Inc., 2014-2016
- Chief Technology Officer, WiTricity Corporation, 2007-2014
- Founding Partner, Wide Net Technologies, Inc., 2003-2012
- Chief Technology Officer, Director, co-Founder, PhotonEx Corporation, 1999-2003
- Assistant Group Leader, Advanced Networks Group, M.I.T. Lincoln Laboratory, 1999
    - Senior Staff and Staff, Advanced Networks Group, M.I.T. Lincoln Laboratory, 1993-1999
- Research Affiliate, Optics and Quantum Electronics Group, M.I.T., 1993-2012
    - Research Assistant, Optics and Quantum Electronics Group, M.I.T., 1987-1993
- Member of Technical Staff, AT&T Bell Laboratories, 1986-1987
    - Senior Technical Associate, AT&T Bell Laboratories, 1984-1986

Honors/Activities

- National Center for Women and Information Technology, 2014 Symons Innovator Award
- Fellow, Optical Society of America, 2013
- Director-at-Large, Optical Society of America, 2004-2006
- Associate Editor, *IEEE Photonics Technology Letters*, 1996-2008
- Organizer, NAE's Japan-America Frontiers in Engineering Conference, 2004
- Assessment Panel Member, National Research Council, NIST, 2002-2006
- ECE Industrial Advisory Council, College of Engineering, Boston University, 2001-2007
- Board of Governors, IEEE Lasers and Electro-Optics Society (LEOS), 1999-2002
- General Chair/Program Chair, IEEE LEOS Annual Meeting, 2002/2000
- Senior Member, Institute of Electrical and Electronics Engineers (IEEE)
- Joint Services Electronics Program (JSEP) Fellowship, 1991-1993
- Honors Thesis, Wellesley College, 1984

Publications

- K.L. Hall, E.R. Thoen and E.P. Ippen, "Nonlinearities in Active Media", in *Semiconductors and Semimetals*, vol. 59, Nonlinear Optics in Semiconductors II, Academic Press, San Diego.
- Author or co-author of over 100 journal articles and conference presentations.
- 98 United States and Foreign patents granted.

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Publications

Journal Papers

1. T.M. Shih, A. Kurs, M. Dahlem, G. Petrich, M. Soljacic, E.P. Ippen, L.A. Kolodziejski, K.L. Hall and M.P. Kesler, "Supercollimation in photonic crystals composed of silicon rods", *Appl. Phys. Lett.*, vol. 93, 131111-13114, (2008).

2. T.M. Shih, A. Kurs, M. Dahlem, G. Petrich, M. Soljacic, E.P. Ippen, L.A. Kolodziejski, K.L. Hall and M.P. Kesler, "Supercollimation in photonic crystals composed of silicon rods", *Virtual Journal of Nanoscale Science and Technology*, vol. 18, vo. 16, (2008).

3. E.R. Thoen, J.P. Donnelly, S.H. Groves, K.L. Hall, and E.P. Ippen, "Proton Bombardment for Enhanced Four-Wave-Mixing in InGaAsP-InP Waveguides", *IEEE Photon. Technol. Lett.*, vol. 12, no. 3, 311-313, (2000).

4. K.L. Hall, D.T. Moriarty, H. Hakimi, F. Hakimi, B.S. Robinson and K.A. Rauschenbach, "An Ultrafast Variable Optical Delay Technique", *IEEE Photon. Technol. Lett.*, vol. 12, no. 2, 208-210, (2000).

5. H. Hakimi, F. Hakimi, K.L. Hall, and K.A. Rauschenbach, "A New Wide-Band Pulse-Restoration Technique for Digital Fiber-Optic Communication Systems Using Temporal Gratings", *IEEE Photon. Technol. Lett.*, vol. 11, no. 8, 1048-1050, (1999).

6. P.A. Schulz and K.L. Hall, "Impulse Response Measurements with 50-GHz Bandwidth", *IEEE Microwave and Guided Wave Lett.*, vol. 9, no. 3, 120, (1999).

7. J.D. Moores, J. Korn, K.L. Hall, S.G. Finn, and K.A. Rauschenbach, "Ultrafast Optical TDM Networking: Extension to the Wide Area", *IEICE Trans. Comm.*, vol. E82-B, no. 2, 209-221, (1999).

8. V.S.W. Chan, K.L. Hall, E. Modiano and K.A. Rauschenbach, "Architectures and Technologies for High-Speed Optical Data Networks", *J. Lightwave Technol.*, vol. 16, no. 12, 2146-2168, (1998).

9. K.L. Hall and K.A. Rauschenbach, "100-Gbit/s bitwise logic", *Opt. Lett.*, vol. 23, no. 16, 1271-1273, (1998).

10. M.H. Hu, Z. Huang, K.L. Hall, R. Scarmozzino and R.M. Osgood, "An Integrated Two-Stage Cascaded Mach-Zehnder Device in GaAs", *J. Lightwave Technol.*, vol. 16, no. 8, 1447-1455, (1998).

11. N.S. Patel, K.L. Hall and K.A. Rauschenbach, “Interferometric all-optical switches for ultrafast signal processing”, *Appl. Opt.*, vol. 37, no. 14, 2831-2842, (1998).

12. K.L Hall and K.A. Rauschenbach, “All-Optical Buffering of 40 Gb/s Data Packets”, *IEEE Photon. Technol. Lett.*, vol. 10, no. 3, 442-444, (1998).

13. D.J. Jones, K.L. Hall, H.A. Haus, and E.P. Ippen, “Asynchronous Phase-Modulated Optical Fiber Ring Buffer”, *Opt. Lett.*, vol. 23, no. 3, 177-179, (1998).

14. K.L. Hall, J.P. Donnelly, S.H. Groves, C.I. Fennelly, R.J. Bailey, and A. Napoleone, “40-Gb/s all-optical circulating shift register with an inverter”, *Opt. Lett.*, vol. 22, no. 19, 1479-1481, (1997).

15. N.S. Patel, K.L. Hall and K.A. Rauschenbach, “Optical Rate Conversion for High-Speed TDM Networks”, I*EEE Photon. Technol. Lett*., vol. 9, no. 9, 1277, (1997).

16. K.L. Hall, K.A. Rauschenbach, S.G. Finn, R.A. Barry, N.S. Patel, and J.D. Moores, “100 Gb/s Optical Network Technology”, in *Trends in Optics and Photonics*, vol. 13, Ultrafast Electronics and Optoelectronics, Martin Nuss and John Bowers, eds. (Optical Society of America, Washington, DC 1997), pp. 31-36.

17. N.S. Patel, K.A. Rauschenbach and K.L. Hall, “40 Gb/s demultiplexing using an ultrafast nonlinear interferometer”, *IEEE Photon. Technol. Lett.*, vol. 8, no. 12, 1695, (1996).

18. N.S. Patel, K.L Hall and K.A. Rauschenbach,”40 Gb/s cascadable all-optical logic with an ultrafast nonlinear interferometer”, *Opt. Lett*., vol. 21, no. 18, 1466, (1996).

19. K.L Hall and K.A. Rauschenbach, “All-Optical Bit Pattern Generation and Matching”, *Electron. Lett.*, vol. 32, no. 13, 1214, (1996).

20. R.A. Barry, V.W.S. Chan, K.L. Hall, E.S. Kintzer, J.D. Moores, K.A. Rauschenbach, E.A. Swanson, L.E. Adams, C.R. Doerr, S.G. Finn, H.A. Haus, E.P. Ippen, W.S. Wong and M. Haner, “All-Optical Network Consortium-Ultrafast TDM Networks”, *IEEE Journal on Selected Areas in Communications*, vol. 14, no. 5, 999, (1996).

21. J.D. Moores, W.S. Wong and K.L. Hall, “50 Gb/s Optical Pulse Storage Ring Using Novel Rational-Harmonic Modulation”, *Opt. Lett.*, vol. 20, no. 24, 2547, (1995).

22. K.L. Hall, J.D. Moores, K.A. Rauschenbach, W.S. Wong, E.P. Ippen and H.A. Haus, “All-Optical Storage of a 1.25 kb Packet at 10 Gb/s”, *IEEE Photon. Technol. Lett.*, vol. 7, 1093, (1995).

23. J.D. Moores, K.L. Hall, S.M. LePage, K.A. Rauschenbach, W.S. Wong, H.A. Haus and E.P. Ippen, “20-GHz Optical Storage Loop/Laser Using Amplitude Modulation, Filtering and Artificial Fast Saturable Absorption”, *IEEE Photon. Technol. Lett.*, vol. 7, 1096, (1995).

24. K.L. Hall, K. A. Rauschenbach, E.A. Swanson, S.R. Chinn, and G. Raybon, “Picosecond-Accuracy All-Optical Bit Phase Comparison Using a Nonlinear Optical Loop Mirror”, *IEEE Photon. Technol. Lett.*, vol. 7, 935, (1995).

25. E. A. Swanson, S.R. Chinn, K. Hall, K. A. Rauschenbach, R.S. Bondurant, and J.W. Miller, “100-GHz Soliton Pulse Train Generation using Soliton Compression of Two Phase Sidebands from a Single DFB Laser”, *IEEE Photon. Technol. Lett.*, vol. 6, 1194, (1994).

26. K.A. Rauschenbach, K.L. Hall, J.C. Livas and G. Raybon, “All-Optical Pulse Width and Wavelength Conversion at 10 Gb/s Using a Nonlinear Optical Loop Mirror”, *IEEE Photon. Technol. Lett.*, vol. 6, 1130, (1994).

27. K.L. Hall, G. Lenz, A.M. Darwish, and E.P. Ippen, “Subpicosecond Gain and Index Nonlinearities in InGaAsP Diode Lasers”, *Opt. Comm.*, vol. 111, 589, (1994).

28. K.L. Hall, A.M. Darwish, E.P. Ippen, U. Koren and G. Raybon, “Femtosecond Index Nonlinearities in InGaAsP Optical Amplifiers”, *Appl. Phys. Lett.*, vol. 62, no. 12, 1320, (1993).

29. K.L. Hall, G. Lenz, E.P. Ippen, U. Koren and G. Raybon, “Carrier Heating and Spectral Hole Burning in Strained-Layer Multiple Quantum Well Lasers at 1.5 μm”, *Appl. Phys. Lett*., vol. 61, 2512, (1992).

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31. K.L. Hall, G. Lenz and E.P. Ippen, “Femtosecond Time Domain Measurement of Group Velocity Dispersion in Diode Lasers at 1.5 μm”, *J. Lightwave Technol*., vol. 10, no. 5, 616-619, (1992).

32. K.L. Hall, Y. Lai, E.P. Ippen, G. Eisenstein and U. Koren, “Femtosecond Gain Dynamics and Saturation Behavior in InGaAsP Multiple Quantum Well Optical Amplifiers”, *Appl. Phys. Lett*., vol. 57, no. 27, 2888, (1990).

33. Y. Lai, K.L. Hall, E.P. Ippen and G. Eisenstein, “Short Pulse Gain Saturation in InGaAsP Diode Laser Amplifiers”, *IEEE Photon. Tech. Lett.*, vol. 2, no. 10, 711, (1990).

34. K.L. Hall, E.P. Ippen and G. Eisenstein, “Bias-Lead Monitoring of Ultrafast Nonlinearities in InGaAsP Diode Laser Amplifiers”, *Appl. Phys. Lett*., vol. 57, no. 2, 129, (1990).

35. K.L. Hall, J. Mark, E.P. Ippen, and G. Eisenstein, “Femtosecond Gain Dynamics in InGaAsP Optical Amplifiers”, *Appl. Phys. Lett*., vol. 56, no. 18, 1740, (1990).

36. J. Mark, L.Y. Liu, K.L. Hall, H.A. Haus and E.P. Ippen, “Femtosecond Pulse Generation in a Laser with a Nonlinear External Resonator”, *Opt. Lett*., vol. 14, 48-50, (1989).

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39. R.M. Jopson, G. Eisenstein, K.L. Hall, G. Raybon, C.A. Burrus, and U. Koren, “Polarisation-Dependent Gain Spectrum of a 1.5 μm Travelling-Wave Optical Amplifier”, *Electron. Lett*., vol. 22, no. 21, pp 1105-1107, (1986).

40. B.L. Kasper, C.A. Burrus, J.R. Talman, and K.L. Hall, “Balanced Dual-Detector for Optical Heterodyne Communication at Gbit/s Rates”, *Electron. Lett*., vol. 22, no. 8, 413-414, (1986).

41. R.M. Jopson, G. Eisenstein, M.S. Whalen, K.L. Hall, U. Koren, and J.R. Simpson, “A 1.55-μm Semiconductor-Optical Fiber Ring Laser”, *Appl. Phys. Lett*., vol. 48, 204, (1986).

42. E. Marden Marshall and K.L. Hall, “Collisional Drift Instability in Hollow and Coaxial Plasmas”, *Plasma Physics and Controlled Fusion*, vol. 28, no. 12A, 1867-1884, (1986).

43. R.M. Jopson, G. Eisenstein, K.L.Hall and J.R. Simpson, “Microlenses for Stressed-Cladding Polarisation-Preserving Fibre”, *Electron. Lett.*, vol. 21, no. 17, 758-759, (1985).

44. G. Eisenstein, R.M. Jopson, R.A. Linke, C.A. Burrus, U. Koren, M.S. Whalen and K.L. Hall, “Gain Measurements of InGaAsP 1.5 μm Optical Amplifiers”, *Electron. Lett.*, vol. 21, 1076, (1985).

45. Y.K. Jhee, K.Y. Liou, C.A. Burrus, and K.L. Hall, “Linewidth Reduction of Cleaved-Coupled-Cavity Lasers by Optical Feedback from a Single-Mode Polarisation-Preserving Fibre External Cavity”, *Electron. Lett*., vol. 21, 1146, (1985).

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47. R.M. Jopson, G. Eisenstein, H.E. Earl, and K.L. Hall, “Bulk Optical Isolator Tunable from 1.2 μm to 1.7 μm”, *Electron. Lett*., vol. 21, no. 18, 783-784, (1985).

48. G. Eisenstein, R.S. Tucker, S.K. Korotky, U. Koren, J.J. Veselka, L.W. Stulz, R.M. Jopson, and K.L. Hall, “Active Mode-Locking of an InGaAsP 1.55μm Laser in a Fibre Resonator with an Integrated Single-Mode-Fibre Output Port”, *Electron. Lett*, vol. 21, no. 5, 173-175, (1985).

49. G. Eisenstein, S.K. Korotky, L.W. Stulz, J.J. Veselka, R.M. Jopson, and K.L. Hall, “Antireflection Coatings on Lithium Niobate Waveguide Devices Using Electron Beam Evaporated Yttrium Oxide”, *Electron. Lett*., vol. 21, no. 9, 363-364, (1985).

50. E. Marden Marshall and K.L. Hall, “Density Gradient Driven Drift Instability in Hollow and Coaxial Plasmas”, *Bulletin of the American Physical Society*, vol. 29, 1264, (1984).

51. E. Marden Marshall and K.L. Hall, ``Collisional Drift Instability in Plasmas with Modified Cross-Sections", *Bulletin of the American Physical Society*, vol. 28, 1067, (1983).

Book Chapters

1. K.L. Hall, E.R. Thoen and E.P. Ippen, “Nonlinearities in Active Media”, in *Semiconductors and Semimetals*, vol. 59, Nonlinear Optics in Semiconductors II, Academic Press, San Diego.

Patents

1. K.L. Hall, J.D. Moores, K.A. Rauschenbach, “Optical Memory and Data Pattern Generator”, U.S. Patent No. 5,566,261.

2. K.L. Hall, K.A. Rauschenbach, “Apparatus and Method for Comparing Optical Bits”, U.S. Patent No. 5,831,731.

3. N.S. Patel, K.L. Hall, J.D. Moores, K.A. Rauschenbach, S.G. Finn, R.A. Barry, “Optical Bit Rate Converter”, U.S. Patent No. 6,175,433.

4. M. Medard, J.D. Moores, K.L. Hall, K.A. Rauschenbach, S. Parikh, A.H. Chan, “Pseudorandom Noise Sequence Generator”, U.S. Patent No. 6,201,870.

5. K.L. Hall, H. Hakimi, F. Hakimi, D.T Moriarty, K.A. Rauschenbach, “Fast Variable Optical Delay”, U.S. Patent No. 6,356,677.

6. K.L. Hall, K.A. Rauschenbach, “All-Optical Bit Phase Sensing and Clock Recovery Apparatus and Methods”, U.S. Patent No. 6,388,753.

7. F. Hakimi, H. Hakimi, K.L. Hall, “Wavelength Shifting and Optical Switching”, U.S. Patent No. 6,427,039.

8. N.S. Patel, K.L. Hall, J.D. Moores, K.A. Rauschenbach, S.G. Finn, R.A. Barry, “Optical Bit Rate Converter”, U.S. Patent No. 6,563,895.

9. K.L. Hall and K.A. Rauschenbach, “All-Optical Bit Phase Sensing”, U.S. Patent No. 6,634,813.

10. F. Hakimi, H. Hakimi, K.L. Hall, “Wavelength Shifting and Optical Switching”, U.S. Patent No. 6,671,427.

11. K.L. Hall, H. Hakimi, F. Hakimi, D.T. Moriarty, K.A. Rauschenbach, “Fast Variable Optical Delay”, U.S. Patent No. 6,674,930.

12. A.B. Kurs, A. Karalis, K.L. Hall, M.P. Kesler, M. Soljacic, “Wireless Energy Transfer using Planar Capacitively Loaded Conducting Loop Resonators”, U.S. Patent No. 8,035,255.

13. D.A. Schatz, H.T. Lou, M.P. Kesler, K.L. Hall, K.J. Kulikowski, E.R. Giler, R. Fiorello, “Wireless Energy Transfer for Refrigerator Application”, U.S. Patent No. 8,106,539.

14. A. Karalis, A.B. Kurs, A. Campanella, K.J. Kulikowski, K.L. Hall, M. Soljacic, M.P. Kesler, “Wireless Energy Transfer using Field Shaping to Reduce Loss”, U.S. Patent No. 8,304,935.

15. A. Karalis, A.B. Kurs, A. Campanella, K.J. Kulikowski, K.L. Hall, M. Soljacic, M.P. Kesler, “Wireless Energy Transfer using Magnetic Materials to Shape Field and Reduce Loss”, U.S. Patent No. 8,324,759.

16. A.B. Kurs, A. Karalis, M.P. Kesler, A. Campanella, K.L. Hall, K.J. Kulikowski, Q. Li, M. Soljacic, “Wireless Energy Transfer for Computer Peripheral Applications”, U.S. Patent No. 8,400,017.

17. A.B. Kurs, A. Karalis, M.P. Kesler, A. Campanella, K.L. Hall, K.J. Kulikowski, M. Soljacic, “Low AC Resistance Conductor Designs”, U.S. Patent No. 8,410,636.

18. A. Karalis, A.B. Kurs, A. Campanella, D.A. Schatz, H.T. Lou, M.P. Kesler, K.L. Hall, K.J. Kulikowski, E.R. Giler, R. Fiorello, M. Soljacic, “Multi-Resonator Wireless Energy Transfer for Exterior Lighting”, U.S. Patent No. 8,441,154.

19. M.P. Kesler, A. Karalis, A.B. Kurs, A. Campanella, R. Fiorello, Q. Li, K.J. Kulikowski, E.R. Giler, F.J. Pergal, D.A. Schatz, K.L. Hall, M. Soljacic, “Wireless Energy Transfer Systems”, U.S. Patent No. 8,461,719.

20. A.B. Kurs, A. Campanella, K.J. Kulikowski, K.L. Hall, M. Soljacic, M.P. Kesler, A. Karalis, “Wireless Energy Transfer using Conducting Surfaces to Shape Fields and Reduce Loss”, U.S. Patent No. 8,461,720.

21. A. Karalis, A.B. Kurs, A. Campanella, K.J. Kulikowski, K.L. Hall, M. Soljacic, M.P. Kesler, “Wireless Energy Transfer using Object Positioning for Low Loss”, U.S. Patent No. 8,461,721.

22. A.B. Kurs, A. Campanella, K.J. Kulikowski, K.L. Hall, M. Soljacic, M.P. Kesler, A. Karalis, “Wireless Energy Transfer using Conducting Surfaces to Shape Field and Improve k”, U.S. Patent No. 8,461,722.

23. A. Karalis, A.B. Kurs, A. Campanella, D.A. Schatz, M.P. Kesler, K.L. Hall, E.R. Giler, M. Soljacic, M.P. Kesler, “Tunable Wireless Energy Transfer for Outdoor Lighting Applications”, U.S. Patent No. 8,466,583.

24. A. Karalis, A.B. Kurs, A. Campanella, K.J. Kulikowski, K.L. Hall, M. Soljacic, M.P. Kesler, “Wireless Energy Transfer Over Distance using Field Shaping to Improve the Coupling Factor”, U.S. Patent No. 8,471,410.

25. A. Karalis, A.B. Kurs, A. Campanella, K.J. Kulikowski, K.L. Hall, M. Soljacic, M.P. Kesler, “Wireless Energy Transfer with High-Q Resonators using Field Shaping to Improve k”, U.S. Patent No. 8,476,788.

26. A.B. Kurs, A. Karalis, M.P. Kesler, A. Campanella, K.L. Hall, K.J. Kulikowski, M. Soljacic, “Wireless Energy Transfer using Variable Size Resonators and System Monitoring”, U.S. Patent No. 8,482,158.

27. M.P. Kesler, A. Karalis, A.B. Kurs, A. Campanella, R. Fiorello, Q. Li, K.J. Kulikowski, E.R. Giler, D.A. Schatz, K.L. Hall, M. Soljacic, “Wireless Energy Transfer Resonator Kit”, U.S. Patent No. 8,487,480.

28. K.L. Hall, M.P. Kesler, K.J. Kulikowski, A.J. Campanella, “Wireless Energy Transfer Converters”, U.S. Patent No. 8,497,601.

29. D.A. Schatz, H.T. Lou, M.P. Kesler, K.L. Hall, K.J. Kulikowski, E.R. Giler, R. Fiorello, “Wireless Energy Transfer with Feedback Control for Lighting Applications”, U.S. Patent No. 8,552,592.

30. A. Karalis, A.B. Kurs, A.J. Campanella, K.J. Kulikowski, K.L. Hall, M. Soljacic, M.P. Kesler, “Wireless Energy Transfer Using Object Positioning for Improved k”, U.S. Patent No. 8,569,914.

31. D.A. Schatz, A. Karalis, K.L. Hall, M.P. Kesler, M. Soljacic, E.R. Giler, A.B. Kurs, K.J. Kulikowski, “Wireless Energy Transfer Using High-Q Resonators for Lighting Applications”, U.S. Patent No. 8,587,153.

32. E.R. Giler, K.L. Hall, M.P. Kesler, M. Soljacic, A. Karalis, A.B. Kurs, Q. Li, S.J. Ganem, “Wireless Energy Transfer Using Repeater Resonators”, U.S. Patent No. 8,587,155.

33. K.L. Hall, M.P. Kesler, K.J. Kulikowski, M.A. Feldstein, V. Efe, “Resonator Arrays for Wireless Energy Transfer”, U.S. Patent No. 8,598,743.

34. A.B. Kurs, A. Karalis, M.P. Kesler, A.J. Campanella, K.L. Hall, K.J. Kulikowski, Q. Li, M. Soljacic, “Wireless Energy Transfer Systems”, U.S. Patent No. 8,618,696.

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36. A.J. Campanella, H.T. Lou, M.P. Kesler, K.L. Hall, R. Fiorello, A. Karalis, “Tunable Wireless Energy Transfer Systems”, U.S. Patent No. 8,643,326.

37. A. Karalis, A.B. Kurs, A.J. Campanella, K.J. Kulikowski, K.L. Hall, M. Soljacic. M.P. Kesler, “Wireless Energy Transfer Across Variable Distances using Field Shaping with Magnetic Materials to Improve the Coupling Factor”, U.S. Patent No. 8,669,676.

38. D.A. Schatz, A. Karalis, K.L. Hall, M.P. Kesler, M. Soljacic, E.R. Giler, A.B. Kurs, K.J. Kulikowski, “Wireless Energy Transfer for Supplying Power and Heat to a Device”, U.S. Patent No. 8,686,598.

39. D.A. Schatz, A. Karalis, K.L. Hall, M.P. Kesler, M. Soljacic, E.R. Giler, A.B. Kurs, K.J. Kulikowski, “Wireless Energy Transfer with Frequency Hopping”, U.S. Patent No. 8,692,410.

40. A.B. Kurs, A. Karalis, M.P. Kesler, A.J. Campanella, K.L. Hall, K.J. Kulikowski, and M. Soljacic, “Low AC Resistance Conductor Designs”, U.S. Patent No. 8,716,903.

41. D.A. Schatz, K.L. Hall, M.P. Kesler, A.B. Kurs, and K.J. Kulikowski, “Wireless Energy Transfer Using Repeater Resonators”, U.S. Patent No. 8,729,737.

42. M.P. Kesler, K.L. Hall. A.B. Kurs, A. Karalis, M. Soljacic, A.J. Campanella, and D.A. Schatz, “Wireless Energy Transfer for Implantable Devices”, U.S. Patent No. 8,847,548.

43. M.P. Kesler, K.L. Hall, K. Kulikowski, A. Karalis, A.B. Kurs, M. Soljacic, A.J. Campanella and V. Efe, “Wireless Energy Transfer with Variable Size Resonators for Implanted Medical Devices”, U.S. Patent No. 8,901,778.

44. A.B. Kurs, A.J. Campanella, A. Karalis, D. Schatz, K.L. Hall, M. Soljacic, M.P, Kesler, “Wireless Energy Transfer for Implantable Devices”, Australian Patent No. AU2012268613.

45. M.P. Kesler, K.L. Hall, A.J. Campanella, A. Karalis, A.B. Kurs, M. Soljacic, K. Kulikowski, “Wireless Energy Transfer with Resonator Arrays for Medical Applications”, U.S. Patent No. 8,901,779.

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