

The Ohio State University, Department of Mechanical and Aerospace Engineering
Tel: (614) 247-8414 Email: bons.2@osu.edu

JEFFREY P. BONS, PhD

EXPERIENCE

- 2007 - Professor, The Ohio State University, Department of Mechanical and Aerospace Engineering
- TEACHING:**
Instructor of undergraduate and graduate engineering courses including thermodynamics, fluid mechanics, viscous fluids, compressible flow, turbulence, and gas turbine design.
- ADVISING:**
Advisor currently for 7 PhD and 4 Masters candidates and numerous undergraduates.
- RESEARCH:**
Current research in low and high pressure turbines, transonic flows, helicopter rotor dynamic stall, turbine deposition, unsteady flows, etc.... Funding from a variety of sources including: DOE, DOD, NASA, and various industrial sponsors.
- 2002 -2007 Associate Professor, Brigham Young University Department of Mechanical Engineering (granted tenure and advanced to rank of Full Professor effective September 2007)
- TEACHING:**
Instructor of undergraduate and graduate engineering courses including thermodynamics, fluid mechanics, viscous fluids, compressible flow, turbulence, and gas turbine design.
- ADVISING:**
Advised 8 MS students and numerous undergraduates.
- RESEARCH:**
Director of the Turbine Research Laboratory with current research in low and high pressure turbines as well as combustor exit flows and engine nozzles. Funding from a variety of sources including: DOE, DOD, and various industrial sponsors.
- 1997-2002 Assistant Professor, Air Force Institute of Technology, WPAFB OH
Major, US Air Force
Full-time instructor of graduate level engineering courses including viscous fluids, high speed aerodynamics, turbulence, propulsion, and instrumentation. Advisor for masters theses. Responsible for turbomachinery focused research.
- 1994-97 Research Assistant, Gas Turbine Laboratory, MIT, Cambridge MA
Completed experimental and analytical study of turbine blade internal cooling. Research focused on characterizing cooling efficiency by obtaining the first-ever simultaneous heat transfer and fluid velocity measurements (using rotating PIV) in a simulated internally cooled turbine blade.
- 1992-94 Research Engineer, Air Force Propulsion Laboratory, WPAFB
Designed, developed, and constructed a new high freestream turbulence wind tunnel for innovative film cooling research. Experimental topics included: convective heat transfer, turbulent jet mixing, and unsteady fluid dynamics.
- 1990-92 Program Manager, Advanced Cruise Missile System Program Office, WPAFB
Responsible for development, production, and deployment of critical Advanced Cruise Missile support equipment.
- 1988-90 Research Assistant, Gas Turbine Laboratory, MIT, Cambridge MA
Designed, constructed, and performed experimental testing on a high performance fuel pump. Constructed diagnostic control models to study pumping system instabilities.

EDUCATION

Massachusetts Institute of Technology, Cambridge MA

Ph.D. 1997 - GPA: 5.0/5.0.

Dissertation: "Complementary Velocity and Heat Transfer Measurements in a Rotating Turbine Cooling Passage". Advisor: Professor Jack Kerrebrock

M.S. 1990 - GPA: 5.0/5.0.

Thesis: "Instabilities and Unsteady Flows in Centrifugal Pumps". Advisors: Professors Belgacem Jaroux and Edward Greitzer

B.S. 1988 - GPA: 4.9/5.0.

CAREER AWARDS

- IGTI/ASME Turbomachinery Committee 2017 Best Paper Award for "Dynamic Similarity in Turbine Deposition Testing and the Role of Pressure," by Sacco, C., Bowen, C., Lundgreen, R., Bons, J.P., Ruggiero, E., Allen, J., and Bailey, J.
- Ralph L. Boyer Award for Excellence in Undergraduate Teaching Engineering Education", April 2016.
- IGTI/ASME Education Committee 2013 Best Paper Award for Turner, M., Bons, J., Roberts, R., Rumpfkeil, M., Smith, T., VanKuren, J., Ausserer, J., and Litke, P., 2013, "Thrust Vectoring Design Project at Six Universities (Part I): Project Description and Final Designs", accepted for presentation at the ASME Turbo Expo 2013 in San Antonio, Texas, June 3-7, 2013. Paper #GT2013-95602.
- IGTI/ASME Heat Transfer Committee 2011 Best Paper Award for "Coal Ash Deposition on Nozzle Guide Vanes: Part I – Experimental Characteristics of Four Coal Ash Types," by J. Webb, B. Casaday, B. Barker, J.P. Bons, A.D. Gledhill, and N.P. Padture. Presented at ASME Turbo Expo 2011 in Vancouver, Canada, June 2011. (GT2011-45894)
- 2011 OSU Department of Aerospace Engineering "Outstanding Teacher Award"
- IGTI/ASME Heat Transfer Committee 2009 Best Paper Award for "Film Cooling Effectiveness and Heat Transfer Near Deposit-Laden Film Holes," S. Lewis, B. Barker, J.P. Bons, W. Ai, T.H. Fletcher. GT2009-59567.
- 2009 OSU Department of Aerospace Engineering "Outstanding Teacher Award"
- 2009 OSU College of Engineering Charles E. MacQuigg Teaching Award.
- ASME Heat Transfer Division 2007 Best Paper Award for "A Critical Assessment of Reynolds Analogy for Turbine Flows" by J.P. Bons.
- IGTI/ASME Heat Transfer Committee 2006 Best Paper Award for Evolution of Surface Deposits on a High Pressure Turbine Blade, Part 1: Physical Characteristics," by J.E. Wammack, J. Crosby, D.H. Fletcher, J.P. Bons, and T.H. Fletcher.
- IGTI/ASME Heat Transfer Committee 2006 Best Paper Award for Evolution of Surface Deposits on a High Pressure Turbine Blade, Part 2: Convective Heat Transfer," by J.P. Bons, J.E. Wammack, J. Crosby, D.H. Fletcher, and T.H. Fletcher.
- IGTI/ASME Heat Transfer Committee 2004 Best Paper Award for "Simulated Land-Based Turbine Deposits Generated In An Accelerated Deposition Facility," by J.W. Jensen, S.W. Squire, J.P. Bons, and T.H. Fletcher.
- Co-recipient of the 2001 AFRL Scientific/Technical Achievement Team Award.
- Co-recipient of AFRL/PR's Annual S.D. Heron Award for Basic Research, 2000.
- IGTI/ASME Heat Transfer Committee 1998 Best Paper Award for "Complementary Velocity and Heat Transfer Measurements in a Rotating Cooling Passage with Smooth Walls," by J.P. Bons and J.L. Kerrebrock.
- Co-recipient of AFRL/PR's Annual E.C. Simpson Award for Research, 1998.
- Co-recipient of AFRL/PR's Annual S.D. Heron Award for Basic Research, 1994.

PROFESSIONAL INVOLVEMENT

- Associate Editor, ASME Journal of Turbomachinery, 2018 – 2021.
- Associate Editor, AIAA Journal of Propulsion and Power, 1 Feb 2010 – present.
- AIAA Fluid Dynamics Technical Committee Organizing Committee for Aerospace Sciences Meeting 2009. Organization of reviews for 41 abstracts.
- AIAA Fluid Dynamics Technical Committee Point Contact for Flow Control Conference 2008. Organization of reviews for 20 abstracts.
- AIAA Airbreathing Propulsion Technical Committee Point Contact for ASM 2008. Organization of reviews for 60+ abstracts.

- Reviewer for ASME Turbomachinery Committee Best Paper Award, 2007.
- Member of IGTI (ASME) Heat Transfer Technical Committee, 2002 – present
- Fellow of ASME – April 2013
- Associate Fellow of AIAA – Apr 2006
- Member of AIAA Fluid Dynamics Technical Committee, 2007 - 2010
- Member of AIAA Airbreathing Propulsion Technical Committee, 2004 - 2008
- Session Chair for IGTI Conference: 1999-2015. Includes editorial responsibilities for ASME Journal of Turbomachinery.
- Heat Transfer Committee Point Contact for IGTI Conference 2006. Required the organization of over 150 papers into 30 sessions and supervising their review for the conference.
- Session Chair for AIAA Conference: 2004, 2005, 2007, 2008
- Reviewer for: ASME Journal of Turbomachinery, AIAA Journal of Propulsion and Power, ASME Journal of Heat Transfer, ASME Journal of Fluids Engineering, Int'l Journal of Heat and Mass Transfer, Experiments in Fluids, etc...
- Reviewer for ASME Heat Transfer Committee Best Paper Award, 2003.
- Member-at-large of Academic Advisory Board for Department of Energy University Turbine Sponsored Research Program, 2004 – 2006. Elected position.
- Vice President of Academic Advisory Board for Department of Energy University Turbine Sponsored Research Program, 2006 – present. Elected position.
- Member Tau Beta Pi and Sigma Gamma Tau

MILITARY SERVICE

- Commissioned an officer in the US Air Force, June 1988.
- Promoted to rank of Major, Oct 1999.
- Honorable discharge, July 2002.

PUBLICATIONS AND PRESENTATIONS

Refereed Journal Articles:

1. Spens, A., and Bons, J.P., 2024, “Active Fluidic Control of a Nozzle Guide Vane Throat,” *Journal of Turbomachinery*, Jan. 2024, DOI: 10.1115/1.4063677.
2. Spens, A., and Bons, J.P., 2024, “Characterization of Out-of-Plane Curved Fluidic Oscillators,” *AIAA Journal*, online publication 9 Jan 2024, <https://doi.org/10.2514/1.J063549>.
3. Wendel, N., Mizer, A., Subasic, N., and Bons, J.P., 2023, “Mineral Composition Effects On Dust Deposition At Realistic Engine Conditions”, *Journal of Turbomachinery*, Oct. 2023, <https://doi.org/10.1115/1.4063675>.
4. Nied, E., Bons, J.P., and Lundgreen, R., 2023, “Unpacking Inter-Mineral Synergies And Reactions During Dust Deposition in an Impingement Coolant Jet”, *ASME Journal of Turbomachinery*, May 2023, 145(5): 051015. <https://doi.org/10.1115/1.4056153>
5. Spens, A., Pisano, A.P., and Bons, J.P., 2023, “The Application of Curved Fluidic Oscillators for Leading Edge Flow Control,” *AIAA Journal*, published on-line 30 Jan 2023. [doi/10.2514/1.J062329](https://doi.org/10.2514/1.J062329)
6. Whitaker, S.M. and Bons, J.P., 2023, “An Improved Particle Impact Model by Accounting for Rate of Strain and Stochastic Rebound,” *ASME Journal of Turbomachinery*, Jan 2023, Vol 145, 011010 (11 pages).
7. McFadden, E.J., Brandt, P.J., Bons, J.P., “Swept Wing Active Flow Control with a Streamwise Row of Vortex Generating Jets,” *AIAA Journal*, Vol. 61, No. 3, 2023. DOI: 10.2514/1.J062302.
8. Zhu, W., Bons, J.P., and Gregory, J.W., 2022, “Boundary Layer and Near Wake Measurements of a Two-Dimensional Airfoil with Background-Oriented Schlieren Method,” *Experiments in Fluids*, published on-line 28 Dec 2022, 64:7, <https://doi.org/10.1007/s00348-022-03550-2>

9. Bons, J.P., Lo, C., Nied, E., and Han, J., 2022, "The Effect Of Flow and Surface Temperature On Cold-Side and Hot-Side Turbine Deposition", ASME Journal of Turbomachinery, Dec 2022, Vol. 144, 121013 (12 pages)
10. Bowen, C., and Bons, J.P., 2022, "Enhancing Turbine Deposition Prediction Capability with Conjugate Mesh Morphing", ASME Journal of Turbomachinery, June 2022, Vol. 144(6), 061013 (11 pages).
11. Goss, A.E., Bons, J.P., and Burton, G., 2022, "An Arbitrary Lagrange-Eulerian Investigation of HRAM Shallow Jet Pre-Spurt Formation and Time Sensitivities to Impact Plate Dynamics", Journal of Impact Engineering, DOI 10.1016/j.ijimpeng.2022.104275
12. Lo, C., Bons, J.P., Yao, Y., and Capecelatro, J., 2022, "Assessment of stochastic models for predicting particle transport and deposition in turbulent pipe flows". Journal of Aerosol Science, 162, 105954. <https://doi.org/10.1016/j.jaerosci.2022.105954>.
13. Boyle, R.J., Gnanaselvam, P., Parikh, A.H., Ameri, A.A., Bons, J.P., and Nagpal, V.K., 2021, "Design Of Stress Constrained Sic/Sic Ceramic Matrix Composite Turbine Blades," ASME Journal of Engineering for Gas Turbines and Power, May 2021, 143(5), <https://doi-org.proxy.lib.ohio-state.edu/10.1115/1.4049776>.
14. Clark, R.A., Plewacki, N., Gnanaselvam, P., and Bons, J.P., 2021, "The Effect Of Surface Temperature On Deposition With Thermal Barrier Coatings," ASME Journal of Turbomachinery, April 2021, 143(4), 041004-11 pages, <https://doi.org/10.1115/1.4049856>
15. Hossain, M.A., Ameri, A., Gregory, J.W., and Bons, J.P., 2021, "Experimental Investigation Of Innovative Cooling Schemes On An Additively Manufactured Engine Scale Turbine Nozzle Guide Vane," ASME Journal of Turbomach., Jan 2021, <https://doi-org.proxy.lib.ohio-state.edu/10.1115/1.4049618>.
16. Varney, B., Barker, B., Bons, J.P., Wolff, T., and Gnanaselvam, P., 2021, "FINE PARTICULATE DEPOSITION IN AN EFFUSION PLATE GEOMETRY," ASME Journal of Turbomach., Jan 2021, 143(1):011001, <https://doi-org.proxy.lib.ohio-state.edu/10.1115/1.4048293> .
17. Hossain, M.A, Ameri, A., and Bons, J.P., 2021, "Conjugate Heat Transfer Study of Innovative Pin-Fin Cooling Configuration," AIAA Journal of Propulsion and Power, Feb 2021, <https://arc.aiaa.org/doi/10.2514/1.B37980> .
18. Hossain, M.A., Ameri, A., Gregory, J.W., and Bons, J.P., 2020, "SWEEPING JET FILM COOLING AT HIGH BLOWING RATIO ON A TURBINE VANE," ASME. J. Turbomach. December 2020; 142: 121010 (12 pages). DOI: 10.1115/1.4047396
19. Benton, S., and Bons, J.P., 2020, "Crow and Elliptic Instabilities in a Streamwise Vortex-Wall Interaction," AIAA Journal Technical Note, Dec 2020, DOI: 10.2514/1.J059849
20. Hossain, M.A., Ameri, A., Gregory, J.W., and Bons, J.P., 2021, "Effects of Fluidic Oscillator Exit Fan Angle on Flow Field and Impingement Heat Transfer", AIAA Journal, April 2021, DOI:10.2514/1.J059931.
21. Bowen, C., Ameri, A., and Bons, J.P., 2020, "Challenges Associated with Replicating Rotor Blade Deposition in a Non-Rotating Annular Cascade," ASME Journal of Turbomach., Sep 2020, <https://doi-org.proxy.lib.ohio-state.edu/10.1115/1.4047399>.
22. Zhu, W, McCrink, MH, Bons, JP, and Gregory, JW, 2020, "The unsteady Kutta condition on an airfoil in a surging flow," Journal of Fluid Mechanics, vol. 893, no. R2, June 25, 2020, <https://doi.org/10.1017/jfm.2020.254>. Published online April 15, 2020.
23. Libertowski, N.D., Geiger, G.M., and Bons, J.P., 2020, "Modeling Deposit Erosion In Internal Turbine Cooling Geometries," ASME J. Eng. Gas Turbines Power, Mar 2020, 142(3): 031024 (9 pages). <https://doi.org/10.1115/1.4045954>.
24. Hossain, M. A., Asar, M. E., Gregory, J. W., and Bons, J. P. (March 17, 2020). "Experimental Investigation of Sweeping Jet Film Cooling in a Transonic Turbine Cascade." ASME. J. Turbomach. April 2020; 142(4): 041009. <https://doi.org/10.1115/1.4046548>
25. Bowen, C.P., Libertowski, N.D., Mortazavi, M., and Bons, J.P., 2019, "Modeling Deposition in Turbine Cooling Passages with Temperature Dependent Adhesion and Mesh Morphing,"

- Journal of Engineering for Gas Turbines and Power, July 2019, 141(7), 071010-12 pages, doi: 10.1115/1.4042287.
26. Hossain, M.A., Agricola, L., Ameri, A., Gregory, J.W., and Bons, J.P., 2019, "Sweeping Jet Film Cooling on a Turbine Vane," *Journal of Turbomachinery*, March 2019, Vol. 141, 031007-1-11.
 27. Hossain, M.A., Agricola, L., Ameri, A., Gregory, J.W., Bons, J.P., 2018, "Sweeping Jet Impingement Heat Transfer On A Simulated Turbine Vane Leading Edge", *Journal of Global Power and Propulsion Society (GPPS)*, 2018, 2:402-414.
 28. Bons, J.P., Benton, S., Bernardini, C., and Bloxham, M., 2018, "Active Flow Control For Low Pressure Turbines," *AIAA Journal*, Vol. 56, No. 7, pp. 2687-2698. (<https://doi.org/10.2514/1.J056697>)
 29. Walker, M.M., Hipp, K.D., Benton, S.I., and Bons, J.P., 2018, "Effect of Jet Spacing on Swept Wing Leading Edge Separation Control", *Technical Note in AIAA Journal*. (Vol. 56, No. 7), pp. 2907-2910 (<https://doi.org/10.2514/1.J056352>).
 30. Sacco, C., Bowen, C., Lundgreen, R., Bons, J.P., Ruggiero, E., Allen, J., and Bailey, J., 2018, "Dynamic Similarity in Turbine Deposition Testing and the Role of Pressure," *J.Eng.Gas Turbines Power*, Oct 2018, 140(10), 102605-12 pages, doi: 10.1115/1.4038550.
 31. Hossain, M.A., Prenter, R., Lundgreen, R., Ameri, A., Gregory, J.W., Bons, J.P., 2018, "Experimental and numerical investigation of sweeping jet film cooling," *ASME Journal of Turbomachinery*, March 2018, 140(3), p. 031009
 32. Prenter, R., Ameri, A., and Bons, J.P., 2017, "Computational Simulation Of Deposition In A Cooled High-Pressure Turbine Stage With Hot Streaks", *J. Turbomach.*, 2017, Vol 139(9): 091005-091005-11, doi: 10.1115/1.4036008.
 33. Bons, J.P., Prenter, R., and Whitaker, S., 2017, "A Simple Physics-Based Model For Particle Rebound And Deposition In Turbomachinery", *J. Turbomach.*, 2017, Vol. 139(8):081009-081009-12, doi: 10.1115/1.4035921
 34. Hipp, K.D., Walker, M.M., Benton, S.I., and Bons, J.P., 2017, "Control of Poststall Airfoil Using Leading-Edge Pulsed Jets," *AIAA Journal* , Vol. 55, pp. 365-376, (12 pages) doi: 10.2514/1.J055223.
 35. Prenter, R., Ameri, A., and Bons, J.P., 2016, "Deposition on a Cooled Nozzle Guide Vane with Non-uniform Inlet Temperatures", *ASME J. Turbomach* 138(10), 101005 (11 pages), doi: 10.1115/1.4032924.
 36. Turner, M., Roberts, R., Rumpfkeil, M., VanKuren, J., Bons, J., Smith, T., Ausserer, J., and Litke, P., 2016, "Thrust Vectoring Design Project at Six Universities", *International Journal of Engineering Education*, Vol. 32, No. 1(A), pp. 252-271.
 37. Memory, C.L., Chen, J.P., and Bons, J.P., 2016, "Implicit Large Eddy Simulation of a Stalled Low Pressure Turbine Airfoil", *ASME Journal of Turbomachinery*, July 2016, Vol 138(7):071008, 10 pages.
 38. Bernardini, C., Benton, S.I., Hipp, K., and Bons, J.P., 2016, "Large Low-Frequency Oscillations Initiated by Flow Control on a Post-Stall Airfoil", *AIAA Journal*, Jan 2016, DOI: 10.2514/1.J054321 (12 pages).
 39. Whitaker, S.M., Prenter, R., and Bons, J.P., 2015, "The Effect of Freestream Turbulence on Deposition for Nozzle Guide Vanes", *ASME Journal of Turbomachinery*, Dec 2015, Vol. 137(12): 121001, 9 pages.
 40. Bernardini, C., Benton, S.I., Lee, J.D., Bons, J.P., Chen, J-P, and Martelli, F., 2014, "Steady VGJ Flow Control on a Highly Loaded Transonic LPT Cascade: Effects of Compressibility and Roughness", *ASME Journal of Turbomachinery*, Nov. 2014, Vol. 136., 111003 (11 pages). doi: 10.1115/1.402814.
 41. Benton, S.I., Bernardini, C., Bons, J.P., and Sondergaard, R., 2014, "Parametric Optimization of Unsteady Endwall Blowing on a Highly Loaded LPT," *ASME Journal of Turbomachinery*, July 2014, Vol. 136., 071013 (8 pages). doi: 10.1115/1.4026127.

42. Bernardini, C., Benton, S.I., Chen, J-P, and Bons J.P., 2014, "Exploitation of Subharmonics for Separated Shear Layer Control on a High-Lift LPT Using Acoustic Forcing," *ASME Journal of Turbomachinery*, May 2014, Vol. 136., 051018 (9 pages). doi: 10.1115/1.4025586.
43. Casaday, B., Prenter, R., Bonilla, C., Lawrence, M., Clum, C., Ameri, A., Bons, J.P., 2014, "Deposition with Hot Streaks in an Uncooled Turbine Vane Passage," *ASME Journal of Turbomachinery*, April 2014, Vol. 136., 041017 (9 pages). doi: 10.1115/1.4025215.
44. Bloxham, M.J. and Bons, J.P., 2014, "A Global Approach to Turbomachinery Flow Control: Passage Vortex Control," *ASME Journal of Turbomachinery*, April 2014, Vol. 136., 041003 (9 pages). doi: 10.1115/1.4024686.
45. Bernardini, C., Benton, S.I., Chen, J-P, and Bons J.P., 2014, "Pulsed Jets Laminar Separation Control Using Instability Exploitation". *AIAA Journal*, Volume 52, Issue 1, pp. 104-115, doi: <http://arc.aiaa.org/doi/abs/10.2514/1.J052274> .
46. Bernardini, C., Benton, S.I., and Bons, J.P., 2013, "The Effect of Acoustic Excitation on Boundary Layer Separation of a Highly Loaded LPT Blade", *ASME Journal of Turbomachinery*, September 2013, Vol. 135., 051001 (9 pages). doi: 10.1115/1.4007834.
47. Casaday, B.P., Ameri, A., Bons, J.P., 2013, "Numerical Investigation of Ash Deposition on Nozzle Guide Vane Endwalls," *ASME Journal of Engineering for Gas Turbines and Power*, March 2013, Vol. 135., 032001 (9 pages). doi: 10.1115/1.4007736.
48. Packard, N.O., Thake, M.P. Jr., Bonilla, C.H., Gompertz, K., and Bons, J.P., 2013, "Active Control of Flow Separation of a Laminar Airfoil," *AIAA Journal*, Vol. 51, (5), Mar 2013, pp. 1032-1041.
49. Webb, J., Casaday, B., Barker, B., Bons, J.P., Gledhill, A.D., and Padture, N.P., 2013, "Coal Ash Deposition on Nozzle Guide Vanes: Part I – Experimental Characteristics of Four Coal Ash Types," *ASME Journal of Turbomachinery*, Vol. 135, March 2013, 021033, (9 pages).
50. Barker, B., Casaday, B., Shankara, P., Ameri, A., Bons, J.P., 2013, "Coal Ash Deposition on Nozzle Guide Vanes: Part II – Computational Modeling," *ASME Journal of Turbomachinery*, Vol. 135, January 2013, 011015, (9 pages).
51. Benton, S.I., Bons, J.P., and Sondergaard, R., 2012, "Secondary Flow Loss Reduction through Blowing for a Highly Loaded Low Pressure Turbine Cascade", *ASME Journal of Turbomachinery*, Nov. 2012, Vol. 135., 021020 (8 pages). doi: 10.1115/1.4007531.
52. Bonilla, C., Webb, J., Clum, C., Casaday, B., Brewer, E., and Bons, J.P., 2012, "The Effect of Particle Size and Film Cooling on Nozzle Guide Vane Deposition", *ASME Journal of Engineering for Gas Turbines and Power*, October 2012, Vol. 134., 101901 (8 pages). doi: 10.1115/1.4007057.
53. Ai, W., Murray, N., Fletcher, T.H., Harding, S., and Bons, J.P., 2012, "Effect of Hole Spacing on Deposition of Fine Coal Flyash Near Film Cooling Holes," *ASME Journal of Turbomachinery*, Vol. 134, July 2012, 041021, (9 pages).
54. Ai, W., Murray, N., Fletcher, T.H., Harding, S., Lewis, S., and Bons, J.P., 2012, "Deposition Near Film Cooling Holes on a High Pressure Turbine Vane," *ASME Journal of Turbomachinery*, Vol. 134, July 2012, 041013, (11 pages).
55. Bons, J.P., Plum, J., Gompertz, K., Bloxham, M., and Clark, J.P., 2012, "The Application of Flow Control to an Aft-Loaded Low Pressure Turbine Cascade with Unsteady Wakes", *ASME Journal of Turbomachinery*, Vol. 134, May 2012, 031009, (11 pages).
56. Erickson, E., Ames, F.E. and Bons, J.P., 2012, "Effects of Realistically Rough Surface on Vane Heat Transfer Including the Influence of Turbulence Condition and Reynolds Number," *ASME Journal of Turbomachinery*, Vol. 134, March 2012, 021013, (8 pages).
57. Ai, W., Murray, N., Fletcher, T.H., Harding, S., Bons, J.P., 2012, "Effect of Hole spacing on Deposition of Fine Coal Flyash Near Film Cooling Holes," *ASME Journal of Turbomachinery*, July 2012, Vol. 134, Issue 4, 9 pages
58. Gompertz, K., and Bons, J.P., 2011, "Combined Unsteady Wakes and Active Flow Control on a Low Pressure Turbine Airfoil," *AIAA JPP*, 2011, Vol. 27, pp. 990-1000.

59. Gompertz, K., Jensen, C., Kumar, P., Peng, D., Gregory, J.W., and Bons, J.P., 2011, "Modification of Transonic Blowdown Wind Tunnel to Produce Oscillating Freestream Mach Number," *AIAA Journal*, Vol. 49, No. 11, November 2011, pp. 2555-2563.
60. Ai, W., Murray, N., Fletcher, T.H., Harding, S., Lewis, S., and Bons, J.P., 2011, "Deposition Near Film Cooling Holes on a High Pressure Turbine Vane," *ASME Journal of Turbomachinery*, Oct 2011, Vol. 133, 12 pages.
61. Ai, W., Laycock, R.G., Rappleye, D.S., Fletcher, T.H., and Bons, J.P., 2011, "Effect of Particle Size and Trench Configuration on Deposition from Fine Coal Flyash near Film Cooling Holes," *Energy & Fuels* (American Chemical Society Publications), 2011, Vol. 25, pp. 1066-1076.
62. Lewis, S., Barker, B., Bons, J.P., Ai, W., and Fletcher, T.H., 2011, "Film Cooling Effectiveness and Heat Transfer Near Deposit-Laden Film Holes," *ASME Journal of Turbomachinery*, **133**, Iss. 3, 031003, (July 2011).
63. Bloxham, M., and Bons, J.P., 2010, "Leading Edge Endwall Suction and Midspan Blowing to Reduce Turbomachinery Losses," *AIAA Journal of Propulsion and Power*, Vol. 26, No. 6, Nov-Dec 2010, pp. 1268-1275.
64. McClain, S.T., Hodge, B.K., and Bons, J.P., 2011, "The Effect of Element Thermal Conductivity on Turbulent Convective Heat Transfer from Rough Surfaces," *ASME Journal of Turbomachinery*, **133**, 021024, (April 2011).
65. Bons, J.P., 2010, "A Review of Surface Roughness Effects in Gas Turbines", *ASME Journal of Turbomachinery*, **132**, 021005, (January 2010).
66. Bloxham, M., Reimann, D., Crapo, K., Plum, J., and Bons, J.P., 2009, "Synchronizing Separation Flow Control with Unsteady Wakes in a Low-Pressure Turbine Cascade," *ASME Journal of Turbomachinery*, April 2009, Vol. 131, 021019.
67. Bons, J.P., 2009, "Transient Method for Convective Heat Transfer Measurement with Lateral Conduction, Part 1: Analytical Development for Generic Rough Surfaces," *ASME J of Heat Transfer*, Jan. 2009, Vol. 131, 011301.
68. Bons, J.P., Fletcher, D., and Borchert, B., 2009, "Transient Method for Convective Heat Transfer Measurement with Lateral Conduction, Part 2: Experimental Application to an Isolated Bump," *ASME J of Heat Transfer*, Jan. 2009, Vol. 131, 011302.
69. Reimann, D., Bloxham, M., Plum, J., and Bons, J.P., 2008, "Spanwise Wake and Discrete Jet Disturbances on a Separating Low-Pressure Turbine Blade," *AIAA Journal of Propulsion and Power*, Vol. 24, No. 6, Nov-Dec 2008, pp. 1278-1286.
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Accepted for Refereed Publication:

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92. Spens paper from SciTech

Refereed Conference Presentations:

1. Spens, A., and Bons, J.P., 2023, "Active Fluidic Control of a Nozzle Guide Vane Throat," presented at the 2023 IGTI Conference in Boston, MA. (GT2023-101856)

2. Wendel, N., Mizer, A., Subasic, N., and Bons, J.P., 2023, "Mineral Composition Effects On Dust Deposition At Realistic Engine Conditions", presented at the 2023 IGTI Conference in Boston, MA. (GT2023-101559)
3. Bons, J.P., Lo, C., Nied, E., and Han, J., 2022, "The Effect Of Flow and Surface Temperature On Cold-Side and Hot-Side Turbine Deposition" presented at the 2022 IGTI Conference in Rotterdam, The Netherlands. (GT2022-82027)
4. Nied, E., Bons, J.P., and Lundgreen, R., 2022, "Unpacking Inter-Mineral Synergies And Reactions During The Deposition Of AFRL Dust At Temperatures Relevant To Gas Turbine Engines", accepted for presentation at the 2022 IGTI Conference in Rotterdam, The Netherlands (GT2022-82304).
5. Bowen, C., and Bons, J.P., 2021, "Enhancing Turbine Deposition Prediction Capability with Conjugate Mesh Morphing", presented (virtually) at the IGTI 2021 (GT2021-60224).
6. Boyle, R.J., Gnanaselvam, P., Parikh, A.H., Ameri, A.A., Bons, J.P., and Nagpal, V.K., 2020, "Design Of Stress Constrained Sic/Sic Ceramic Matrix Composite Turbine Blades," presented (virtually) at the IGTI 2020 in London, England (GT2020-15067).
7. Hossain, M.A., Ameri, A., Gregory, J.W., and Bons, J.P., 2020, "Experimental Investigation Of Innovative Cooling Schemes On An Additively Manufactured Engine Scale Turbine Nozzle Guide Vane," presented (virtually) at the IGTI 2020 in London, England (GT2020-15707)
8. Clark, R.A., Plewacki, N., Gnanaselvam, P., and Bons, J.P., 2020, "The Effect Of Surface Temperature On Deposition With Thermal Barrier Coatings," presented (virtually) at the IGTI 2020 in London, England (GT2020-15544)
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Conference Presentations:

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2. Murnieks, V.A., Spens, A., Heidersbach, R.W., Seth, D., McCrink, M.H., and Bons, J.P., 2024, "Wing Trailing Edge Coanda Flow Control; Effect of Actuator Placement Relative to Upstream Propeller Slipstream," presented at the 2024 SciTech Forum in Orlando, FL, January 8-12, 2024. Paper #AIAA-2024-0696.
3. Murnieks, V.A., Spens, A., Heidersbach, R.W., Seth, D., McCrink, M.H., and Bons, J.P., 2024, "Effectiveness of Various Trailing Edge Coanda Actuator Nozzles and Surfaces with a Propeller Slipstream Flow," presented at the 2024 SciTech Forum in Orlando, FL, January 8-12, 2024. Paper #AIAA-2024-0697.

4. McFadden, E.J., and Bons, J.P., 2024, "Leading-Edge Sweep and Reynolds Number Variation for Fluidic Fence Active Flow Control," presented at the 2024 SciTech Forum in Orlando, FL, January 8-12, 2024. Paper #AIAA-2024-1318.
5. Brandt, P.J., and Bons, J.P., 2024, "Effect of Aspect Ratio on Swept Wing Dynamic Response to Active Separation Control," presented at the 2024 SciTech Forum in Orlando, FL, January 8-12, 2024. Paper #AIAA-2024-0693.
6. Subasic, N.P., and Bons, J.P., 2024, "The Effects of Chemistry and Particle Size on Erosion of Deposits in Gas Turbine Cooling Circuits," presented at the 2024 SciTech Forum in Orlando, FL, January 8-12, 2024. Paper #AIAA-2024-1600.
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11. Spens, A., McFadden, E.J., Bons, J.P., "Active Flow Control of a Swept Wing using Unsteady Fluidic Fence Techniques," presented at AIAA SciTech Forum in National Harbor, MD, January 23-27, 2023. Paper #AIAA-2023-1238.
12. Rambacher, C.B., Bons, J.P., "Effect of Reynolds Number on Swept-Wing Active Flow Control with Streamwise Vortex Generating Jets," presented at AIAA SciTech Forum in National Harbor, MD, January 23-27, 2023. Paper #AIAA-2023-1239.
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81. "Low Reynolds Number Laminar Airfoil with Active Flow Control," M. Thake, N. Packard, C. Bonilla, J.P. Bons. Presented at the 5th AIAA Flow Control Conference in Chicago, IL, 28 June - 1 July 2010 (paper #AIAA-2010-4579).
82. "Modification of a Transonic Blowdown Wind Tunnel to Produce Oscillating Freestream Mach Number," K. Gompertz, P. Kumar, C. Jensen, D. Peng, J. Gregory, and J.P. Bons. Presented at the AIAA 48th Aerospace Sciences Meeting and Exhibit in Orlando, FL, 4-7 Jan 2010 (paper #AIAA 2010-1484).
83. "Fluid Dynamics of Impinging Wakes and Separation Control on a Low Pressure Turbine Cascade," K. Gompertz and J.P. Bons. Presented at the AIAA 48th Aerospace Sciences Meeting and Exhibit in Orlando, FL, 4-7 Jan 2010 (paper #AIAA 2010-1121).

84. "Numerical simulations of Vortex Generating Jets on Low Pressure Turbine Blades," C. Memory, K. Gompertz, J-P Chen, and J.P. Bons. Presented at the AIAA 48th Aerospace Sciences Meeting and Exhibit in Orlando, FL, 4-7 Jan 2010 (paper #AIAA 2010-90).
85. "Separation Control Authority of Vortex Generating Jets in a Low-Pressure Turbine Cascade with Simulated Wakes," K. A. Gompertz, J. Pluim, and J.P. Bons. Presented at the AIAA 47th Aerospace Sciences Meeting and Exhibit in Orlando, FL, 5-8 Jan 2009 (paper #AIAA 2009-0377).
86. Bloxham, M., Hollis, R., and Bons, J.P., 2008, "Horseshoe Vortex Control with Leading Edge Endwall Boundary Layer Removal," presented at the 4th AIAA Flow Control Conference in Seattle, WA, 23-26 June 2008 (paper #AIAA-2008-4319).
87. "Experimental Measurement of Cross-Plane and In-Plane Vorticity Using Particle Image Velocimetry," by M. Bloxham, J. Pluim, C. Memory, and J.P. Bons. Presented at the AIAA 46th Aerospace Sciences Meeting and Exhibit in Reno, NV, 7-10 Jan 2008 (paper #AIAA 2008-0709).
88. "Numerical Simulation of Vortex Generating Jets in Zero and Adverse Pressure Gradients," by C. Memory, D. Snyder, and J.P. Bons. Presented at the AIAA 46th Aerospace Sciences Meeting and Exhibit in Reno, NV, 7-10 Jan 2008 (paper #AIAA 2008-0558).
89. "Route to an Accurate 2D CFD Model for a Separating Turbine Blade," by D. Rogers, S. Gorrell, D. Snyder, and J.P. Bons. Presented at the AIAA 46th Aerospace Sciences Meeting and Exhibit in Reno, NV, 7-10 Jan 2008 (paper #AIAA 2008-0078).
90. "A Comparison of Real and Simulated Surface Roughness Characterizations", by J.P. Bons and K.T. Christensen. Presented at the AIAA Fluid Dynamics Conference in Miami, FL, June 2007 (paper #AIAA 2007-3997). Invited.
91. "Comparison of Spanwise Wake and Discrete jet Disturbances on a Separating Low-Pressure Turbine Blade," by D. Reimann, M. Bloxham, J. Pluim, and J.P. Bons. Presented at the AIAA 45th Aerospace Sciences Meeting and Exhibit in Reno, NV, 8-11 Jan 2007 (paper #AIAA 2007-0525).
92. "Influence of Vortex Generator Jet-Induced Transition on Separating Low Pressure Turbine Boundary Layers," by D. Reimann, M. Bloxham, K.L. Crapo, J.D. Pluim, and J.P. Bons. Presented at the 3rd AIAA Flow Control Conference in San Francisco, 5-8 June, 2006 (paper #AIAA 2006-2852).
93. "The Effect of Core Flow Turbulence on Planar Lobed-Mixer Nozzle Effectiveness," by J. Mickelsen, C. Yarrington, J. P. Bons, and D. Snyder. Presented at the AIAA 44th Aerospace Sciences Meeting and Exhibit in Reno, NV, 9-12 Jan 2006 (paper #AIAA 2006-0018).
94. "The Effect of VGJ Pulsing Frequency on Separation Bubble Dynamics," by M. Bloxham, D. Reimann, and J. P. Bons. Presented at the AIAA 44th Aerospace Sciences Meeting and Exhibit in Reno, NV, 9-12 Jan 2006 (paper #AIAA 2006-0876).
95. "Flow and Heat Transfer over Rough Surfaces: Usefulness of 2-D Roughness-Resolved Simulations," by S. Yoon, S. Na, Z.J. Wang, J. P. Bons, and T.I-P. Shih. Presented at the AIAA 44th Aerospace Sciences Meeting and Exhibit in Reno, NV, 9-12 Jan 2006 (paper #AIAA 2006-0025).
96. "The Effect of Elevated Freestream Turbulence on Separation Control with Vortex-Generating Jets," by D.H. Olson, D. Reimann, M. Bloxham, and J.P. Bons. Presented at the AIAA 43rd Aerospace Sciences Meeting and Exhibit in Reno, NV, 10-13 Jan 2005 (paper #AIAA 2005-1114).
97. "Aerodynamic and Thermal Control of Turbine and Aerodynamic Flows," by R. Sondergaard, R. Rivir, J.P. Bons, and N. Yurchenko. Presented at the 2nd AIAA Flow Control Conference in Portland, OR, 28 June – 1 July (paper #AIAA 2004-2201).
98. "Direct Simulation of Surface Roughness Effects with a RANS and DES Approach on Viscous Adaptive Cartesian Grids," by Z. Wang, X. Chi, T. Shih, and J.P. Bons. Presented at the 2nd AIAA Flow Control Conference in Portland, OR, 28 June – 1 July (paper #AIAA 2004-2420).

99. "Time-Resolved Flow Measurements of Pulsed Vortex-Generator Jets in a Separating Boundary Layer," by L. Hansen and J.P. Bons. Presented at the 2nd AIAA Flow Control Conference in Portland, OR, 28 June – 1 July (paper #AIAA 2004-2203).
100. "Active Control of a Separating Boundary Layer With Steady Vortex Generating Jets - Detailed Flow Measurements," by R. Eldredge and J.P. Bons. Presented at the AIAA 42nd Aerospace Sciences Meeting and Exhibit in Reno, NV, 5-8 Jan 2004 (paper #AIAA 2004-0751).
101. "Composite Metal-Polysilicon MEMS Actuators for Flow Control," by J.P. Bons, M.E. Franke, D.M. Borgeson, M.G. Daniel, and W.D. Cowan. Presented at the AIAA 41st Aerospace Sciences Meeting and Exhibit in Reno, NV, 6-9 Jan 2003 (paper #AIAA 2003-0784).
102. "Surface Roughness Effects on Shear Drag and Heat Transfer," by J.W. Drab and J.P. Bons. Presented at the AIAA 40th Aerospace Sciences Meeting and Exhibit in Reno, NV, 14-17 Jan 2002 (paper #AIAA 2002-0085).
103. "CFD Simulation of an Aircraft Laser Turret with Fairings," by G.J. Schwabacher, J.P. Bons, and M.E. Franke. Presented at the AIAA 39th Aerospace Sciences Meeting and Exhibit in Reno, NV, 8-11 Jan 2001 (paper #AIAA 2001-0889).
104. "Passive and Active Control of Separation in Gas Turbines," by R.B. Rivir, R. Sondergaard, J.P. Bons, and J.P. Lake. Presented at the AIAA FLUIDS 2000 Conference and Exhibit in Denver, CO, (paper #AIAA-2000-2235).
105. "Roughness Measurements on Ground Power Turbines," by J.P. Bons, R.B. Rivir and R. Taylor. Presented at the ASM 2000 Materials Solutions Conference and Exhibition in St Louis, MO, 9-12 October 2000.
106. "Control of Low-Pressure Turbine Separation Using Vortex Generator Jets," by J.P. Bons, R. Sondergaard, and R.B. Rivir. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit in Reno, NV, Jan 1999, (paper #AIAA 99-0367).
107. "The Effect of Unsteadiness on Film Cooling Effectiveness," by J.P. Bons, R.B. Rivir, C.D. MacArthur, and D.J. Pestian. Presented at the AIAA 33rd Aerospace Sciences Meeting and Exhibit in Reno, NV (paper #AIAA 95-0306).
108. "Film Cooling Jet Mixing with Free Stream Turbulence," by J.J. Schauer and J.P. Bons. Presented at the 1994 ICHMT International Symposium on Turbulence, Heat, and Mass Transfer in Lisbon, Portugal (published in proceedings).

Professional Courses:

1. "Active Flow Control in Low Pressure Turbines," invited lecturer at the von Karman Lecture Series "Active Flow Control: Techniques and Applications", 8-12 May, 2017, at VKI, Belgium.
2. "Impact of Synfuel & Hydrogen Fuels Relevant to Gas Turbine Development," invited speaker. Short-course presented power generation community (DOE and industry) August 3-5, 2004 at Morgantown, WV.

Book Chapters:

1. Bons, J.P., 2009, Invited chapter on "Turbomachinery Applications" by H.F. Fasel, A. Gross, J.P. Bons, R.B. Rivir, and R. Sondergaard for Fundamentals and Applications of Modern Flow Control published by AIAA, Progress in Astronautics and Aeronautics Series, Vol. 231, edited by R. Joslin and D. Miller. 2009.
2. Bons, J.P., 2014, Invited chapter on "Surface Roughness Effects in Gas Turbines" for AIAA Progress in Astronautics and Aeronautics volume titled *Turbine Aerodynamics, Heat Transfer, Materials, and Mechanics*, Vol. 243, edited by Tom I-P Shih and Vigor Yang, 2014.

Invited Talks:

1. "Progress in Turbine Deposition Experiments and Modeling", by J.P. Bons. Presented to 70+ GE employees. Aug 2022.
2. "Progress in Turbine Deposition Experiments and Modeling", by J.P. Bons. Presented to 70+ GE employees. May 2021.
3. "Turbine Deposition", by J.P. Bons. Presented at Purdue University, Sep. 2016.
4. "Turbine Deposition", by J.P. Bons. Presented at the "IGCC Workshop" held at Siemens Corporation, Orlando, FL, 23 Feb. 2009.
5. "LPT Flow Control Using Vortex Generator Jets," by J.P. Bons. Presented at the 4th AIAA Flow Control Conference in Seattle, WA, 23-26 June 2008.
6. "Gas Turbine Roughness," invited speaker. July 6, 2006 at Iowa State University.
7. "Unsteady Transition and Separation in an LPT Cascade," invited speaker at Minnowbrook V Conference on Unsteady Flows in Turbomachinery, Aug. 20-23, 2006 at Blue Mountain Lake, NY. Conference sponsored by NASA and AFOSR. Presentation included in workshop proceedings.

Patents:

1. "Out of Plane Curved Fluidic Oscillator", Hossain, M.A., Bons, J.P., Gregory, J.W., and Ameri, A. Issued Jan. 2024.
2. Another one started for VAT

Research Proposals and Funding

Proposals Awarded Funding:

New Awards

Dec 2023 – Nov 2026

PI for ONR contract, "Variable cycle engines enabled by active flow control turbine nozzle guide vanes", [\$600k]

Feb 2023 – Dec 2023

PI for Pratt Whitney grant, "Task# 65: Dust characterization for deposition testing" [\$172.5k]

Aug 2023 – Aug 2026

PI for NASA Fellowship Award to Evan McFadden, "Evaluation of a streamwise row of vortex generating jets for implementation on commercial transports," [\$192k]

May 2023 – Sep 2026

PI for RR contract, "High pressure deposition facility testing of dual walled coupons," [\$20k]

Mar 2023 – Mar 2024

PI for Honeywell grant, "Sand plugging of flat plate and annular effusion cooling test articles," [\$88k]

Oct 2023 – Feb 2024

PI for Precision Combustion contract, "Novel deposition resistant effusion hole testing - high pressure testing program," [\$20k + ??k]

Jun 2023 – Dec 2023

PR for STTR with CraftTech from NAVAIR, "Improved physics modeling for sand particulate tracking & deposition in gas turbine engines," [\$40k + \$30k option]

Feb 2023 – Jan 2026

Co-PI for 3-year ONR grant, "AFC-Enabled V/STOL for UAS - From Wind Tunnel to Flight Test Demonstrator", 3 year, PI is Matt McCrink, [\$976k]

Mar 2022 – Dec 2023

PI for GE grant, "Deposition Testing to Support T408 Stage 1 Nozzle Redesign", [\$183k]

Apr 2022 – Mar 2025

PI for ONR grant, "High Fidelity Deposition Experiments in Gas Turbine Hot Section Components", [\$479k]

Mar 2022 – Feb 2023

PI for DURIP/ONR grant, "Isokinetic Particle Size and Shape Measurement to Support Gas Turbine Deposition Research", [\$102.3k]

Feb 2022 – Dec 2022

PI for Pratt Whitney grant, “High Pressure Deposition Testing of Internal Cooling Geometries-Phase V” [\$147k]
Feb 2021 – Jan 2024
 PI for 3-year ONR grant, “Fluid fences for swept wing flow control”, \$397k
Jan 2021 – Dec 2021
 PI for Rolls Royce grant, “Deposition Testing – Dual Wall HPDF” [\$100k]
Jun 2021 – Dec 2021
 PI for Rolls Royce grant, “Deposition Testing – Hybrid Coupon” [\$20k]
Jan 2021 – Mar 2021
 PI for Rolls Royce grant, “Deposition Testing – Suction Surface dual Wall” [\$10k]
Jan 2021 – Feb 2021
 PI for Rolls Royce grant, “Deposition Testing – Castings” [\$51k]
Sep 2020 – Mar 2021
 Co-PI for 6 month contract with N&R Engineering under NASA grant, “Approaches to Facilitate Using HPT SiC/SiC CMC Vanes and Rotor Blades”, \$33k. PI is Ali Ameri.
Jan 2021 – Mar 2022
 PI for Pratt Whitney grant, “High Pressure Deposition Testing of Internal Cooling Geometries-Phase IV” [\$185k]
Apr 2020 – Feb 2021
 PI for Pratt Whitney grant, “High Pressure Deposition Testing of Internal Cooling Geometries-Phase III” [\$135k]
Jan 2020 – Feb 2021
 PI for Rolls Royce grant, “High Pressure Deposition Facility Testing – Internally Cooled Castings – Part 3” [\$51k]
Jan 2020 – Apr 2021
 PI for Rolls Royce grant, “High Pressure Deposition Facility Testing of Dual Walled Coupons” [\$100k]
Jan 2020 – Dec 2020
 PI for Pratt Whitney grant, “Deposition and Dirt Chemistry” [\$70k]
Dec 2018 – Feb 2019
 PI for Rolls-Royce grant, “HPDF Induction System Upgrade” [\$20k]
Mar 2019 – May 2019
 PI for Rolls-Royce grant, “HPDF extension – Part 2” [\$36k]
Mar 2018 – Apr 2018
 PI for Rolls-Royce grant, “Phase V: Fine particle rig testing of dual walled coupons” [\$36k]
Oct 2018 – Mar 2019
 PI for IHI Corp (Japan) grant, “High Temperature erosion testing for material systems used in aero-engines: Pretest” [\$72k]
Jul 2018 – Dec 2018
 PI for Rolls-Royce grant, “Fine particle blockage testing – Phase IV (Double-Walled Coupon)” [\$16k]
Nov 2018
 Recipient of Honeywell donation to promote, “Deposition Research at OSU” [\$180k]
Jan 2019 – Dec 2019
 PI for Pratt Whitney grant, “High Pressure Deposition Testing of Internal Cooling Geometries-Phase II” [\$105k]
Jan 2019 – Dec 2019
 PI for Pratt Whitney grant, “Impingement Jet Deposition Testing” [\$60k]
May 2018 – Dec 2018
 PI for Pratt Whitney grant, “High Pressure Deposition Testing of Internal Cooling Geometries” [\$53k]
Oct 2018 – Sep 2020
 Co-PI for NAVAIR grant with CRAFTech as PI, “High Temperature Deposition Modeling For Gas Turbines” [\$320k]

Jan 2018 – Dec 2018

PI for Honeywell grant, “Sand Plugging of Annular Effusion Cooling Test Articles – Phase V”, H [\$75k]

Jul 2018 – Mar 2022

PI for ONR grant, “Deposition in Gas Turbine Hot Section Components”, [\$451k]

Mar 2018 – Apr 2018

PI for Rolls-Royce grant, “Advanced III Testing Extension” [\$9k]

Mar 2018 – Aug 2018

PI for Rolls-Royce grant, “HPDF Upgrade and Testing” [\$96k]

Nov 2017

Recipient of Honeywell donation to promote, “Deposition Research at OSU” [\$105k]

Aug 2017 – Feb 2019

PI for Rolls-Royce grant, “Trent 900 Deposition Testing” [\$270k]

Aug 2017 – Jun 2018

PI for Rolls-Royce grant, “Fabrication of High Temperature Deposition Facility” [\$179k]

May 2017 – Jul 2017

PI for Rolls-Royce grant, “Design of High Temperature Deposition Facility” [\$10k]

Jul 2017 – Apr 2018

PI for Rolls-Royce grant, “Fine Particle Blockage Testing – Phase II” [\$70k]

Jul 2017 – May 2020

coPI for 2-year grant from NASA (A. Ameri is PI), “Design concepts for low aspect ratio high pressure turbines”, [\$208k].

Aug 2017 – Jul 2018

coPI for DURIP grant from ARO (J. Gregory is PI), “Unsteady Freestream Velocity Oscillation System at Rotorcraft-Relevant Mach Amplitude”, [\$215k].

Feb 2017 – Dec 2021

coPI for 3-year grant from ARO (J. Gregory is PI), “Unsteady Compressibility Effects for Modern Rotorcraft”, [\$365k].

Jan 2017 – Dec 2017

PI for Honeywell grant, “Sand Clogging of Effusion Holes-Phase IV” [\$35k]

Jan 2017 – Oct 2018

PI for NCMS/NAVAIR grant, “Deposition Testing for AE1107 Turbine Vanes” [\$93k]

Nov 2016 – Apr 2017

PI for subcontract to ISSI as part of Phase I SBIR to Navy, “Dust Sensor Development” [\$23.4k]

Nov 2016

Recipient of Honeywell donation to promote, “Deposition Research at OSU” [\$90k]

Jul 2016 – Dec 2016

PI for Honeywell grant, “Sand Clogging of Effusion Holes-Phase III” [\$40k]

Jul 2016 – Dec 2016

PI for Rolls-Royce grant, “Internal Deposition” [\$65k]

Apr 2016 – Aug 2017

PI for Rolls-Royce grant, “Blockage Testing of T700 NGVs” [\$184k]

Feb 2016 – Jun 2016

PI for NCMS/NAVAIR grant, “Deposition Testing for T700 Turbine Vanes” [\$52k]

Jan 2016 – Dec 2016

PI for GERC grant, “Coefficient of Restitution Measurement” [\$30k]

Jan 2016 – Dec 2016

PI for GEA grant, “Dust Deposition Testing” [\$150k]

Jan 2016 – May 2016

PI for Honeywell grant, “Sand Clogging of Effusion Holes-Phase II-Addendum” [\$25k]

Oct 2015 – Sep 2019

PI for 3-year grant from DOE/NETL under UTSR program, “Revolutionizing Turbine Cooling with Micro-Architectures Enabled by Direct Metal Laser Sintering”, [\$637k].

Aug 2015 – Apr 2016

PI for ARO STIR grant, “P1.1.2 Unsteady Aerodynamics - Synchronized Flow Control of Dynamic Stall under Coupled Pitch and Freestream Oscillations” [\$50k]

Jan 2015 – Dec 2015

PI for GEA grant, “Dust Deposition Testing” [\$300k]

Jan 2015 – Aug 2015

PI for Honeywell grant, “Sand Clogging of Effusion Holes-Phase II” [\$50k]

Sep 2014 – Jan 2015

PI for Honeywell grant, “Sand Clogging of Effusion Holes” [\$48k]

Jan 2014 – Dec 2015

PI for GERC grant, “Coefficient of Restitution Measurement” [\$60k]

Jan 2014 – Dec 2014

PI for GEA grant, “Turbine Deposition Research” [\$200k]

Jan 2014 – Dec 2014

PI for GEA grant, “Deflector Dust Accumulation” [\$45k]

Jan 2014 – May 2014

PI for Orbital Research Inc grant, “AAE4511 Capstone” [\$3k]

Jan 2014 – May 2014

PI for Competitor Swim Inc grant, “AAE4511 Capstone” [\$5k]

Sep 2013 – Mar 2015

PI for Univ of Cincinnati grant, “Ohio Research Scholars Program: Center for Intelligent Propulsion and Advanced Life Management Systems” [\$2,100k]

Sep 2013 – May 2014

PI for Universal Tech Corp grant, “AAE4511 Capstone” [\$12k]

Jan 2013 – Dec 2013

PI for GERC grant, “Turbine Fouling Research” [\$200k]

Apr 2013 – Mar 2016

PI for AFOSR proposal, “UNDERSTANDING LEADING EDGE STALL PHYSICS NECESSARY FOR CLOSED LOOP FLOW CONTROL”, 3-year effort (\$336k)

Oct 2012 – Mar 2013

Gregory, J.W. (PI) and Bons, J. P.. Sikorsky grant, “Flow Control of Dynamic Stall on the VR-12 Airfoil” .[\$241k]

Sep 2012 – Dec 2013

PI for GERC grant, “Micro Cooling Channels” [\$46k]

May 2012 – Apr 2015

PI for NASA Phase II SBIR, “Advanced Turbine Blade Cooling Techniques”. Subcontract to Micro Cooling Concepts, [\$105k.]

Jun 2012 – Jun 2013

Gregory, J.W. (PI) and Bons, J. P., *High Frame Rate PSP/PIV System for Unsteady Compressible Dynamic Stall*, Army Research Office DURIP, June 15, 2012 – June 14, 2013, [\$290k]

Jun 2012 – Sep 2012

PI for GERC grant, “Fundamental Impact Studies” [\$43k]

Jan 2012 – Dec 2012

PI for GEA grant, “Dust Accumulation in Turbine Cooling Passages” [\$227k]

Oct 2011 – Dec 2011

PI for GEA grant, “Dust Accumulation in Turbine Cooling Passages” [\$100k]

Oct 2011 – Sep 2015

PI with Dr. Ali Ameri for grant from DOE/NETL involving turbine heat transfer. Topic: “Effects of Hot Streak and Phantom Cooling on Heat Transfer in a Cooled Turbine Stage Including Particulate Deposition,” [\$497k]

Jul 2011 – Jun 2012

PI for DAGSI Research Fellowship. Topic: “The Application of Flow Control to Reduce Profile and Endwall Losses on a Highly Loaded Low Pressure Turbine Operating Off-Design,” [\$51k + tuition]

Oct 2010 – Sep 2014 (1 year extension)

Co-PI with UND for grant from DOE/NETL involving turbine degradation. Topic: “Cooling Strategies for Vane leading Edges in a Syngas Environment Including Effects of Deposition and Turbulence,” [OSU share \$245k]

Jul 2010 – Jun 2011

PI for DAGSI Research Fellowship. Topic: “The Application of Flow Control to Reduce Profile and Endwall Losses on a Highly Loaded Low Pressure Turbine Operating Off-Design,” [\$45k + tuition]

Jun 2010 – Apr 2011

PI for grant from Konkuk University, South Korea, “Aerodynamic Testing of Two Novel Airfoil Configurations” [\$85k]

Jan 2009 – Dec 2011

Co-PI for AFOSR grant with H. Fasel (University of Arizona), “Control of Boundary Layer Separation for Lifting Surfaces – Investigations using Numerical Simulations, Theory, Wind/Water-Tunnel and Free Flight Experiments,” [\$450k total with \$150k OSU share]

Oct 2008 – Sep 2011

PI for grant from DOE/NETL involving turbine degradation. Topic: “Designing Turbine Endwalls For Deposition Resistance With 1400c Combustor Exit Temperatures And Syngas Water Vapor Levels”. [\$475k]

Jan 2007 – Dec 2009

PI for grant from AFOSR involving low pressure turbine flow control (#FA9550-07-1-0186). Topic: “Design and Modeling of Turbine Airfoils with Active Flow Control in Realistic Engine Conditions”. [\$389k]

Jan 2007 – Dec 2009

PI for grant from NASA involving low pressure turbine flow control (#NNX07AE04A). Topic: “A Holistic Approach to Flow Control for Turbomachinery Blading”. [\$219k]

Mar 2006 – Dec 2007

ORCA Mentoring Grant Proposal from BYU. Title: “Gas Turbine Basic Research Center-II“ by J. Bons for \$17,261.

Aug 2005 – January 2009

PI for 3-year funding award from DOE under the University Turbine Systems Research (UTSR) (#DE-FC26-02NT41431, UTSR Project Number: 05-01-SR120). Topic: “Deposition of Alternative (Syngas) Fuels on Turbine Blades with Film Cooling”. Work performed in cooperation with Dr. Fletcher of BYU Chem Eng Dept. [\$400k]

Jan 2004 – Jun 2005

ORCA Mentoring Grant Proposal from BYU. Title: “Gas Turbine Basic Research Center“ by J. Bons and T. Fletcher for \$16,198.

Jan 2004 – Dec 2006

PI for grant from AFOSR involving low pressure turbine flow control. Topic: “Integrated Flow Control Devices (VGJs) for the design of Enhanced Performance Low Pressure Turbines”. [\$175k]

Jan 2004 – Dec 2005

BYU college seed proposal titled: “MAV Design with PIV” by J. Bons and J. Cox for \$13,120.

Jan 2003 – Dec 2003

BYU college seed proposal titled: “Gas Turbine Combustor Exit Roughness Characterization,” to J. Bons and T. Fletcher for \$19,500.

Apr 2003 – Apr 2004

PI for DURIP grant from AFOSR for purchase of PIV system. Topic: “Visualization of Flow Control Devices (VGJs) for Low Pressure Turbine Separation Control using Stereo PIV”. [\$117k]

Jan 2003 – Dec 2003

PI for grant from AFOSR involving low pressure turbine flow control. Topic: “Integrated Flow Control Devices (VGJs) for the design of Enhanced Performance Low Pressure Turbines”. [\$48k]

Jun 2002 – May 2005

PI for 3-year funding award from DOE under the Advanced Land-Based Gas Turbine Systems Research Consortium (AGTSR). Topic: “Turbine Surface Degradation with Service and Its Effects on

Performance”. Work performed in cooperation with Drs. R. Rivir and R. Sondergaard (AFRL/PR) and Drs. T. Shih and ZJ Wang, Michigan State University, and Drs. A. Hamed and W. Tabakoff at University of Cincinnati. [\$566k]

April 2000 – May 2002

Co-PI for 2-year funding award from the State of Ohio under the Dayton Area Graduate Studies Institute (DAGSI) research initiative. Topic: “Passive and Active Control of Separated and Transitional Flows with Heat Transfer in Turbomachines.” Principal investigator is Dr. K. Ghia, University of Cincinnati. Research involves the application of MEMS technology to implement flow control in turbomachinery. Work is being conducted in conjunction with UC and AFRL/PR. [\$400k, AFIT share is \$100k]

Mar 1999 – Feb 2002

PI for 3-year funding award from DOE under the Advanced Land-Based Gas Turbine Systems Research Consortium (AGTSR). Topic: “Real Surface Effects on Turbine Heat Transfer and Aerodynamic Performance”. Work performed in cooperation with Drs. R. Rivir and R. Sondergaard (AFRL/PR) and Drs. R. Taylor and K. Hodge, Mississippi State University. [\$321k]

Oct 1998 – Sep 2001

Co-PI for Ultra-High Work, High Efficiency Turbines for UAVs experimental effort funded by AFOSR through Dr. R. Sondergaard, Air Force Propulsion Laboratory (AFRL/PR) at WPAFB. [\$70k/year]

Jan 1998 – Dec 2000

PI for continuous multi-year funding award from AFOSR involving low pressure turbine flow control. Experimental work performed in cooperation with Drs. R. Rivir and R. Sondergaard, Air Force Propulsion Laboratory (AFRL/PR) at WPAFB. [\$15k/year]

Proposals Currently Pending:

1. ARO, August 2022, “Compressibility Effects in Surging Flows”, PI, 3 year, \$454.
2. NASA ULI, Jan 2023, “Aviation Fuel with Net-Zero or Net-Negative Carbon Dioxide Emissions”, co-PI, 3 year, \$361k (PI is WPI)
3. Pratt-Whitney, Dec 2022, “Dust Characterization for Deposition Testing”, PI, 1 year, \$98k
4. ONR, VAT with AFC

Proposals Recently Declined:

1. UTSR, 2019, (RDE)
2. MCC, DARPA, 2019 – Hypersonic Leading Edge Cooling

Students Advised

Graduate Students Advised:

Air Force Institute of Technology

1. O. Powell, “Heat Transfer to the Inclined Trailing Wall of an Open Cavity,” 1999, M.S.
2. G. Schwabacher, “Computational Fluid Dynamics Testing for Drag Reduction of an Aircraft Laser Turrent,” 2000, M.S.
3. J. Drab, “Turbine Blade Surface Roughness Effects on Shear Drag and Heat Transfer,” 2001, M.S.
4. C. Ellering, “The Combined Effects of Freestream Turbulence, Pressure Gradients, and Surface Roughness on Turbine Aerodynamics,” 2002, M.S.
5. D. Borgeson, “Boundary Layer Control Using Micro-Electromechanical Systems (MEMS),” 2002, M.S.

Brigham Young University

6. R. Eldredge, "Active Control of a Separating Boundary Layer with Steady Vortex Generating Jets: Detailed Flow Measurements," 2004, M.S.
7. J. Jensen, "The Development of an Accelerated Testing Facility for the Study of Deposits in Land-Based Gas Turbines," 2004, M.S.
8. L. Hansen, "Phase Locked Flow Measurements of Steady and Unsteady Vortex Generator Jets in a Separating Boundary Layer," 2005, M.S.
9. J. Wammack, "Evolution of Turbine Blade Deposits in an Accelerated Deposition Facility: Roughness and Thermal Analysis," 2005, M.S.
10. M. Bare, "Integrating Empirical Methods into Product Design Using Rapid Prototypes and Wind Tunnel Tests," 2006, M.S.
11. D. Reimann, "Effects Of Spanwise And Discrete Disturbances On Separating Boundary Layers On Low Pressure Turbine Blades," 2007, M.S.
12. M. Bloxham, "The Effects Of Vortex Generator Jet Frequency, Duty Cycle, And Phase On Separation Bubble Dynamics," 2007, M.S.
13. J. Crosby, "Particle Size, Gas Temperature, And Impingement Cooling Effects On High Pressure Turbine Deposition In Land Based Gas Turbines From Various Synfuels," 2007, M.S.

Ohio State University

14. S. Lewis, "The Effects of Upstream Synfuel Deposition on Film Cooling Effectiveness and Convective Heat Transfer Coefficient Near Industrial Gas Turbine Film Cooling Holes," 2008, M.S., ME. Pratt-Whitney, CT.
15. M. Bloxham, "A Global Approach to Turbomachinery Flow Control: Loss Reduction using Endwall Suction and Midspan Vortex Generator Jet Blowing", Winter 2010, PhD. , AAE. Rolls-Royce, IN.
16. R. Hollis, "The Effects of Localized Suction on Secondary Flows and Surface Heat Transfer", 2009, M.S. , AAE. Clean Energy, CA
17. K. Cramer, "Design, Construction, and Preliminary Validation of the Turbine Reacting Flow Rig", 2009, M.S. , AAE. Northrop-Grumman, CA
18. J. Pluim, "Design of a High Fidelity Wake Simulator for Research Using Linear Cascades", 2009, M.S. , AAE. Rolls-Royce, IN.
19. K. Gompertz, "Separation Flow Control with Vortex Generator Jets Employed in an Aft-Loaded Low-Pressure Turbine Cascade with Simulated Upstream Wakes", Spring 2009, M.S. , AAE.
20. P. Shankarah, "CFD SIMULATION AND ANALYSIS OF PARTICULATE DEPOSITION ON GAS TURBINE VANES", Winter 2009, M.S. , AAE. CD-Adapco
21. C. Smith, "Experimental Validations of a Hot Gas Turbine Particle Deposition Facility", Winter 2010, M.S. , AAE. Penn State Research Institute, PA
22. B. Barker, "Simulation of Coal Ash Deposition on Modern Turbine Nozzle Guide Vanes", Summer 2010, M.S. , AAE Rolls-Royce, IN.
23. M. Thake, "Reynolds Number Scalability for Separation Control on a Laminar Airfoil", Winter 2011, M.S. Boeing, KS.
24. K. Haase, visiting MS student from University of Stuttgart, 2009, Diplome Arbeit.
25. S. Schulz, visiting MS student from University of Stuttgart, 2010, Diplome Arbeit.
26. K. Gompertz, departed December 2013, Ph.D., left without finishing dissertation. Currently working in Denver, CO.

27. N. Packard, "Active Flow Separation Control of a Laminar Airfoil at Low Reynolds Number", Spring 2012, AAE, Ph.D., Boeing, WA.
28. J. Webb, "The Effect of Particle Size and Film Cooling on Nozzle Guide Vane Deposition", August 2011, M.S. Swagelock, OH.
29. S. Necamp, Non-thesis, Spring, 2011, M.S.. US Air Force, WPAFB, OH.
30. S. Benton, "Capitalizing on Convective Instabilities in a Streamwise Vortex-Wall Interaction", Summer 2015, Ph.D. AFRL, WPAFB, OH.
31. C. Bonilla, "The Effect of Film Cooling on Nozzle Guide Vane Ash Deposition", Fall 2012, M.S., AAE, GE Research Center, NY
32. B. Casaday, "Investigation of Particle Deposition in Internal Cooling Cavities of a Nozzle Guide Vane," Summer 2013, Ph.D., AAE, General Atomics, CA and now Boeing.
33. C. Clum, "The Effects of Particle Size, Chemical Composition and Temperature on Deposition in an Impingement Cooling Scheme", Spring 2013, M.S., Pratt-Whitney, CT.
34. D. Lageman, Non-thesis, Winter 2012, M.S. US Air Force, NE
35. S. Maier, visiting MS student from University of Stuttgart, 2011, Diplome Arbeit. (now at Siemens I believe)
36. C. Bernardini, visiting post-doc Curie Fellow from University of Florence, 2011-2014, University of Notre-Dame, IN, and now Space-X
37. M. Lawrence, "An Experimental Investigation of High Temperature Particle Rebound and Deposition Characteristics Applicable to Gas Turbine Fouling", Summer 2013, M.S., GE then ISSI (Innovative Scientific Solutions Inc), OH.
38. S. Whitaker, "Informing Physics-Based Particle Deposition Models using Novel Experimental Techniques to Evaluate Particle-Surface Interaction," Summer 2017, Ph.D, Honeywell, AZ.
39. R. Prenter, "Investigating the Physics and Performance of Reverse-Oriented Film Cooling," Summer 2017, Ph.D., Pratt-Whitney, CT.
40. A. Steurer, visiting MS student from University of Stuttgart, 2013, Diplome Arbeit.
41. B. Peterson, "A Study of Blockage due to Ingested Airborne Particulate in a Simulated Double-Wall Turbine Internal Cooling Passage", Spring 2015, M.S. OSU, ARC, OH, Honda.
42. D. Zagnoli, "A Numerical Study of Deposition in a Full Turbine Stage Using Steady and Unsteady Methods", Spring 2015, M.S. Hiltner Inc., WA.
43. R. Blunt, "A Study of the Effects of Turning Angle on Particle Deposition in Gas Turbine Combustor Liner Effusion Cooling Holes", Spring 2016, M.S., Jacobs, Dearborn MI.
44. S. Naigle, "Flow Control of Compressible Dynamic Stall using Vortex Generator Jets", Spring 2016, M.S., US Army Officer, AL
45. K. Hipp, "Control of a Post-Stall Airfoil Using Pulsed Jets", Spring 2016, M.S., Blue Origin
46. C. Sacco, "The Effects of Pressure on Particle Deposition in an Impinging Flow", Summer 2016, M.S., Univ of Notre Dame, IN
47. M. Walker, "Replicating the Effects of a Passive Boundary-Layer Fence via Active Flow Control", Spring 2018, PhD (AFIT)
48. R. Lundgreen, postdoc, Fall 2015 - Spring 2017, Pratt-Whitney, CT.
49. A. Hossain, "Sweeping Jet Film Cooling", Spring 2020, PhD. Dow Chemical, Houston TX.
50. R. Monatos, expected graduation, Spring 2017, M.S. Left without graduating.
51. T. Woodford, non-thesis, Spring 2017, M.S., (unsure)

52. L. Agricola, “Nozzle Guide Vane Sweeping Jet Impingement Cooling”, Spring 2018, M.S. (Corvid Technology)
53. C. Bowen, “Improving Deposition Modeling Through an Investigation of Absolute Pressure Effects and a Novel Conjugate Mesh Morphing Framework”, Fall 2020, PhD, (Sandia National Labs-postdoc)
54. T. Wolff, “The Effect of Particle Size on Deposition in an Effusion Cooling Geometry”, Spring 2018, M.S., Pratt-Whitney, CT.
55. B. Hatfield, expected graduation, Spring 2018, M.S. Left without graduating.
56. N. Libertowski, “Experimental Testing of Deposition Relevant to Turbine Cooling Geometries in order to Improve the OSU Deposition Model”, Spring 2019, M.S., ??Cleveland Area??.
57. W. Banks, “Analysis of Turbine Rotor Tip Clearance Losses and Parametric Optimization of Shroud”, Spring 2019, M.S., ??NASA Contractor in Cleveland??
58. S. Burkett, expected graduation, Spring 2019, M.S. Left without graduating. Now living in New Mexico working at Sandia.
59. E. Asar, “Investigating Turbine Vane Trailing Edge Pin Fin Cooling in Subsonic and Transonic Cascades”, Spring 2019, M.S. Pursuing PhD at Worcester Polytechnic Institute in Worcester MA.
60. M. Mortazavi, postdoc, Spring 2017 – Spring 2018.
61. A. Hussain, “The Effect of Spanwise Location of an Active Boundary Layer Fence on Swept Wing Performance”, Spring 2019, BS/MS, Raytheon.
62. G. Geiger, “Modeling Deposition and Erosion of Deposits in an Impingement Cooling Jet Using Mesh-Morphing”, Spring 2020, M.S., Rolls-Royce
63. I. Potts, “Particle Redistribution in Serpentine Engine Inlets” Spring 2020, M.S., AFRL at Wright-Patterson AFB.
64. N. Plewacki, “Modeling High Temperature Deposition in Gas Turbines”, Spring 2020, M.S., NAVAIR.
65. P. Gnanaselvam, “Modeling Turbulent Dispersion and Deposition of Airborne Particles in High Temperature Pipe Flows”, Spring 2020, M.S., OPT then returned to India. Siemens Gamesa India, Rotor Performance Engineer.
66. A. Goss, “An Arbitrary Lagrange-Eulerian Investigation of HRAM Shallow Jet Pre-Spurt Formation and Time Sensitivities to Impact Plate Dynamics”, Fall 2021, PhD. Civilian USAF employee at WPAFB
67. R. Clark, expected graduation, Spring 2023, PhD. Left in summer 2020 to pursue PhD at Georgia Tech.
68. E. Nied, graduated Spring 2022, M.S. “Evidence of Mineral Phase and Eutectic Chemistry as Dominant Factors Affecting Deposition of Heterogeneous Mineral Dust in an Impingement Coolant Jet”. Employed at Hubbell Power Systems in Cleveland area.
69. Jiaxuan (Tom) Han, expected graduation, Spring 2024, PhD. Switched to different advisor in summer 2021 due to change of research interest.
70. Alex Spens, graduated Summer 2023, PhD, “Exploration of Active Flow Control to Enable a Variable Area Turbine”, Aurora/Boeing.
71. Rajat Saksena, “Effect of Fluidic Fence Spanwise Placement on Swept Wing Stall”, Fall 2021, PhD. Seeking employment in US.
72. Prashanth Mohana Sundaram, Spring 2021, MS. Return to India to work for BioTech startup. Now employed at Google.

73. Roger Zeits, expected graduation, Spring 2022, MS. Left program in summer 2021 due to change of personal interest
74. Chi Hsiu (Roy) Lo, Spring 2023, PhD, “A Numerical Investigation of Particle Deposition in Gas Turbine Impingement Cooling Jets Including Effects of Turbophoresis, Deposit Evolution Modeling, and Adhesion Sensitivity to Temperature”, Taiwan NASA
75. Jake Brandon, PhD candidate. Left program in summer 2022 due to change of personal interest.
76. Evan McFadden, expected graduation, Spring 2026, PhD
77. Collin Rambacher, Spring 2023, MS, “Flow Control of a Swept Wing using Vortex Generating Jets in a Limited Span Wind Tunnel”, General Electric
78. Nathanael Wendel, Spring 2023, MS, “Exploration of the Role of Mineral Chemistry Toward Dust Deposition in Turbine Engines with Synthetic Mineral Dust Blends”, pursuing PhD with Dr. Gaitonde
79. Ezra McNichols, expected graduation, Spring 2024, PhD (NASA employee)
80. Andrew Mizer, Spring 2023, MS, “THE RESULTS OF CHEMICAL COMPOSITION ON HIGH TEMPERATURE DUST DEPOSITION”, General Electric.
81. Noah Subasic, expected graduation, Spring 2024, MS.
82. Patrick Brandt, expected graduation, Spring 2028, PhD.
83. Victoria Murnieks, expected graduation, Spring 2024, MS
84. George Gogidze, expected graduation, Spring 2025, MS
85. Bradley Jacobs, expected graduation, Spring 2025, MS
86. Sepehr Hosseinkhani, expected graduation, Spring 2025, MS

**Thesis Committee member for numerous students at AFIT, BYU, and OSU.

Ohio State University

Ron Simmons

Nagini Dvorack

Rohit Belapurkar

Curtis Memory (2010 defense)

Aniruddha Sinha (2010 presentation)

Di Peng (2011 exam)

Samik Bhattacharya (2011 exam)

Becky Howard (2011 exam)

Kevin Disotell (2012 exam)

Jim Giuliani (2012 exam)

Stopped counting...

Undergraduate Students Advised on Research Projects:

Brigham Young University

1. Don. Clark, “Wind Tunnel Design”, 2002-2003.
2. David Olson, “Preliminary Wind Tunnel Testing of Low Pressure Turbine Blades”, 2002-2004.
3. Dan Reimann, “Freestream Turbulence Effects on VGJ Flow Control”, 2003-2005.
4. Matt Bloxham, “Freestream Turbulence Effects on VGJ Flow Control”, 2004-2005.
5. John Pettit, “Influence of Surface Polishing on Turbine Deposition”. Student ORCA sponsored research project, 2004.

6. Jared Crosby, "Deposition from Alternative Fuels in Land-Based Turbines". Student ORCA sponsored research project, 2004-2005.
7. Kenneth Engan, "Wind Tunnel Bypass Flow Design", 2004.
8. Brook Bentley. "Deposition from Alternative Fuels in Land-Based Turbines". Student ORCA sponsored research project, 2004.
9. McMullin Burton, "Thermal Conductivity Measurement in Non-Uniform Deposit Layers", 2005.
10. Cole Yarrington, "Fluid Dynamics of Mixer Lobes", 2004-2005.
11. Justin Mickelsen, "Fluid Dynamics of Mixer Lobes", 2005.
12. Daniel Fletcher, "Deposition in Land-Based Turbines", 2005-2006.
13. Spencer Grange, "Deposition in Land-Based Turbines", 2005-2006.
14. Scott Lewis, "Deposition in Land-Based Turbines", 2005-2006.
15. Michael Armstrong, "Flow Control in LPT", 2005.
16. Katie Crapo, "Flow Control in LPT", 2006.
17. Jon Plum, "Flow Control in LPT", 2006.
18. Aaron Mason, "Deposition in Land-Based Turbines", 2006.
19. Nathan Rhead, "Transient IR Measurement on Rough Surfaces," 2006.
20. Joshua Dustin, "Secondary Flow Management in Turbines," 2007
21. Brian Casaday, "Secondary Flow Management in Turbines," 2007
22. Brad Borchert, "Transient IR Measurement on Rough Surfaces," 2007.

Ohio State University

1. Jason Brown, 2007.
2. Shay Pontsler, 2008.
3. Stuart Benton, 2008.
4. Carey Clum, 2009.
5. Carlos Bonilla, 2009-2010.
6. Ethan Brewer, 2011-12
7. Michael Lawrence, 2011-2012
8. Dan Reilly, 2012
9. Blair Peterson, 2013
10. Kevin Shoup, 2014
11. Erik Bokar, 2013-2014
12. Craig Sacco, 2014
13. Lucas Agricola, 2014-2015
14. Alex Miller, 2015-2016, Honors thesis
15. James Walsh, 2016-2017
16. Khalid El-Sayed, 2017
17. Gabe Geiger, 2016-2018
18. Jennifer Haines, 2017-2018
19. Ali Hussain, 2017-2018, Honors thesis, "The Effect of Slot Configuration on Active Flow Control Performance of Swept Wings at Low Reynolds Numbers," May 2018. Raytheon.
20. Chris Silva, 2018-2019
21. Austin Karr, 2019

22. Evan Crowe, 2018-2019, Honors thesis , “Effects Of Dust Composition On Particle Deposition In An Internal Effusion Cooling Geometry,” May 2019, PhD Student at Univ of Illinois.
23. Evan McFadden, 2019 summer
24. John Mulh, 2019-2020
25. Semo Slaoui, 2021-2022, honors thesis: “Particle Deposition in Gas Turbine Engines: The Effect of Temperature on Mineral Particles’ Behavior”
26. Joseph Staschiak, 2021
27. Patrick Brandt, 2021-2022
28. Nisha Kumar, 2022.
29. Luke Paxton, 2022.
30. Leksi Murnieks, 2023
31. John Jackam, 2023
32. Nik Wagner, 2023
33. Mason Mitchell, 2023
34. Tanner Sabau, 2023
35. Ethan Butler, 2023
36. Thomas DeFoor, 2023
37. Cole Westrick, 2023

Courses Taught

Air Force Institute of Technology

F97, Aero520, Viscous Flow Theory
 W98, Aero536, High Speed Aerodynamics
 Su98, Seng516, Introduction to Instrumentation
 F98, Aero520, Viscous Flow Theory
 W99, Aero520, Viscous Flow Theory
 Sp99, Aero627, Turbulence
 Su99, Seng516, Introduction to Instrumentation
 F99, Aero520, Viscous Flow Theory
 W00, Aero536, High Speed Aerodynamics
 Sp00, Aero627, Turbulence
 Su00, Seng516, Introduction to Instrumentation
 F00, Meng431, Propulsion
 Sp01, Aero627, Turbulence
 Su01, Meng733, Airbreathing Engine Design
 W02, Aero627, Turbulence

Brigham Young University

F02, ME510, Compressible Flow Theory
 W03, ME321, Thermodynamics
 F03, ME510, Compressible Flow Theory
 F03, ME611, Turbulence
 W04, ME312, Fluid Mechanics
 F04, ME510, Compressible Flow Theory
 W05, ME312, Fluid Mechanics

W05, ME526, Gas Turbine & Jet Engine Design
S05, ME515, Airfoil Design Theory
F05, ME312, Fluid Mechanics
W06, ME426, Gas Turbine & Jet Engine Design
W06, ME611, Turbulence
S06, ME312, Fluid Mechanics
F06, ME312, Fluid Mechanics
W07, ME510, Compressible Flow Theory
W07, ME426, Gas Turbine & Jet Engine Design
S07, ME515, Airfoil Design Theory

Ohio State University

F07, AAE751, Advanced Propulsion
W08, AAE860, Internal Flows in Turbomachinery
F08, AAE751, Advanced Propulsion
W09, AAE201, Introduction to Aerospace Engineering
S09, AAE570, Viscous Flow and Heat Transfer
F09, AAE751, Advanced Propulsion
W10, AAE862, Internal Flows in Turbomachinery
S10, AAE570, Viscous Flow and Heat Transfer
S10, AAE612, Aircraft Flight Test Engineering
F10, AAE751, Advanced Propulsion
W11, AAE201, Introduction to Aerospace Engineering
W11, AAE771, Compressible Viscous Flow
S11, AAE570, Viscous Flow and Heat Transfer
F11, AAE751, Advanced Propulsion
W12, AAE862, Internal Flows in Turbomachinery
S12, AAE570, Viscous Flow and Heat Transfer
S12, AAE612, Aircraft Flight Test Engineering
F12, AAE4510, Experimental Projects Lab I
F12, AAE5771, Laminar and Transitional Flow
S13, AAE4511, Experimental Projects Lab II
S13, AAE5751, Advanced Propulsion
F13, AAE7862, Internal Flows in Turbomachinery
F13, AAE4510, Experimental Projects Lab I
S14, AAE4511, Experimental Projects Lab II
S14, AAE5751, Advanced Propulsion
F14, AAE4510, Experimental Projects Lab I
F14, AAE6771, Laminar and Transitional Flow
S15, AAE4511, Experimental Projects Lab II
S15, AAE5612, Aircraft Flight Test Engineering
F15, AAE7862, Internal Flows in Turbomachinery
S16, AAE5610, Helicopter Aerodynamics
S16, AAE5612, Aircraft Flight Test Engineering
F16, AAE6771, Laminar and Transitional Flow
S17, AAE5610, Helicopter Aerodynamics

F17, AAE7862, Internal Flows in Turbomachinery
F18, AAE6771, Laminar and Transitional Flow
S19, AAE5751, Advanced Propulsion
F19, AAE7862, Internal Flows in Turbomachinery
S20, AAE6860, Experimental Fluid Mechanics
F20, AAE3560, Fundamentals of Aerodynamics
S21, AAE5612, Aircraft Flight Test Engineering
F21, AAE7862, Internal Flows in Turbomachinery
S22, AAE6860, Experimental Fluid Mechanics
F22, AAE6771, Laminar and Transitional Flow
S23, AAE3570, Gas Dynamics
F23, AAE7862, Internal Flows in Turbomachinery
S24, AAE3570, Gas Dynamics

Department Service

Air Force Institute of Technology

1998-1999: Faculty Council Secretary (for entire College of Engineering)
1999 – 2002: Faculty advisor to student Tau Beta Pi chapter
1999, 2001: Faculty search committee

Brigham Young University

Assessment (ABET) Committee, 7/06 – 6/07
Faculty Hiring Committee, 7/05 – 7/06
Graduate Program Committee, 8/03 – 6/05
Graduate Seminar Coordinator, 8/03 – 6/05
Ph.D. Qualifying Exam Committee, Fluid Mechanics, 2003 – 6/07
Curriculum Committee, Fluid Mechanics

Ohio State University

Performance Plan Acceleration Task Force, 10/08 – 2/09
Aero/Aviation Merger Assessment Committee, 10/07 – 12/08
Graduate Program Committee, 9/07 – 6/11
AARL Lab Director, 6/08 – 6/10
Undergraduate Studies Chair, 6/10 – 6/13
Core Committee Representative, 6/10 – 5/16
Faculty Search Committee Chair, 10/10 – 6/11
Faculty Search Committee: 2011, 2013, 2014, 2015
CQI Committee: 9/12 – 9/14
Ugrad Committee Member, 6/13 – 9/14
Grad Committee Member, 6/13 – 5/16
Associate Chair for Graduate Studies, 7/16 – 12/21
Faculty Search Committee Chair (McCrink), 9/21 – 1/22
Faculty Search Committee Member (ARC Director), 9/21 – 4/22
Faculty Search Committee Member (Dept Chair), 2/22 – 4/22
Faculty Search Committee Chair (Webb), 1/23 – 4/23

