

**Kristan L. Corwin**  
**Curriculum Vitae**

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**Education:**

University of Colorado, Boulder CO	Physics	Ph.D.	1999
Thesis advisor: Carl E. Wieman			
University of Colorado, Boulder CO	Physics	M. S.	1996
State University of New York at Buffalo	Physics	B. S.	1993

**Appointments:**

<i>Interim Associate Dean for Research</i> , College of Arts and Sciences	2017 – present
<i>Ernest K. and Lillian E. Chapin Professor of Physics</i> , Kansas State University	2017 – present
<i>Professor</i> , Kansas State University, Manhattan, Kansas	2016 – present
<i>Associate Professor</i> , Kansas State University, Manhattan, Kansas	2008 – 2016
<i>Assistant Professor</i> , Kansas State University, Manhattan, Kansas	2003 – 2008
<i>Lecturer</i> , University of Colorado, Boulder, Colorado	2002 – 2003
<i>National Research Council Postdoctoral Fellow</i> , NIST, Boulder Colorado	2001 – 2003
<i>Postdoctoral Research Associate</i> , L'Ecole Normale Supérieure, Paris, France	2000 – 2001
<i>Graduate Research Assistant</i> , JILA, University of Colorado	1994 – 1999
<i>Graduate Teaching Assistant</i> , University of Colorado	1993 – 1994

**Professional and Leadership Experience:**

Division of Laser Science, American Physical Society	
Vice Chair, Chair-Elect	2017 – present
Executive Committee Member-at-large	2014 – 2017
DLS Thesis prize committee member and Chair	2014 – present
Board Member, Jonathan F. Reichert Foundation	2016- present
Co-Director, Optical Frequency Comb Winter School, ICTP, Trieste, Italy	2016
OSA Lomb Medal Selection Committee member and Chair	2015 – 2016
Committee on Atomic, Molecular and Optical Sciences (CAMOS) of the National Research Council (NRC): Member	2012 – 2015
Executive Committee Member: APS Group on Precision Measurement and Fundamental Constants	2009 – 2012
Conference on Lasers and Electro-Optics Sub-committee member	2009 – 2012
Topical Group 14: Optical Metrology	
Nominating Committee Member: NSF Physics REU Leadership Group 2011	
Review Panel member, National Science Foundation (some site visits)	2006 – 2010
Referee: <u>Appl. Opt.</u> , <u>J. of Quantum Electronics</u> , <u>Nature</u> , <u>Nature Photonics</u> , <u>Opt. Comm</u> , <u>Opt. Express</u> , <u>Opt. Lett.</u> , <u>Phys. Rev. Lett.</u> , and <u>Phys. Rev. A</u>	
Member: American Physical Society,	
Optical Society of America (lifetime member)	

Consultant, New Focus Corp., application note author and catalog editor,	1997, 1999
President of physics graduate students, University of Colorado	1997 – 1998
Atomic Physics Journal Club Organizer, JILA and Univ. of Colorado	1995 – 1997

**Honors and Awards:**

<b>Member, National Academy of Inventors</b>	2016–present
<b>JILA Visiting Fellow</b>	2015 – 2016
<b>Ad Astra top 150 scientists in Kansas</b>	2011
<b>College of Arts and Sciences William L. Stamey Teaching Award</b>	2010
<b>Selected by K-State Physics Students: Schwenk Award</b>	2010
<b>Making a difference award, Women in Engineering and Science Program</b>	2009, 2010
<b>Big 12 Rising Star Award</b> from the Center for Economic Development, Innovation and Commercialization	2007
<b>Optical Society of America Reviewer Reward</b>	2005
<b>NSF CAREER Award</b>	2005
<b>Kansas NSF EPSCoR First Award</b>	2004
<b>Kansas State University Mentoring Fellowship</b>	2003
<b>National Research Council Postdoctoral Fellowship</b>	2001–2003
<b>Graduate School Fellowship, University of Colorado</b>	1993–1995

**Publications****Patents and Provisional Patents:**

“Fluid-Filled Hollow Optical Fiber Cell,” Kristan L. Corwin, Chenchen Wang, Ryan J. Luder, Sajed Hosseini Zavareh, and Brian Washburn, US Patent application, filed March 21, 2017.

"Fluid-Filled Photonic Microcell," Kristan L. Corwin, Chenchen Wang, Ryan J. Luder, Sajed Hosseini Zavareh, and Brian Washburn, Provisional Patent Application No. 62/311,223 filed on March 21, 2016

“Gas Filled Hollow Fiber Laser,” Wolfgang Rudolph, Amarin Ratanavis, Vasudevan Nampoothiri, Kristan L. Corwin, Andrew M. Jones, Rajesh Kadel, Brian R. Washburn, Rajesh Kadel, and John M. Zavada, **U.S. Patent Number 9,106,055**, (2015).

“Reflected Pump Technique for Saturated Absorption Spectroscopy inside Hollow Photonic Bandgap Fibers,” K. Knabe, R. Thapa, B. R. Washburn and K. L. Corwin, Provisional Patent, Submitted to US Patent Office Sept 18 (2006).

“A System and a Method for Frequency-Stabilizing a Diode Laser,” K. L. Corwin, Zheng-Tian Lu, Carter F. Hand, Ryan J. Epstein, and Carl E. Wieman, **US Patent Number US6009111** (1999).

**Peer-Reviewed Publications:**

1. Neda Dadashzadeh, Manasadevi P. Thirugnanasambandam, H. W. Kushan Weerasinghe, Benoit Debord, Matthieu Chafer, Frederic Gerome, Fetah Benabid, Brian R. Washburn, and Kristan L. Corwin, “Near diffraction-limited performance of an OPA pumped acetylene-filled hollow-core fiber laser in the mid-IR,” *Optics Express* 25, 13351-13358 (2017). <https://doi.org/10.1364/OE.25.013351>
2. Shun Wu, Karl Tillman, Brian R. Washburn, and Kristan L. Corwin, “Carrier-envelope offset frequency linewidth narrowing in a Cr:forsterite laser-based frequency comb”,

- Applied Optics Vol. 55, Issue 34, pp. 9810-9817 (2016).  
<https://doi.org/10.1364/AO.55.009810>
3. N. Dadashzadeh, M. Thirugnanasambandam, K. Weerasinghe, B. Debord, M. Chafer, F. Gérôme, F. Benabid, B. Washburn, and K. L. Corwin, "Near-Gaussian Spatial Mode from a Mid-IR Acetylene-filled Hollow-Core Fiber Laser," in *Frontiers in Optics 2016*, OSA Technical Digest (online) (Optical Society of America, 2016), paper FTu1I.5.  
<https://doi.org/10.1364/FIO.2016.FTu1I.5>
  4. Neda Dadashzadeh, Manasa Thirugnanasambandam, Kushan Weerasinghe, Benoît Debord, Matthieu Chafer, Frédéric Gérôme, Fetah Benabid, Brian Washburn, and Kristan Corwin "Power-scaling a Mid-IR OPA-pumped Acetylene-filled Hollow-Core Photonic Crystal Fiber Laser," in *CLEO: 2016*, OSA Technical Digest (online) (Optical Society of America, 2016), paper STh4O.1. [https://doi.org/10.1364/CLEO\\_SI.2016.STh4O.1](https://doi.org/10.1364/CLEO_SI.2016.STh4O.1)
  5. Ryan Luder, Sajed Hosseini-Zavareh, Chenchen Wang, Manasa Thirugnanasambandam, Brian Washburn, and Kristan Corwin, "Short Acetylene-Filled Photonic Bandgap Fiber Cells Toward Practical Industry Standards," in *CLEO: 2016*, OSA Technical Digest (online) (Optical Society of America, 2016), paper SM2H.6.  
[https://doi.org/10.1364/CLEO\\_SI.2016.SM2H.6](https://doi.org/10.1364/CLEO_SI.2016.SM2H.6)
  6. Shun Wu, Chenchen Wang, Coralie Fourcade-Dutin, Brian R. Washburn, Fetah Benabid, and Kristan L. Corwin, "Direct fiber comb stabilization to a gas-filled hollow-core photonic crystal fiber," *Opt. Express* 22, 23704-23715 (2014) [10.1364/OE.22.023704](https://doi.org/10.1364/OE.22.023704)
  7. C. Wang, S. Wu, B. Mangan, L. Meng, J. M. Fini, R. S. Windeler, E. M. Monberg, A. Desantolo, K. Mukasa, J. W. Nicholson, D. DiGiovanni, B. R. Washburn, and K. L. Corwin, "Single-mode hollow-core fiber for portable acetylene sub-Doppler frequency reference," in *CLEO: 2014*, OSA Technical Digest (online) (Optical Society of America, 2014), paper SM3N.7. [10.1364/CLEO\\_SI.2014.SM3N.7](https://doi.org/10.1364/CLEO_SI.2014.SM3N.7)
  8. C. Wang, S. Wu, C. Fourcade Dutin, B. R. Washburn, F. Benabid, and K. L. Corwin, "Toward an all-fiber based optically referenced frequency comb," in *CLEO: 2014*, OSA Technical Digest (online) (Optical Society of America, 2014), paper SW1O.7.  
[10.1364/CLEO\\_SI.2014.SW1O.7](https://doi.org/10.1364/CLEO_SI.2014.SW1O.7)
  9. S. Wu, C. Wang, C. Fourcade Dutin, B. R. Washburn, F. Benabid, and K. L. Corwin, "Direct Comb Stabilization to a  $^{12}\text{C}_2\text{H}_2$ -filled Hollow-core Fiber via Single Tooth Saturated Absorption Spectroscopy," in *CLEO: 2014*, OSA Technical Digest (online) (Optical Society of America, 2014), paper SW1O.1. [10.1364/CLEO\\_SI.2014.SW1O.1](https://doi.org/10.1364/CLEO_SI.2014.SW1O.1)
  10. Chenchen Wang, Natalie V. Wheeler, Coralie Fourcade-Dutin, Michael Grogan, Thomas D. Bradley, Brian R. Washburn, Fetah Benabid, and Kristan L. Corwin, "Acetylene frequency references in gas-filled hollow optical fiber and photonic microcells," *Applied Optics*, Vol. 52, Issue 22, pp. 5430-5439 (2013) [10.1364/AO.52.005430](https://doi.org/10.1364/AO.52.005430)
  11. S. Wu, C. Wang, C. Fourcade-Dutin, B. R. Washburn, F. Benabid, and K. L. Corwin, "Sub-Doppler Intrafiber Spectroscopy of  $\text{C}_2\text{H}_2$  Using Amplified Frequency Comb Lines Directly," in *CLEO: 2013*, OSA Technical Digest (online) (Optical Society of America, 2013), paper CTu3I.1. [10.1364/CLEO\\_SI.2013.CTu3I.1](https://doi.org/10.1364/CLEO_SI.2013.CTu3I.1)
  12. Chenchen Wang, Thomas Bradley, Yingying Wang, Kristan L. Corwin, Frédéric Gérôme, and Fetah Benabid, "Angle splice of large-core kagome hollow-core photonic crystal fiber for gas-filled microcells," *CLEO: Science and Innovations*, San Jose,

- California United States, June 9-14, 2013, Special Fiber Design & Fabrication (CM3I) [10.1364/CLEO\\_SI.2013.CM3I.1](https://doi.org/10.1364/CLEO_SI.2013.CM3I.1)
13. Shun Wu, Chenchen Wang, Coralie Fourcade-Dutin, Brian R. Washburn, Fetah Benabid, and Kristan L. Corwin, "Direct Stabilization of a Frequency Comb to a  $^{12}\text{C}_2\text{H}_2$ -filled Hollow-core Photonic Crystal Fiber", *Frontiers in Optics*, Orlando, FL, October 2013 Frequency Comb Science and Technology I (FTu1A) [10.1364/FIO.2013.FTu1A.4](https://doi.org/10.1364/FIO.2013.FTu1A.4)
  14. W. Rudolph, C. Mao, N. Campbell, V. Nampoothiri, B. Baumgart, A. M. Jones, B. R. Washburn, and K. L. Corwin, "Gas Filled Photonic Crystal Fiber Lasers," in *Lasers, Sources, and Related Photonic Devices*, OSA Technical Digest (CD) (Optical Society of America, 2012), paper ITh1B.2. <https://doi.org/10.1364/AIOM.2012.ITh1B.2>
  15. Chenchen Wang, Nathalie V. Wheeler, Coralie F. Dutin, Michael Grogan, Tom Bradley, Brian R. Washburn, Fetah Benabid, and Kristan L. Corwin, "Accurate Fiber-based Acetylene Frequency References", Conference Paper, CLEO: Science and Innovations, San Jose, California, May 6, 2012, Optical Combs and Spectroscopic Applications (CF2C) [10.1364/CLEO\\_SI.2012.CF2C.7](https://doi.org/10.1364/CLEO_SI.2012.CF2C.7)
  16. M. Jones, B. Baumgart, C. Mao, A. V. V. Nampoothiri, N. Campbell, C. F. Dutin, Y. Wang, F. Benabid, W. Rudolph, B. R. Washburn, and K. L. Corwin, "Efficient Mid-IR Lasing in Gas-Filled Hollow Waveguides," in CLEO: Science and Innovations, OSA Technical Digest (online) (Optical Society of America, 2012), paper CM3N.2. [10.1364/CLEO\\_SI.2012.CM3N.2](https://doi.org/10.1364/CLEO_SI.2012.CM3N.2)
  17. A. M. Jones, C. Fourcade-Dutin, C. Mao, B. Baumgart, A. V. V. Nampoothiri, N. Campbell, Y. Wang, F. Benabid, W. Rudolph, B. R. Washburn and K. L. Corwin, "Characterization of mid-infrared emissions from  $\text{C}_2\text{H}_2$ , CO,  $\text{CO}_2$ , and HCN-filled hollow fiber lasers," *Photonics West* January 2012, Proceedings of SPIE **8237**, 82373Y (10 pages), 2012. <http://dx.doi.org/10.1117/12.909254>
  18. V. Vasudevan Nampoothiri, Andrew M. Jones, C. Fourcade-Dutin, Chenchen Mao, Neda Dadashzadeh, Bastian Baumgart, Y.Y. Wang, M. Alharbi, T. Bradley, Neil Campbell, F. Benabid, Brian R. Washburn, Kristan L. Corwin, and Wolfgang Rudolph, "Hollow-core Optical Fiber Gas Lasers (HOFGLAS): a review," *Optical Materials Express*, Vol. 2, Issue 7, pp. 948-961 (2012) [10.1364/OME.2.000948](https://doi.org/10.1364/OME.2.000948)
  19. Wang, N. V. Wheeler, J. Lim, K. Knabe, M. Grogan, Y. Wang, B. R. Washburn, F. Benabid, and K. L. Corwin, "Portable Acetylene Frequency References inside Sealed Hollow-core Kagome Photonic Crystal Fiber," in *CLEO:2011 - Laser Applications to Photonic Applications*, OSA Technical Digest (CD) (Optical Society of America, 2011), paper CFC1. [10.1364/CLEO\\_SI.2011.CFC1](https://doi.org/10.1364/CLEO_SI.2011.CFC1)
  20. Jones, A. V. V. Nampoothiri, T. Fiedler, R. Kadel, W. Hageman, N. V. Wheeler, F. Couny, F. Benabid, W. Rudolph, K. L. Corwin, and B. R. Washburn, "Mid-IR Fiber Lasers Based on Molecular Gas-filled Hollow-Core Photonic Crystal Fiber," in *CLEO:2011 - Laser Applications to Photonic Applications*, OSA Technical Digest (CD) (Optical Society of America, 2011), paper CThD1. [10.1364/CLEO\\_SI.2011.CThD1](https://doi.org/10.1364/CLEO_SI.2011.CThD1)
  21. A.M. Jones, A V V Nampoothiri, A. Ratanavis, T. Fiedler, N. V. Wheeler, F. Couny, R. Kadel, F. Benabid, B. R. Washburn, K. L. Corwin, and W. Rudolph, "Mid-infrared gas filled photonic crystal fiber laser based on population inversion," *Optics Express*, 19, 2309-2316 (2011). [10.1364/OE.19.002309](https://doi.org/10.1364/OE.19.002309)

22. A. M. Jones, A. V. V. Nampoothiri, A. Ratanavis, R. Kadel, N. V. Wheeler, F. Couny, F. Benabid, W. Rudolph, B. R. Washburn, and K. L. Corwin, "C<sub>2</sub>H<sub>2</sub> Gas Laser Inside Hollow-Core Photonic Crystal Fiber Based on Population Inversion," Conf. on Lasers and Electro-Optics (CLEO), May 2010, paper CTuU1, San Jose, CA.  
<http://www.opticsinfobase.org/abstract.cfm?URI=CLEO-2010-CTuU1>
23. "Laser emission from a gas (acetylene) filled hollow fiber," A.V.V. Nampoothiri, A. Jones, A. Ratanavis, K. Corwin, B.R. Washburn, W. Rudolph, , Post-Deadline Photonics West, Jan. 2010, San Francisco, CA
24. K. Knabe, S. Wu, J. Lim, K. Tillman, P. Light, F. Couny, N. Wheeler, R. Thapa, A. Jones, J. Nicholson, B. Washburn, F. Benabid, and K. Corwin, "10 kHz accuracy of an optical frequency reference based on <sup>12</sup>C<sub>2</sub>H<sub>2</sub>-filled large-core kagome photonic crystal fibers," Opt. Express **17**, 16017-16026 (2009). [10.1364/OE.17.016017](https://doi.org/10.1364/OE.17.016017)
25. Lim, K. Knabe, K. Tillman, W. Neely, Y. Wang, R. Amezcua-Correa, F. Couny, P. Light, F. Benabid, J. Knight, K. Corwin, J. Nicholson, and B. Washburn, "A phase-stabilized carbon nanotube fiber laser frequency comb," Opt. Express **17**, 14115-14120 (2009). [10.1364/OE.17.014115](https://doi.org/10.1364/OE.17.014115)
26. Karl A. Tillman, Rajesh Thapa, Kevin Knabe, Shun Wu, Jinkang Lim, Brian R. Washburn, and Kristan L. Corwin, "Stabilization of a self-referenced, prism-based, Cr:forsterite laser frequency comb using an intracavity prism," Appl. Opt. **48**, 6980-6989 (2009)  
[10.1364/AO.48.006980](https://doi.org/10.1364/AO.48.006980)
27. K. Knabe, J. Lim, K. Tillman, R. Thapa, F. Couny, P. S. Light, J. W. Nicholson, B. R. Washburn, F. Benabid, and K. L. Corwin, "Stability of an Acetylene Frequency Reference inside Kagome Structured Hollow-Core Photonic Crystal Fiber," in *Conference on Lasers and Electro-Optics/International Quantum Electronics Conference*, OSA Technical Digest (CD) (Optical Society of America, 2009), paper CWB5. [10.1364/CLEO.2009.CWB5](https://doi.org/10.1364/CLEO.2009.CWB5)
28. Jinkang Lim, Kevin Knabe, Yishan Wang, Rodrigo Amezcua-Correa, François Couny, Philip S. Light, Fetah Benabid, Jonathan C. Knight, Kristan L. Corwin, Jeffrey W. Nicholson, and Brian R. Washburn, "Phase-Stabilized 167 MHz Repetition Frequency Carbon Nanotube Fiber Laser Frequency Comb in *Conference on Lasers and Electro-Optics/International Quantum Electronics Conference*, OSA Technical Digest (CD) (Optical Society of America, 2009), paper CTuK2. [10.1364/CLEO.2009.CTuK2](https://doi.org/10.1364/CLEO.2009.CTuK2)
29. A. M. Jones, K. Knabe, J. Lim, R. Thapa, K. Tillman, F. Couny, P. S. Light, F. Benabid, B. R. Washburn, and K. L. Corwin, "Stability of Optical Frequency References Based on Acetylene-Filled Kagome-Structured Hollow Core Fiber," in *Frontiers in Optics 2008/Laser Science XXIV/Plasmonics and Metamaterials/Optical Fabrication and Testing*, OSA Technical Digest (CD) (Optical Society of America, 2008), paper FWF7. [10.1364/FIO.2008.FWF7](https://doi.org/10.1364/FIO.2008.FWF7)
30. K. A. Tillman, R. Thapa, B. R. Washburn, and K. L. Corwin, "Significant Carrier Envelope Offset Frequency Linewidth Narrowing in a Prism-Based Cr:Forsterite Frequency Comb," in *Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies*, OSA Technical Digest (CD) (Optical Society of America, 2008), paper CTuC5.  
<https://www.osapublishing.org/abstract.cfm?uri=cleo-2008-CTuC5&origin=search>

31. K. Knabe, A. Jones, K. L. Corwin, F. Couny, P. S. Light, and F. Benabid, "Saturated Absorption Spectroscopy of  $C^{2+}H^{2+}$  inside a Hollow, Large-Core Kagome Photonic Crystal Fiber," in *Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies*, OSA Technical Digest (CD) (Optical Society of America, 2008), paper JFA5. <https://www.osapublishing.org/abstract.cfm?uri=cleo-2008-JFA5&origin=search>
32. Karl A. Tillman, Rajesh Thapa, Brian R. Washburn and Kristan Corwin, "Carrier-envelope phase dynamics in a self-referenced prism-based chromium:forsterite frequency comb," Annual meeting of the Lasers for Electro-Optics Society (LEOS), October 2007, Buena Vista, FL.
33. R. Thapa, K. A. Tillman, A. Naweed, A. Jones, B. R. Washburn and K. L. Corwin, "Phase-stabilized Prism-based Cr:forsterite Laser Frequency Comb for Absolute Frequency Measurements," Tech. Dig., Conf. on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conf. (CLEO/QELS), May 2007, Baltimore, MD.
34. Kevin Knabe, Rajesh Thapa, Brian R. Washburn, and Kristan L. Corwin, "Reflected Pump Technique for Saturated Absorption Spectroscopy Inside Photonic Bandgap Fibers," Tech. Dig., Conf. on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conf. (CLEO/QELS), May 2007, Baltimore, MD.
35. E. Moon, Chengquan Li, Zuoliang Duan, J. Tackett, K. L. Corwin, B. R. Washburn, Zenghu Chang, "Reducing the Fast Carrier-Envelope Phase Jitter of Amplified Femtosecond Laser Pulses," Tech. Dig., Conf. on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conf. (CLEO/QELS), May 2007, Baltimore, MD.
36. E. Moon, Chengquan Li, Zuoliang Duan, J. Tackett, K. L. Corwin, B. R. Washburn, Zenghu Chang, "Reduction of fast carrier-envelope phase jitter in femtosecond laser amplifiers," *Optics Express*, **14**, 9758-9763 (2006).
37. R. Thapa, K. Knabe, K. L. Corwin, and B. R. Washburn, "Arc fusion splicing of hollow-core photonic bandgap fibers for gas-filled fiber cells," *Optics Express*, **14**, 9576-9583 (2006).
38. K. Knabe, R. Thapa, O. L. Weaver, B. R. Washburn, and K. L. Corwin, "Comparison of Saturated Absorption Spectra of Acetylene Gas Inside Photonic Bandgap Fibers," Tech. Digest, Symposium on Optical Fiber Measurements (SOFM 2006), Sep 19-20, 2006, Boulder, CO, NIST Special Publication 1055, pp. 55-58 (2006).
39. Rajesh Thapa, Kevin Knabe, Mohammed Faheem, Ahmer Naweed, Oliver L. Weaver, and Kristan L. Corwin, "Saturated absorption spectroscopy of acetylene gas inside large-core photonic bandgap fiber," *Optics Letters*, **31**, 2489 (2006).
40. R. Thapa, K. Knabe, A. Naweed, M. Faheem, O. L. Weaver, and K. L. Corwin, "Saturated Absorption Signals from Acetylene Gas Inside Photonic Bandgap Fiber," Tech. Dig., Conf. on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conf. (CLEO/QELS), May 23-25, 2006, Long Beach, CA (2006).
41. R. Thapa, K. L. Corwin, and B. R. Washburn, "Splicing hollow-core photonic bandgap fiber to solid core fiber using an arc fusion splicer," Tech. Dig., Conf. on Lasers and Electro-Optics and Quantum Electronics and Laser Science Conf. (CLEO/QELS), May 23-25, 2006, Long Beach, CA (2006).

42. Mohammed Faheem, Rajesh Thapa, and Kristan L. Corwin, "Spectral Hole Burning of Acetylene Gas inside a Photonic Bandgap Optical Fiber", Tech. Dig., Conf. on Lasers and Electro-Optics and Electro-Optics/Quantum Electronics and Laser Science Conference (CLEO/QELS), May 2005, Baltimore, MD (2005).
43. K. L. Corwin, I. Thomann, T. Dennis, R. W. Fox, W. Swann, E. A. Curtis, C. W. Oates, G. Wilpers, A. Bartels, S. L. Gilbert, L. Hollberg, N. R. Newbury, S. A. Diddams, J. W. Nicholson, and M. F. Yan, "Absolute-frequency measurements with a stabilized near-infrared optical frequency comb from a Cr : forsterite laser," *Optics Letters*, **29**, 397-399 (2004).
44. K. L. Corwin, T. Dennis, I. Thomann, R. Fox, W. Swann, E. A. Curtis, C. W. Oates, G. Wilpers, A. Bartels, S. L. Gilbert, L. Hollberg, S. A. Diddams, N. R. Newbury, J. W. Nicholson, and M. F. Yan "Absolute frequency measurements of methane absorption lines with a stabilized near-infrared optical frequency comb," Tech. Dig., Conf. on Lasers and Electro-Optics and International Quantum Electronics Conf. (CLEO/IQEC), May 16-21, 2004, San Francisco, CA (2004).
45. Thomann, A. Bartels, K. L. Corwin, N. R. Newbury, L. Hollberg, S. A. Diddams, J. W. Nicholson, and M. F. Yan, "420-MHz Cr : forsterite femtosecond ring laser and continuum generation in the 1-2  $\mu$ m range," *Optics Letters*, **28**, 1368-1370 (2003).
46. N. R. Newbury, B. R. Washburn, K. L. Corwin, and R. S. Windeler, "Noise amplification during supercontinuum generation in microstructure fiber," *Optics Letters*, **28**, 944-946 (2003).
47. K. L. Corwin, N. R. Newbury, J. M. Dudley, S. Coen, S. A. Diddams, K. Weber, and R. S. Windeler, "Fundamental noise limitations to supercontinuum generation in microstructure fiber," *Physical Review Letters*, **90**, 113904 (2003).
48. K. L. Corwin, N. R. Newbury, J. M. Dudley, S. Coen, S. A. Diddams, B. R. Washburn, K. Weber, and R. S. Windeler, "Fundamental amplitude noise limitations to supercontinuum spectra generated in a microstructured fiber," *Applied Physics B-Lasers and Optics*, **77**, 269-277 (2003).
49. K. L. Corwin, N. R. Newbury, J. M. Dudley, S. Coen, S. A. Diddams, B. R. Washburn, K. Weber, and R. S. Windeler, "Fundamental amplitude noise limitations to supercontinuum spectra generated in a microstructured fiber, erratum" *Applied Physics B-Lasers and Optics*, **77**, 467-468 (2003).
50. K.L. Corwin, N.R. Newbury, B.R. Washburn, S.A. Diddams, J.M. Dudley, S. Coen and R.S. Windeler, "Experimental and Numerical Investigation of Fundamental Noise on Supercontinuum Generated in Microstructure Fiber," Tech. Digest, Quantum Electronics and Laser Science (QELS) Conference, Baltimore, MD, June 1-6 (2003).
51. B. R. Washburn, K.L. Corwin, N.R. Newbury and R.S. Windeler , "Impact of Technical Noise on Supercontinuum Generation in Microstructure Fiber," In proceedings of the Conference on Lasers and Electro-Optics (CLEO), Optical Society of America, Jun 1-6, 2003, Baltimore, MD, Vol. CTu 3 (2003).
52. N.R. Newbury, K.L. Corwin, S.A. Diddams, B. Washburn, J.M. Dudley, S. Coen and R.S. Windeler, "Amplitude Noise on Supercontinuum Generated in Microstructure Fiber: Measurement and Simulations, Proc., IEEE Lasers and Electro-Optics Society, Summer Topicals, 2003, Photonics Time/Frequency Measurement and Control, Jul 14-16, 2003,

- Vancouver, British Columbia, Canada, Vol. 03TH8701, pp. 47-48 (2003).
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#### **Invited Talks Since 2004:**

"Direct Comb spectroscopy on gas-filled optical fibers, "Winter college on optical frequency combs, International Center for Theoretical Physics, Trieste, Italy, Feb 2016.



- “Gas-filled hollow optical fibers for robust frequency references,” NIST, Boulder talk during group meeting (Host Nathan Newbury) , October 8, 2015.
- “Gas-filled hollow optical fibers for novel lasers and portable frequency references,” JILA Visiting Fellow talk, October 29, 2015.
- “Hollow Core Optical Fiber Gas Lasers (HOFGLAS): toward novel and practical systems in fused silica,” AFOSR Review in Arlington, VA, December 2015
- “Counting the frequency of light: Gas-filled hollow optical fibers for novel lasers and frequency metrology” Ball State Physics Colloquium, March 27, 2014
- “Novel lasers and optical frequency references based on gas-filled kagomé fibers,” at XLIM/Universite of Limoges, France, hosted by Fetah Benabid , April 11, 2013.
- “Direct Spectroscopy in Hollow Optical Fibers with Fiber-based Optical Frequency Combs,” Kristan L. Corwin, AFOSR 2012 Air Force Office of Scientific Research (AFOSR) Ultrashort Pulse Laser-Matter Interactions Program Review, Potomac, Maryland, December 18-20, 2012
- “Microstructured optical fiber for frequency metrology and optically-pumped gas lasers,” Kristan L. Corwin, OSA Traveling lecturer program, presented to meeting of OSA student chapter at the University of New Mexico, March 2, 2012.
- “Acetylene-filled Hollow-core Kagome Fiber toward Portable Frequency References”, Kristan L. Corwin, Chenchen Wang, Kevin Knabe, Shun Wu, Jinkang Lim, Brian R. Washburn, Natalie Wheeler, François Couny, and Fetah Benabid, IEEE Photonics Society Annual Meeting, Denver CO, November 11, 2010  
<http://www.photonicsconferences.org/ANNUAL2010/advancedPrograms.php>
- “10 kHz Accuracy Spectroscopy in Acetylene-filled Hollowcore Kagome Fiber and Improved Linewidths”, K. L. Corwin, K. Knabe, C. Wang, S. Wu, J. Lim, N. Wheeler, F. Couny, B. R. Washburn, and F. Benabid, Frontiers in Optics Conference (Optical Society of America) , Rochester NY, October 25, 2010  
<http://www.opticsinfobase.org/abstract.cfm?URI=LS-2010-LMB2>
- “Fibers and combs: weaving a portable frequency reference in the near-IR,” 40th Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, May 19–23, 2009; Charlottesville, VA, Bulletin of the APS, Vol. 54, Number 7, L2.00002, K. Corwin, <http://meetings.aps.org/link/BAPS.2009.DAMOP.L2.2>
- “International exchange to create portable optical frequency references in photonic bandgap fiber,” NSF IREE meeting, Washington, DC, May 2008
- “Fibers and Combs for frequency measurement and nonlinear optics” Univ. of Bath, UK, seminar, joint with Brian Washburn, April 2008
- “Fibers and Combs for frequency measurement and nonlinear optics” National Physical Laboratory, Teddington, UK, seminar, joint with Brian Washburn, April 2008
- “Eye-safe Optically-Pumped Gas-filled Fiber Lasers: Experimental Progress at Kansas State”, kick-off meeting for STTR project at Precision Photonics in November, 2008
- “Optical frequency references: putting a frequency ruler in your pocket,” IGERT lecture, University of New Mexico, March 23, 2007.
- “Gas-filled Fibers for Frequency Standards,” Atom/Molecular Gas-filled Fibers for Optoelectronics Workshop, Lawrence Livermore National Laboratories, Jan 2007.
- “Fiber-based Portable Optical Frequency References characterized with infrared frequency combs”, *brief talk and poster*, NSF-Sponsored Optoelectronics Industry Development Association (OIDA) Annual Forum, Washington, D. C., Dec. 6-7, 2006.

- “Optical frequency references: putting a frequency ruler in your pocket”, Dept. of physics AMO and Cond. Matter seminar, University of Michigan, November 2006.
- “Nonlinear optics for precise optical frequency measurements,” seminar, University of Southern Mississippi, Hattiesburg, MS, October 2005.
- “Personal Response System in Large Introductory Physics and Astronomy classes,” together with R. Kirby, DAMOP Teaching Workshop, Lincoln NE, May 2005.
- “Women in the Sciences: The path ahead,” Dinner with the Deans, Women mentoring women program, Kansas State University, February 2005.
- “Optical frequency combs for practical optical frequency references,” Colorado State University physics colloquium, Fort Collins, CO November 2004.
- “Spectral hole burning in gas-filled photonic bandgap fiber: toward robust portable wavelength references,” Division of Laser Sciences New Faculty Workshop, Rochester, NY, October 2004.

**Non peer-reviewed Conference Contributions since 2004:**

*(additional conference submissions are listed above in peer-reviewed publications)*

- “Power scaling of extreme ultraviolet frequency combs to the mW level per high harmonic,” G. Porat, C.M. Heyl, S.B. Schoun, C. Benko, N. Dorre, K. Corwin, J. Ye, Bulletin of the American Physical Society 62 (2017)  
<https://meetings.aps.org/Meeting/DAMOP17/Session/J9.8>
- “Mode Profile of a Mid-IR Gas-filled Hollow-Core Photonic Crystal Fiber Laser”, Neda Dadashzadeh, Kushan Weerasinghe, Andrew Jones, Benoit Debord, Frederic Gerome, Fetah Benabid, Brian Washburn, and Kristan Corwin, Frontiers in Optics/Laser Science 2015 San Jose, California United States, 18–22 October 2015, ISBN: 978-1-943580-03-3  
<https://www.osapublishing.org/abstract.cfm?uri=LS-2015-LTh4I.4>
- “Noise dynamics of a prism-based Cr:forsterite laser frequency comb,” Shun Wu, Brian Washburn, Kristan Corwin, and Karl Tillman, Annual Meeting of the APS Division of Atomic, Molecular, and Optical Physics, Houston, TX June 2010.  
<http://meetings.aps.org/link/BAPS.2010.DAMOP.M1.142>
- “Molecular Spectroscopy in Hollow-Core Photonic Crystal Fiber at the 10 kHz Level,” Chenchen Wang, Kevin Knabe, Shun Wu, Jinkang Lim, Karl Tillman, Brian Washburn, Kristan Corwin, Natalie Wheeler, Francois Couny, and Fetah Benabid, Annual Meeting of the APS Division of Atomic, Molecular, and Optical Physics, Houston, TX June 2010. <http://meetings.aps.org/link/BAPS.2010.DAMOP.E1.138>
- “Mid-IR laser emission from a C<sub>2</sub>H<sub>2</sub> gas filled hollow core fiber,” (Invited) W. Rudolph, A.V. Nampoothiri, A. Ratanavis, A. Jones, R. Kadel, B.R. Washburn, K.L. Corwin, N. Wheeler, F. Couny, F. Benabid, [Transparent Optical Networks \(ICTON\), 2010 12th International Conference on](http://www.osapublishing.org/abstract.cfm?uri=ICTON.2010.10.1109/ICTON.2010.5549075), (Tu.B2.4), Page(s): 1-4 June 2010.  
[10.1109/ICTON.2010.5549075](http://www.osapublishing.org/abstract.cfm?uri=ICTON.2010.10.1109/ICTON.2010.5549075)
- “10 kHz Accuracy Spectroscopy in Acetylene-filled Hollow-core Kagome Fiber as Measured with Optical Frequency Combs,” Kevin Knabe, Andrew Jones, Jinkang Lim, Rajesh Thapa, Karl A. Tillman, Shun Wu, François Couny, Phillip S. Light, Natalie Wheeler, Fetah Benabid, Jeffrey W. Nicholson, Brian R. Washburn, and Kristan L. Corwin, F15, Second International Conference on Attosecond Physics, Manhattan KS, July 28-Aug 1, 2009. [http://jrm.phys.ksu.edu/scripts/Atto-09/upload/Old/2009\\_knabe\\_attosecond\\_submission\\_v4-1242415112.pdf](http://jrm.phys.ksu.edu/scripts/Atto-09/upload/Old/2009_knabe_attosecond_submission_v4-1242415112.pdf)

- "Carrier-Envelope Offset Frequency Linewidth Narrowing Using an Intracavity Spatial Filter"  
Karl A. Tillman, Brian R. Washburn, and Kristan L. Corwin, S19, Second International Conference on Attosecond Physics, Manhattan KS, July 28-Aug 1, 2009.  
[http://jrm.phys.ksu.edu/scripts/Atto-09/upload/Old/atto\\_09\\_submission\\_-\\_tillman\\_-\\_final-1242419250.pdf](http://jrm.phys.ksu.edu/scripts/Atto-09/upload/Old/atto_09_submission_-_tillman_-_final-1242419250.pdf)
- "Fractional Instability of a Phase Stabilized Carbon Nanotube Fiber Laser Frequency Comb",  
Jinkang Lim, Kevin Knabe, Yishan Wang, Rodrigo Amezcua-Correa, François Couny, Philip S. Light, Fetah Benabid, Jonathan C. Knight, Kristan L. Corwin, Jeffrey W. Nicholson, and Brian R. Washburn, T23, Second International Conference on Attosecond Physics, Manhattan KS, July 28-Aug 1, 2009.  
[http://jrm.phys.ksu.edu/scripts/Atto-09/upload/Old/lim\\_atto\\_2009\\_abstract\\_final-1242341251.pdf](http://jrm.phys.ksu.edu/scripts/Atto-09/upload/Old/lim_atto_2009_abstract_final-1242341251.pdf)
- "REU in Physics at Kansas State University --- an Evolving Program," 2009 APS March Meeting, March 16–20, 2009, Pittsburgh, PA, Bulletin of the APS, Vol. 54, Number 1, T29.00005 K. Corwin, B. Glymour, A. Lara, L. Weaver, and D. Zollman (2009).  
<http://meetings.aps.org/link/BAPS.2009.MAR.T29.5>
- "Near-IR frequency comb to characterize sub-Doppler spectroscopy of acetylene-filled optical fibers (talk)," K. L. Corwin, K. Knabe, R. Thapa, K. Tillman, A. Jones, and B. R. Washburn, International Conference on Laser Spectroscopy (ICOLS), Telluride, Colorado, USA, June 2007.
- "Near-IR frequency comb to characterize acetylene-filled fiber-based frequency references (poster), K. L. Corwin, K. Knabe, R. Thapa, K. Tillman, A. Jones, B. R. Washburn, J. W. Nicholson and M. F. Yan", B5, Annual meeting of the APS Division of Atomic Molecular and Optical Physics (DAMOP), Calgary, Canada, June 2007.
- "Saturated Absorption Spectroscopy in Acetylene Filled Photonic Bandgap Fibers," K. Knabe, R. Thapa, O. L. Weaver, B. R. Washburn and K. L. Corwin, talk at OSA/DLS annual meeting, Frontiers in Optics, Rochester, NY, October 2006.
- "Doppler-free saturation spectroscopy of acetylene inside a photonic band-gap fiber," R. Thapa, M. Faheem, and K. L. Corwin, poster at APS DAMOP meeting, Lincoln, NE May 2005.
- "Portable, robust optical frequency standards in hollow optical fiber," M. Faheem, R. Thapa, and K. L. Corwin, poster at OSA/DLS annual meeting, Frontiers in Optics, Rochester, NY, October 2004.

#### External Funding active in last 10 years:

Over \$ 7.3 million awarded as lead PI.

- 1) NSF "MRI: Agro-combs: Development of a mid-infrared dual-comb spectrometer for the detection of agriculturally significant gases," **\$1,692,426** 9/01/2017 – 8/31/2022, My role: PI, with Steve Welch, Eduardo Santos, and Brian Washburn as co-PIs.
- 2) AFRL: Research on Gas Filled Hollow Core Fiber Lasers, **\$115,000** March 3, 2017 – 2018, My role: PI, with B. R. Washburn, W. Rudolph, and V. Nampoothiri as co-PIs.
- 3) AFOSR: "Hollow Core Optical Fiber Gas Lasers (HOFGLAS): toward novel and practical systems in fused silica" Kristan Corwin and Brian R. Washburn, Kansas State University,

Wolfgang Rudolph and Vasudevan Nampoothiri, University of New Mexico, Fetah Benabid, GPPMM group, XLIM CNRS Research Institute, Limoges, France. **\$1,200,000** (K-State ~\$500,000) 10/1/2013 – 9/30/2016. Supplement of **\$120,000** (K-State \$60,000). Awarded 9/25/2015.

- 4) AFOSR “Fiber Laser Frequency Combs Spanning the Visible to the IR for Direct Spectroscopy in Hollow Fiber”, PI with Dr. Washburn as co-PI, **\$568,000**, 6/1/11 – 5/31/15
- 5) AFOSR “Gas Filled Hollow Core Fiber Lasers Based on Population Inversion”, PI with Dr. Washburn as co-PI, **\$1,200,000**(K-State ~\$500,000), 9/1/2010-8/31/2012.
- 6) ARO STTR Phase II: “Infrared and near-infrared optically pumped molecular gas-filled fiber laser for navigation, metrology, communication, remote sensing, and high-power applications”, PI with Dr. Washburn as co-PI, **\$270,000**, 12/1/09 – 11/31/11
- 7) AFOSR “Gas-filled Hollow Optical Fiber-based Frequency References for Portable Frequency Combs in the Near Infrared” **\$527,000**, 1/15/08 – 10/31/10. my role: lead PI, with Brian Washburn as co-PI.
- 8) NSF ECS - ELECT, PHOTONICS, & DEVICE TEC program: “CAREER: Fiber-based optical frequency standards characterized with optical frequency combs,” **\$417,000**, 2/1/05 – 1/31/10. (Supplement awarded June 2007 for graduate student to travel to UK for 3 months). My role: Sole PI
- 9) DEPSCoR “Molecular gas-filled hollow optical fiber lasers in the near infrared,” **\$419,608** over 3 years. ~June 2008 – May 2011 My role: co-PI, with Brian Washburn as lead PI.
- 10) ARO STTR Phase I, “Eye-safe Optically-Pumped Gas-filled Fiber Lasers” **\$49,000** from Precision Photonics, July 2008-Jan 2009, My role: PI, Brian Washburn as co-PI
- 11) NSF REU Site (and AFOSR; selected by the AROSR for co-funding), **\$432,000**, “REU Site: Physics at Kansas State University – Interactions of matter, light and learning.” May 29, 2015 – May 28, 2018 My role: PI, with Bret Flanders as co-PI.
- 12) NSF REU Site, **\$413,000**, REU Site: Laser-Matter Interactions on Atomic and Nanoscales,” May 29, 2012 – May 28, 2015 My role: PI, with Dr. Weaver as co-PI.
- 13) NSF REU Site, **\$330,000**, REU Site: Laser-Matter Interactions on Atomic and Nanoscales,” May 29, 2009 – May 28, 2012 My role: PI, with Dr. Weaver as co-PI.
- 14) NSF CCLI Program, **\$149,000** “Integrating Experimentation and Instrumentation in Upper-Division Physics”, co-PI with Drs. Rebello (PI) and Washburn (co-PI), , 1/2008-12/2011
- 15) NSF REU Site, ~**\$300,000**, “REU Site: Laser-Matter Interactions on Atomic and Nanoscales” May 29, 2006 – May 28, 2009. My role: co-PI, with Dr. Larry Weaver as PI