

Christopher C. Daniels

Abbreviated Curriculum Vitae

CURRENT AFFILIATION

Associate Professor of Engineering Practice
Research Associate Professor of Mechanical Engineering
The University of Akron
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EDUCATION

2000	Ph.D. Mechanical Engineering	The University of Akron
1996	M.S. Mechanical Engineering	The University of Akron
1994	B.S. Mechanical Engineering	The University of Akron

PROFESSIONAL EXPERIENCE

2016 – present	<u>Associate Professor of Engineering Practice</u> , Dept. of Mech. Eng. The University of Akron
2009 – present	<u>Research Associate Professor</u> , Dept. of Mechanical Engineering The University of Akron
2003 – 2009	<u>Research Assistant Professor</u> , College of Engineering The University of Akron
2000 – 2003	<u>Senior Research Associate</u> Ohio Aerospace Institute
2000	<u>Visiting Assistant Professor</u> , Dept. of Mechanical Engineering The University of Akron
1996 – 1999	<u>Research Engineer</u> B&C Engineering Associates, Inc.
1995 – 2000	<u>Teaching and Graduate Research Assist.</u> , Dept. of Mechanical Eng. The University of Akron

RESEARCH FUNDING (\$10.3 MILLION TOTAL)

	Agency and Title	Total Award
2013 – 2019	University Space Research Association “Advanced Research and Technology Support” Principal investigator, 100%	\$2,771,254
2015 – 2018	Vantage Partners, LLC “Advanced Energetic Materials and Concepts Dev.” Principal investigator, 100%	\$86,314
2007 – 2013	National Aeronautics and Space Administration “Advanced Aerospace Seals Research” Principal investigator, 85%	\$6,559,599
2004 – 2007	National Aeronautics and Space Administration “Advanced Sealing Technologies Development” Principal investigator, 50%	\$432,980

2003 – 2004	National Aeronautics and Space Administration “Emerging Sealing Technologies” Co-principal investigator, 50%	\$126,651
2000 – 2003	National Aeronautics and Space Administration “Advanced Seal Development” Principal investigator, 100%	\$323,829

PATENTS AND APPLICATIONS

2019	Issued	Shrouded Seal Assembly. U.S. Patent No. 10,330,201. 25-Jun 2019.
2018	Issued	Apparatus and method for quantifying gas loss in a closed system. U.S. Patent No. 9,958,353. 01-May 2018.
2016	Issued	Seals having textured portions for protection in space environments. U.S. Patent 9,377,107. 28-Jun 2016.
	Filed	World Intellectual Property Organization Patent Publication No. WO2013059621 A1. Filed 19-Oct 2012.
	Filed	China Patent Publication No. CN103890465A. 19-Oct 2012.
	Filed	Canada Patent Publication No. CA2852690A1. 19-Oct 2012.
2012	Issued	Seal with integrated shroud for androgynous docking and berthing in space environments. U.S. Patent 8,172,233. 8-May 2012.

PUBLICATIONS

Refereed Journal Articles

1. Daniels, C., M. Braun, H. Oravec, J. Mather, S. Taylor. 2017. Leak rate quantification method for gas pressure seals with controlled pressure differential. *AIAA Journal of Spacecraft and Rockets*, Vol. 54, No. 6, 1228-1234. doi: 10.2514/1.A33804
2. Daniels, C., J. Mather, H. Oravec, S. Taylor, P. Dunlap. 2016. Degradation of silicone elastomer seals from ultraviolet radiation. Submitted to *AIAA Journal of Spacecraft and Rockets*. Manuscript ID 2016-09-A33754.
3. Garafolo, N., and C. Daniels. 2016. Interface Leakage of an Elastomer Face Seal: Methodology and Example. Submitted to the *Journal of Fluids Engineering*. FE-16-1492.
4. Garafolo, N., and C. Daniels. 2014. The mass point leak rate technique with uncertainty analysis. *Research in Nondestructive Evaluation*. 25 (2): 125-149. doi:10.1080/09349847.2013.861953
5. Daniels, C. and N. Garafolo. 2014. Effect of system variables on the uncertainty of the mass point leak rate methodology using first-order regression. *Nondestructive Testing and Evaluation*. 29 (1):14-28. doi:10.1080/10589759.2013.823610
6. Garafolo, N., and C. Daniels. 2013. An experimental investigation of leak-rate performance of a subscale composite elastomer-retainer docking seal. *Journal of Spacecraft and Rockets*. 50 (3): 709-714. doi:10.2514/1.A32380
7. Garafolo, N., and C. Daniels. 2012. A compressible permeation approach to elastomeric space seal characterization. *Journal of Fluids Engineering*. 134 (5). doi:10.1115/1.4006418

8. Daniels, C., N. Garafolo, M. Bastrzyk, and I. Smith. 2012. Evaluation of a novel seal for space applications. *Journal of Spacecraft and Rockets*. 49 (1):83-90. doi:10.2514/1.A32049
9. Finkbeiner, J., P. Dunlap, B. Steinetz, and C. Daniels. 2008. Design review of seals on the Apollo spacecraft. *Journal of Spacecraft and Rockets*. 45 (5): 900-910.
10. Daniels, C., and M. Braun. 2006. The friction behavior of individual components in a spark-ignition engine during warm-up. *Tribology & Lubrication Technology*. 62 (11): 62.
11. Daniels, C., and M. Braun. 2006. The friction behavior of individual components in a spark-ignition engine during warm-up. *Tribology Transactions*. 49 (2): 166-173. doi:10.1080/05698190500544403
12. Li, X., J. Finkbeiner, G. Raman, C. Daniels, and B. Steinetz. 2004. Optimized shapes of oscillating resonators for generating high-amplitude pressure waves. *Journal of the Acoustic Society of America*. 116 (5): 2814-2821.
13. Braun, M., D. Peloso, and C. Daniels. 2002. An investigation of the shear and pressure flows interaction in a hydrostatic journal bearing pocket. *International Journal of Applied Mechanics and Engineering*. 7 (3).
14. Braun, M., C. Daniels, D. Peloso, and R. Hendricks. 2001. Experimental flow patterns and pressure characteristics in a single hydrostatic pocket of variable depth. *Journal of Flow Visualization and Image Processing*. 8: 1-14.
15. Braun, M., C. Daniels, M. Dyko. 2000. An experimental investigation of natural convection in an open ended horizontal annulus using a non-intrusive full flow field visualization method. *Journal of Flow Visualization and Image Processing*. 7: 325-342.
16. Srivatsan, T., S. Sriram, and C. Daniels. 1997. Influence of temperature on cyclic stress response and fracture behavior of aluminum alloy 6061. *Engineering Fracture Mechanics*. 56 (4): 531-550.
17. Sriram, S., C. Daniels, and T. Srivatsan. 1995. Influence of Al₂O₃ particulate reinforcement on tensile fracture of an aluminum alloy metal matrix composite. *Metals, Materials, and Processes*. 7 (2): 83-92.
18. Srivatsan, T., S. Sriram, and C. Daniels. 1995. The Influence of Al₂O₃ particulate reinforcement on the cyclic stress response and fracture behavior of 6061 aluminum alloy. *Applied Composite Materials*. 2: 175-198.

Refereed Conference Papers and Proceedings

1. Dunlap, P., J. Mather, C. Daniels, and H. Oravec. 2018. Evaluations of Candidate Materials for Advanced Space-Rated Vacuum Seals to Explore Space Environment Exposure Limits. *Proceedings of the 30th Space Simulation Conference*, Raleigh, NC.
2. Oravec, H., C. Daniels, J. Mather. 2017. Verification of air leak rate requirements utilizing a helium leak detector method. FEDSM2017-69076. *Proceedings of the ASME Fluids Engineering Division Summer Meeting*, Waikoloa, HI.
3. Magradey, J., and C. Daniels. 2017. A parametric study of an enhanced leak rate method's uncertainty. FEDSM2017-69075. *Proceedings of the ASME Fluids Engineering Division Summer Meeting*, Waikoloa, HI.
4. Daniels, C., J. Mather, H. Oravec, and P. Dunlap. 2016. An Electrically Conductive Elastomer Seal for Spacecraft. AIAA-2016-4923. *Proceedings of the 52st AIAA/ASME/SAE/ASEE Joint Propulsion Conference*, Salt Lake City, UT. doi: 10.2514/6.2016-4923

5. Daniels, C., M. Braun, H. Oravec, J. Mather, and S. Taylor. 2015. Leak rate quantification method for gas pressure seals with controlled pressure differential. AIAA-2015-4231. *Proceedings of the 51st AIAA/ASME/SAE/ASEE Joint Propulsion Conference*, Orlando, FL. ASME Propulsion Best Paper. doi: 10.2514/6.2015-4231
6. Oravec, H., C. Daniels, and N. Penney. 2015. Destructive removal of candidate subscale two-piece silicone elastomer docking seals. AIAA-2015-4055. *Proceedings of the 51st AIAA/ASME/SAE/ASEE Joint Propulsion Conference*, Orlando, FL. (ITAR Restricted)
7. Taylor, S., J. Mather, C. Daniels, and N. Penney. 2015. Performance evaluation of a candidate full-scale dynamic interface seal for the International Low Impact Docking System. AIAA-2015-4049. *Proceedings of the 51st AIAA/ASME/SAE/ASEE Joint Propulsion Conference*, Orlando, FL. (ITAR Restricted)
8. Daniels, C., J. Mather, H. Oravec, S. Taylor, P. Dunlap. 2015. Durability of an elastomeric space seal compound after terrestrial ultraviolet radiation exposure. AIAA 2015-3323. 7th AIAA Atmospheric and Space Environments Conference, Dallas, TX. doi: 10.2514/6.2015-3323
9. Taylor, S., J. Mather, C. Daniels, and D. Dye. 2015. Investigation of the impact of surface blending and ultraviolet radiation exposure on elastomer seal leak rate performance for space seal applications. AIAA 2015-3322. 7th AIAA Atmospheric and Space Environments Conference, Dallas, TX. doi: 10.2514/6.2015-3322
10. Oravec, H. and C. Daniels. 2014. Leak rate performance of silicone elastomer O-rings contaminated with JSC-1A lunar regolith simulant. 14th ASCE International Conference on Engineering, Science, Construction and Operations in Challenging Environments, St. Louis, MO.
11. Oravec, H. and C. Daniels. 2014. Implementation of statistical process control: Evaluating the mechanical performance of a candidate silicone elastomer docking seal. *Proceedings of the 50th AIAA/ASME/SAE/ASEE Joint Propulsion Conference*, AIAA 2014-3600, Cleveland, OH. doi: 10.2514/6.2014-3600
12. Oravec, H., Garafolo, N., and C. Daniels. 2013. The mechanical and sealing performance of an atomic oxygen pretreated subscale candidate silicone elastomer docking seal. *Proceedings of the 49th AIAA/ASME/SEA/ASEE Joint Propulsion Conference and Exhibit*, San Jose, CA. (ITAR Restricted)
13. Garafolo, N. and C. Daniels. 2013. Geometrical consideration of permeation in elastomers. *Proceedings of the ASME 2013 Fluids Engineering Division Summer Meeting*, Incline Village, NV. doi:10.1115/FEDSM2013-16059
14. Garafolo, N. and C. Daniels. 2012. An empirical investigation of seal-interface leakage of an elastomer face seal. *Proceedings of the ASME 2012 Fluids Engineering Division Summer Meeting*. Rio Grande, PR. The American Society of Mechanical Engineers. doi:10.1115/FEDSM2012-72026
15. Oravec, H., J. Wasowski, and C. Daniels. 2012. The effect of temperature and dwell on the adhesion force of silicone elastomer seals. *Proceedings of the 50th AIAA Aerospace Sciences Meeting*, AIAA 2012-0803, Nashville, TN. doi: 10.2514/6.2012-803
16. Garafolo, N., and C. Daniels. 2012. An evaluation of the compressible permeation approach for elastomeric space seals. *Proceedings of the 50th AIAA Aerospace Sciences Meeting*, AIAA 2012-0802, Nashville, TN. doi: 10.2514/6.2012-802
17. Garafolo, N. and C. Daniels. 2011. The quantification of seal-interface leakage of an elastomer face seal. *Proceedings of the ASME 2011 International Mechanical Engineering Congress & Exposition*, Denver, CO. 1: 245-253. doi:10.1115/IMECE2011-63620

18. Oravec, H., Panickar, M., J. Wasowski, and C. Daniels. 2011. Influence of elastomer compound and test temperature on the compression force of candidate space seals: A preliminary study. *Proceedings of the 47th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit*, AIAA 2011-5709, San Diego, CA. doi: 10.2514/6.2011-5709
19. M. Conrad, C. Daniels, B. Hartzler, and M. Panickar. 2011. Retention failure forces in candidate space docking seals. *Proceedings of the 47th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit*, AIAA 2011-5639, San Diego, CA. doi: 10.2514/6.2011-5639
20. Daniels, C., J. Wasowski, M. Panickar, and I. Smith. 2011. Leak rate performance of three silicone elastomer compounds after ground-simulated and on-orbit environment exposures. 3rd AIAA Atmospheric Space Environments Conference, AIAA 2011-3823, Honolulu, HI. doi: 10.2514/6.2011-3823
21. Garafolo, N., and C. Daniels. 2011. Contamination simulation of elastomer space seals with foreign object debris. 3rd AIAA Atmospheric Space Environments Conference, AIAA 2011-3674, Honolulu, HI. doi: 10.2514/6.2011-3674
22. Hartzler, B., M. Panickar, J. Wasowski, and C. Daniels. 2011. Comparison of adhesion and retention forces for two candidate docking seal elastomers. *Proceedings of the 52nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference*, AIAA 2011-2158, Denver, CO and as NASA/CR-2011-217109. doi: 10.2514/6.2011-2158
23. Panickar, M., J. Wasowski, and C. Daniels. 2011. Adhesion of an elastomer seal to metal and its mitigation with atomic oxygen pretreatment. *Proceedings of the 49th AIAA Aerospace Sciences Meeting*, AIAA 2011-426, Orlando, FL. doi: 10.2514/6.2011-426
24. Bastrzyk, M., and C. Daniels. 2010. Compression force response and leak rate quantification of candidate static silicone space seals. *Proceedings of the 46th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit*, AIAA-2010-6908, Nashville, TN. doi: 10.2514/6.2010-6908
25. Dunlap, P., B. Steinetz, C. Daniels, J. Wasowski, M. Robbie, G. Drlik, A. Erker, J. Mayer. 2010. Full-scale system for quantifying loads and leak rates of seals for space applications. *Proceedings of the 46th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit*, AIAA 2010-6987, Nashville, TN.
26. Garafolo, N., and C. Daniels. 2010. An experimental investigation of leak rate performance of a subscale candidate elastomer docking seal. *Proceedings of the 46th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit*, AIAA 2010-6907, Nashville, TN and as NASA/CR-2011-216829. doi: 10.2514/6.2010-6907
27. Penney, N., J. Wasowski, and C. Daniels. 2010. Temperature and atomic oxygen effects on helium leak rates of a candidate main interface seal. *Proceedings of the 46th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit*, AIAA 2010-6986, Nashville, TN. doi: 10.2514/6.2010-6986
28. Bastrzyk, M., J. Wasowski, and C. Daniels. 2010. Non-contact compression set testing and dimensional measurements of space seals: An application of laser technology. 4th Japan-US Symposium on Emerging NDE Capabilities for a Safer World, M2-1, Maui, HI.
29. Conrad, M., C. Daniels, and R. Martin. 2010. Two nondestructive evaluation techniques for inspection of composite silicone-metal aerospace seals. 4th Japan-US Symposium on Emerging NDE Capabilities for a Safer World, M4-2, Maui, HI.
30. Garafolo, N., and C. Daniels. 2010. Comprehensive mass point leak rate technique. Part I: Methodology with uncertainty and experimental error analyzes. 4th Japan-US Symposium on Emerging NDE Capabilities for a Safer World, M4-4, Maui, HI.

31. Daniels, C., and N. Garafolo. 2010. Comprehensive mass point leak rate technique. Part II: Application of methodology and variable influences. 4th Japan-US Symposium on Emerging NDE Capabilities for a Safer World, M4-5, Maui, HI.
32. Bastrzyk, M., and C. Daniels. 2010. The mechanical performance of subscale candidate elastomer docking seal. *Proceedings of the 51st AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference*, AIAA 2009-3129, Orlando, FL and as NASA/CR-2010-3129. doi: 10.2514/6.2010-3129
33. Garafolo, N., M. Bastrzyk, and C. Daniels. 2010. The effects of atomic oxygen on the sealing and mechanical performance of an elastomer seal. *Proceedings of the 48th AIAA Aerospace Sciences Meeting*, AIAA 2009-1440, Orlando, FL. doi: 10.2514/6.2010-1440
34. Daniels, C., N. Garafolo, M. Bastrzyk, and I. Smith. 2009. Evaluation of a novel seal for space applications. *Proceedings of the 45th AIAA/ASME/SAE/ASEE Joint Propulsion Conference*, AIAA 2009-5250, Denver, CO. doi: 10.2514/6.2009-5250
35. Conrad, M., C. Daniels, and M. Bastrzyk. 2009. Experimental investigation of silicone-to-metal bond strength in composite docking system seals. *Proceedings of the 45th AIAA/ASME/SAE/ASEE Joint Propulsion Conference*, AIAA 2009-5318, Denver, CO and as NASA/CR-2010-216886. doi: 10.2514/6.2009-5318
36. Dunlap, P., C. Daniels, J. Wasowski, N. Penney, and B. Steinetz. 2009. Pressure decay testing methodology for quantifying leak rates of full-scale docking system seals. *Proceedings of the 45th AIAA/ASME/SAE/ASEE Joint Propulsion Conference*, AIAA 2009-5319, Denver, CO and as NASA/TM-2010-216244. doi: 10.2514/6.2009-5319
37. Wasowski, J., N. Penney, and C. Daniels. 2009. Leak rates of a candidate docking interface seal at various temperatures. *Proceedings of the 45th AIAA/ASME/SAE/ASEE Joint Propulsion Conference*, AIAA 2009-5320, Denver, CO. doi: 10.2514/6.2009-5320
38. Garafolo, N. and C. Daniels. 2009. Compressible advection through an elastomer seal: A porous media approach to seals for space applications. *Proceedings of the ASME 2009 Fluids Engineering Division Summer Meeting*, Vail, CO, Volume 1: Symposia, Parts A, B and C: 1853-1864. doi:10.1115/FEDSM2009-78067
39. de Groh, H., S. Miller, I. Smith, C. Daniels, B. Steinetz. 2008. Adhesion of cured silicone elastomer seals for NASA's Crew Exploration Vehicle. *Proceedings of the 44th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit*, AIAA 2008-4625, Hartford, CT and as NASA/TM-2008-215433.
40. Smith, I., C. Daniels, P. Dunlap, and B. Steinetz. 2007. Performance of sub-scale docking seals under simulated temperature conditions. *Proceedings of the 44th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit*, AIAA 2008-4713, Hartford, CT and as NASA/TM-2008-215428.
41. Oswald, J., C. Daniels, P. Dunlap, and B. Steinetz. 2007. Simulating elastomer seal mechanics for a Low Impact Docking System. *Proceedings of the AIAA SPACE 2007 Conference & Exposition*, AIAA 2007-6206, Long Beach, CA. doi: 10.2514/6.2007-6206
42. Daniels, C., J. Oswald, M. Bastrzyk, I. Smith, P. Dunlap, and B. Steinetz. 2007. Experimental investigation of leakage and compressive load of elastomeric docking seals. *Proceedings of the AIAA SPACE 2007 Conference & Exposition*, AIAA 2007-6197, Long Beach, CA and as NASA/TM-2008-215023. doi: 10.2514/6.2007-6197

43. Daniels, C., H. de Groh III, P. Dunlap, J. Finkbeiner, B. Steinetz, M. Bastrzyk, J. Oswald, B. Banks, J. Dever, S. Miller, and D. Waters. 2007. Characteristics of elastomer seals exposed to space environments. *Proceedings of the 43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit*, AIAA 2007-5741, Cincinnati, OH, and NASA/TM-2008-215005. doi: 10.2514/6.2007-5741
44. Dunlap, P., C. Daniels, B. Steinetz, A. Erker, M. Robbie, J. Wasowski, G. Drlik, M. Tong, and N. Penney. 2007. Full scale system for quantifying leakage of docking system seals for space applications. *Proceedings of the 43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit*, AIAA 2007-5742, Cincinnati, OH, and as NASA/TM-2007-215024. doi: 10.2514/6.2007-5742
45. Finkbeiner, J., P. Dunlap, Jr., B. Steinetz, C. Daniels. 2006. Apollo Seals: A basis for the crew exploration vehicle seals. *Proceedings of the 42nd AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit*, AIAA 2006-5259, Sacramento, CA and as NASA/TM-2006-214372. doi: 10.2514/6.2006-5259
46. Daniels, C., and M. Braun. 2005. The friction behavior of individual components in a spark ignition engine during warm-up. *60th STLE Annual Meeting Conference Proceedings*, Las Vegas, NV.
47. Daniels, C., J. Finkbeiner, B. Steinetz, X. Li, and G. Raman. 2004. Nonlinear oscillations and flow of gas within closed and open conical resonators. *Proceedings of the AIAA 42nd Aerospace Sciences Meeting and Exhibit*, AIAA 2004-0677, Reno, NV and as NASA/TM-2004-212902.
48. Li, X., J. Finkbeiner, G. Raman, C. Daniels, B. Steinetz. 2003. Nonlinear resonant oscillations of gas in optimized acoustical resonators and the effect of central blockage. *AIAA 41st Aerospace Sciences Meeting and Exhibit*, AIAA 2003-0368, Reno, NV and as NASA/TM-2003-212019.
49. Braun, M., D. Peloso, and C. Daniels. 2001. An investigation of the shear and pressure flows interaction in a hydrostatic journal bearing pocket. Second World Tribology Congress, Vienna, Austria.
50. Braun, M., C. Daniels, D. Peloso, and R. Hendricks. 2000. Experimental flow patterns and pressure characteristics in a single hydrostatic pocket of variable depth. 8th International Symposium on Transport Phenomena and Dynamics of Rotating Machinery, Honolulu, HI, 2: 1041-1048.
51. Braun, M., C. Daniels, M. Dyko, and V. Kyga. 1997. Temperature distribution and flow characteristics of a concentric horizontal cylinder configuration. *Proceedings of the 1997 ASME Fluids Engineering Division Summer Meeting*, Vancouver, British Columbia.
52. Srivatsan, T., C. Daniels, and A. Prakash. 1997. Tensile response of high carbon steel wires. 1997 Annual Convention of the Wire Association International, Atlanta, GA: 67-72.
53. Srivatsan, T., C. Daniels, and A. Prakash. 1997. High cycle fatigue behavior of high carbon steel wires. 1997 Annual Convention of the Wire Association International, Atlanta, GA: 61-66.
54. Daniels, C., T. Srivatsan, and A. Prakash. 1996. The tensile behavior of high carbon steel wires: Influence of temperature. *Metallurgy, Processing, and Applications of Metal Wires: "State of the Art Technology and Challenges for the Future"*. Eds: H.G. Paris and D.K. Kim. Warrendale, PA: The Minerals, Metals, and Materials Society. 195-218. Presented at TMS/ASM Materials Week '96, Cincinnati, OH.
55. Daniels, C., T. Srivatsan, and A. Prakash. 1996. The cyclic deformation of high carbon steel wires: Influence of temperature. *Metallurgy, Processing, and Applications of Metal Wires: "State of the Art Technology and Challenges for the Future"*. Eds.: H.G. Paris and D.K. Kim. Warrendale, PA: The Minerals, Metals, and Materials Society. 219-242. Presented at TMS/ASM Materials Week '96, Cincinnati, OH.

56. Srivatsan, T., C. Daniels, S. Sriram, K. Dhana Singh, W. Soboyejo, and D. Konitzer. 1995. The cyclic fatigue and fracture behavior of a niobium-based intermetallic compound. *Fatigue and Fracture of Ordered Intermetallic Materials II*. Eds: W.O. Soboyejo, T.S. Srivatsan, and R.O. Ritchie. Warrendale, PA: The Minerals, Metals, and Materials Society: 287-308. Presented at 2nd International Symposium on Fatigue and Fracture of Ordered Intermetallic Materials, Rosemont, IL.

Invited Presentations

1. Daniels, C., and N. Garafolo. 2011. Experimental verification of mass point leak rate technique. 2011 NASA Seal / Secondary Air System Research Symposium, Cleveland, OH.
2. Garafolo, N., and C. Daniels. 2011. The characterization of elastomer space seals through a compressible permeation approach. 2011 NASA Seal / Secondary Air System Research Symposium, Cleveland, OH.
3. Dunlap, P., B. Steinetz, and C. Daniels. Overview of LIDS docking seals development. 2009 NASA Seal / Secondary Air System Research Symposium, Cleveland, OH.
4. Steinetz, B., P. Dunlap, M. Proctor, I. Delgado, J. Finkbeiner, H. deGroh, F. Ritzert, C. Daniels, J. DeMange, S. Taylor, J. Wasowski, N. Penney, and N. Garafolo. 2009. Overview of NASA Glenn seal project – 2009. 2009 NASA Seal / Secondary Air System Research Symposium, Cleveland, OH.
5. Dunlap, P., C. Daniels, B. Steinetz, H. de Groh, I. Smith, J. Wasowski, N. Garafolo, and N. Penney. 2008. Overview of LIDS docking seals development. 2008 NASA Seal / Secondary Air System Research Symposium, Cleveland, OH.
6. Dunlap, P., B. Steinetz, and C. Daniels. Overview of GRC test capabilities. 2008. Seal Leakage Testing Technical Interchange Meeting, Cleveland, OH.
7. Smith, I., C. Daniels, J. Wasowski, N. Garafolo, N. Penney. 2008. Low Impact Docking System (LIDS) seal leakage measurement experience. Seal Leakage Testing Technical Interchange Meeting, Cleveland, OH.
8. Daniels, C., J. Wasowski, I. Smith, B. Steinetz, and P. Dunlap. 2008. Potential implications of leak test requirements on hardware design and test parameters. Seal Leakage Testing Technical Interchange Meeting, Cleveland, OH.
9. Wasowski, J., C. Daniels, I. Smith. Highlights of relevant NASA Constellation Program (CxP) documents and guidance on leakage measurement for Low Impact Docking System (LIDS). 2008. Seal Leakage Testing Technical Interchange Meeting, Cleveland, OH.
10. de Groh, H., C. Daniels, P. Dunlap, and B. Steinetz. 2007. Assessing impacts of MMOD strikes on seal performance. 2007 NASA Seal / Secondary Air System Workshop, Cleveland, OH, and in NASA/CP 2008-215263.
11. Drlik, G., J. Oswald, C. Daniels, P. Dunlap, and B. Steinetz. 2007. Docking seal load considerations: Analytical sensitivity studies. 2007 NASA Seal / Secondary Air System Workshop, Cleveland, OH, and in NASA/CP 2008-215263.
12. Smith, I. and C. Daniels. Medium-scale docking seal test results. 2007. 2007 NASA Seal / Secondary Air System Workshop, Cleveland, OH, and in NASA/CP 2008-215263.
13. Daniels, C., P. Dunlap, B. Steinetz, H. de Groh, I. Smith, J. Wasowski, N. Penney, and J. Oswald. 2007. Overview of LIDS docking and berthing system seal development. 2007 NASA Seal / Secondary Air System Workshop, Cleveland, OH, and in NASA/CP 2008-215263.

14. Oswald J. and C. Daniels. 2006. Finite element modeling of elastomeric seals for Low Impact Docking System. 2006 NASA Seal / Secondary Air System Workshop, Cleveland, OH, and in NASA/CP 2007-214995.
15. de Groh, H., C. Daniels, P. Dunlap, J. Dever, S. Miller, D. Waters, and B. Steinetz. 2006. Space environments effects on candidate Low Impact Docking System seal materials. 2006 NASA Seal / Secondary Air System Workshop, Cleveland, OH, and in NASA/CP 2007-214995.
16. Daniels, C., P. Dunlap, H. de Groh III, B. Steinetz, J. Oswald, and I. Smith. 2006. Overview of the Low Impact Docking System seals. 2006 NASA Seal / Secondary Air System Workshop, Cleveland, OH, and in NASA/CP 2007-214995.
17. Oswald, J., C. Daniels, P. Dunlap, and B. Steinetz. 2005. Metallic seal development for Advanced Docking / Berthing System. 2005 NASA Seal / Secondary Air System Workshop, Cleveland, Ohio and in NASA/CP-2006-214383 Vol. 1.
18. Daniels, C., J. Oswald, P. Dunlap, and B. Steinetz. 2005. Elastomeric seal development for Advanced Docking / Berthing System. 2005 NASA Seal / Secondary Air System Workshop, Cleveland, Ohio and in NASA/CP-2006-214383 Vol. 1.
19. Daniels, C., B. Steinetz, and J. Finkbeiner. 2003. Investigations of high-pressure acoustic waves in resonators with seal-like features. 2003 NASA Seal / Secondary Air System Workshop, Cleveland, Ohio and in NASA/CP-2004-212963 Vol. 1.
20. Athavale, M., M. Pindera, C. Daniels, and B. Steinetz. 2003. Numerical investigations of high-pressure acoustic waves in resonators. 2003 NASA Seal / Secondary Air System Workshop, Cleveland, Ohio and in NASA/CP-2004-212963 Vol. 1.

COURSES TAUGHT

4600:300	Thermodynamics I (University of Akron)
4600:301	Thermodynamics II (University of Akron)
4600:400	Thermal Systems Components (University of Akron)
4600:360	Engineering Analysis (University of Akron)
4600:483	Mechanical Engineering Measurements (University of Akron)

PROFESSIONAL SERVICE

Manuscript Reviewer

ASME Fluids Engineering Division Summer Meeting, 2017
 Journal of Automotive Engineering, Proceedings of the Institution of Mech. Engineer.
 Journal of Wear

Grant Reviewer

NASA Small Business Innovation Research Program
 NASA Research Announcement Program
 U.S. Department of Energy University Coal Research Core Program

Session Chair/Organizer

ASME Fluids Engineering Division Summer Meeting, 2017

The 4th Japan-US Symposium on Emerging NDE Capabilities for a Safer World, 2010

Societies

- 1993 – present Member, American Society of Mechanical Engineers
- 2004 – present Senior member, American Institute of Aeronautics and Astronautics
- 2013 – present Member, National Academy of Inventors
- 2017 – present Member, Society of Automotive Engineers

Awards

- | | | |
|------|---------------------------------------|-----------------------------------------------|
| 2019 | Passion Award for Teaching Excellence | Omicron Delta Kappa (U. Akron) |
| 2018 | Innovation Group Achievement Award | NASA Johnson Space Center Director |
| 2018 | Program Manager's Commendation | NASA Orion Exploration Program (NASA JSC) |
| 2018 | Outstanding Researcher Award | College of Engineering (U. Akron) |
| 2016 | Space Flight Awareness Team Award | NASA Docking System (NASA GRC) |
| 2016 | Space Flight Awareness Team Award | Mat. International Space Station Exp. (ISS) |
| 2016 | Best Paper Award | ASME Propulsion Division |
| 2016 | Winner | NineSigma NASA Challenge: Textile Test |
| 2015 | Team Excellence Award | Orion Explore. Docking Hatch (NASA JSC) |
| 2013 | Inductee | National Academy of Inventors (U. Akron) |
| 2011 | Program Manager's Commendation | Space Shuttle Program (NASA) |
| 2010 | Superior Performance Award | Low Impact Docking System (NASA) |
| 2010 | Group Achievement Award | MISSE-6 (NASA GRC) |
| 2010 | New Technology Award | Patent of Androgynous Seal (NASA) |
| 2007 | Group Achievement Award | Low Impact Docking System (NASA JSC) |
| 2007 | Mentor of the Year | NASA Glenn Research Center LERCIP |
| 2006 | Editor's Choice Paper | <i>Tribology & Lubrication Technology</i> |

SERVICE ACTIVITIES

- 2016 – present Faculty Advisor, Zips Baja Student Design Team, College of Engineering
- 2016 – present Faculty Advisor, Senior Capstone Projects, Mechanical Engineering Department
- 2017 – present Faculty 1st Line Academic Advisor, Mechanical Engineering Department
- 2019 – present Accessibility Liaison Committee, College of Engineering