

Curriculum Vitæ
Andrew J. Higgins

October, 2011

Address Department of Mechanical Engineering
McGill University
817 Sherbrooke St. W
Montreal, Quebec H3A 2K6
CANADA

Telephone (514) 398-6297
(514) 398-7365 (FAX)

E-Mail Address andrew.higgins@mcgill.ca

Web Page <http://people.mcgill.ca/andrew.higgins>

Citizenship United States of America (by birth)
Status in Canada: Permanent Resident

Education

Doctor of Philosophy in Aeronautics and Astronautics, University of Washington, Seattle, December 1996.

Masters of Science in Aeronautics and Astronautics, University of Washington, Seattle, August 1993.

Bachelor of Science in Aeronautical and Astronautical Engineering, University of Illinois at Urbana/Champaign, May 1991.

Research Positions

2005–Present Associate Professor, Department of Mechanical Engineering, McGill University, Montreal.

2010–2011 Visiting Scholar, Department of Mechanical and Aerospace Engineering, University of California, San Diego

1999–2005 Assistant Professor, Department of Mechanical Engineering, McGill University, Montreal.

1997–1998 Postdoctoral Research Associate, Shock Wave Physics Group, McGill University, Montreal.

1991–1996 Graduate Research Assistant, Ram Accelerator Laboratory, University of Washington, Seattle.

1989–1991 Undergraduate Research Assistant, Aerothermal Simulations Laboratory, University of Illinois, Urbana.

Consulting

2004 AVESTOR, Boucherville, Quebec.
2001 Pratt & Whitney Seattle Aerospace Center, Seattle, Washington.
1997-1998 Lawrence Livermore National Laboratory, H-Division.

Honors/Awards

Samuel and Ida Fromson Award for Outstanding Teaching, Faculty of Engineering, McGill University, 2004.
Teacher of the Year, Dept. of Mechanical Engineering, McGill University, 2001, 2002, 2004, 2010.
Sigma Mu Engineering Foundation Award for Excellence in Professorship, 2001.
Outstanding Recent Alumnus Award, Dept. of Aeronautical and Astronautical Engineering, University of Illinois, Urbana, 2001.
FCAR Programme stratégique de professeurs-chercheurs, 2000-2004.
Bernard Lewis Fellowship of the Combustion Institute, 1998.
AIAA Pacific Northwest Section Graduate Student Achievement Award, 1995.
Boeing Louis Marsh Fellowship, 1991-1992.

Research Grants and Contracts

Grants

CSA Grant: “Percolating Reactive Waves in Particulate Suspensions (PERWAVES)”, (\$673K, 2011-2014), Principal Investigator: A.J. Higgins
FQRNT Team Grant: “Simulation and Testing Capability for Orbital Debris Impact,” (\$64.5K/year, 2011-2014)
NSERC Research Tools and Instruments: “Photonic Doppler Velocimeter,” (\$140K, 2011), Principal Investigator: A.J. Higgins
NSERC Discovery Grant: “Investigations and applications of detonation propagation in energetic materials,” (\$36K/year, 2009-2014), Principal Investigator: A.J. Higgins
NSERC Research Tools and Instruments: “High-speed camera for visualization of combustion and detonation phenomena,” (\$116K, 2009), Principal Investigator: A.J. Higgins
NSERC Discovery Grant: “Detonation Propagation in Gaseous, Heterogeneous, and Condensed Phase Systems,” (\$25.4K/year, 2005-2009), Principal Investigator: A.J. Higgins

NSERC Research Tools and Instruments: “High Rate Deformation Visualization,” (\$67K, 2004), Principal Investigator: J.A. Nemes

CFI New Opportunities: “Shock Compression of Condensed Matter Laboratory,” (\$295K/2001-2004), Principal Investigator: A.J. Higgins

NSERC Individual Operating Grant: “High Velocity Detonation Phenomena,” (\$17.5K/year, 2000-2004), Principal Investigator: A.J. Higgins

FCAR Établissement de nouveaux chercheurs, volet individuel: “Detonation Propagation in Thin Layer Explosive/Gas Systems,” (\$15K/year, 2000-2004), Principal Investigator: A.J. Higgins

Contracts

Contract MPB Communications “Pioneering of Self-healing of Damage in Composites Caused by Space Debris,” \$18K (2009-2011), Principal Investigator: A.J. Higgins

Contract with Defence R&D Canada, Valcartier, “Combustion Stabilization in Supersonic Flow”, \$23.5K (2009-2011), Principal Investigator: A.J. Higgins

Contract with Defence R&D Canada, Valcartier, “Development of an Explosive-Driven Hypervelocity Launcher,” \$105K (2008), \$116K (2009), \$65K (2010) , Principal Investigator: A.J. Higgins

Contract with Canadian Space Agency–Space Technology Development Program, “Hypervelocity Launcher for Laboratory Testing of Orbital Debris and Micrometeoroid Impact,” \$140K (2006-2007), Principal Investigator: A.J. Higgins

Contract with Defence R&D Canada, Valcartier, “Ignition of Particle Agglomerates with the Addition of Modified Boron Nanopowders,” \$28K (2007), Principal Investigator: A.J. Higgins

Contract with Defence R&D Canada, Suffield, “Shock Initiation of Powder Mixtures,” \$22.3K (2007), Principal Investigator: A.J. Higgins

Contract with Canadian Space Agency, “Laminar Flame in Nonvolatile Solid Particulate Suspensions,” \$298K (2006-2011), Principal Investigator: J.H.S. Lee, Co-Investigator: A.J. Higgins

Contract with Defence R&D Canada, Suffield/Valcartier, “Experimental Investigation of Shock Induced Combustion Ramjet,” Phase I (Suffield): \$53K (2005), Phase II (Valcartier): \$50K (2006), Phase III (Valcartier): \$48K (2007), Principal Investigator: A.J. Higgins

Contract with Defence R&D Canada, Suffield, “A Study of the Effect of Pre-Compression and Metal Particle Addition to the Performance of High Explosives,” Phase I: \$107K (2005), Phase II: \$112K (2006), Phase III: \$60K (2007), Principal Investigator: A.J. Higgins

Contract with Defence R&D Canada, Suffield, “Particle Ignition Under Detonation Product Conditions,” \$30K (2004), Principal Investigator: A.J. Higgins

Contract with Carleton Technologies Inc.: “Demisability Study Using Exothermic Devices,” (\$30K USD, 2003), Principal Investigator: A.J. Higgins

DND Contract: “Compression Limits and Explosion Sensitivity of Molecular Liquids under Planar Compression toward One Megabar,” Phase I (\$95K, 2000), Phase II (\$63K, 2001), Phase III (\$60K, 2002), Principal Investigator: A.J. Higgins

DND Contract: “Initiation and Sensitization of Detonable Hydrocarbon/Air Mixtures for Pulse Detonation Engines,” Phase I (\$85K, 2000), Phase II (\$85K, 2001), Phase III (\$54K, 2002), Principal Investigator: A.J. Higgins

Contract with Combustion Dynamics Ltd.: “Gasless Combustion-Driven Furnace for Materials Research in Microgravity,” (\$30K, 2001), Principal Investigator: A.J. Higgins

Courses Taught

Mech 220 Mechanics II	2000, 2001, 2002
Mech 261/2 Statistics & Measure Lab	2009
Mech 341 Thermodynamics II	2003, 2004, 2005, 2006, 2007, 2008, 2009, 2011
Mech 346 Heat Transfer	2005
Mech 362 Mechanical Lab.	2003, 2004, 2005 2006, 2007, 2009, 2010
Mech 430 Fluids II	2000, 2001, 2002, 2003, 2010
Mech 447/652 Combustion	2004, 2006, 2008, 2012

Students Supervised

Undergraduate Honours Thesis

In Progress (0):

Completed (13): Sonia Yau, Martin St. Jean, Jacqueline English, Jean-Philip Laviolette, Charles Kiyanda, Jorin Mamen, Oren Petel, David Landry, Patrick Batchelor, Patricia Vu, Philippe Chaput, Jeremy Bruns, Alexander Lambert, Matthew Serge

Masters (sole supervisor)

In Progress (3): Justin Huneault, Anthony Devito, Brittany Driedger

Completed (11): Patrick Batchelor, Jason Loiseau, Daniel Szirti, David Mack, Oren Petel, Charles Kiyanda, Jorin Mamen, Jean-Philip Laviolette, Vincent Tanguay, François Xavier Jetté, Pierre Pinard

PhD (sole supervisor)

In Progress (0):

Completed (5): Vincent Tanguay, François Xavier Jetté, Oren Petel, Francois-David Tang, Jimmy Verreault

Other University and Professional Services

Member, Board of Directors, The Institute for Dynamics of Explosions and Reactive Systems, 2009-2013.

Associate Editor, *Proceedings of the Combustion Institute*, 2008-2013.

Plenary Lecture: Combustion Institute – Canadian Section, Spring Technical Meeting, Université de Montréal, Québec, May 11-13, 2009.

Local Organizing Committee, 32nd International Symposium on Combustion, Montreal, Canada, August 3 – August 8, 2008.

Co-chairman of Host Committee, 20th International Colloquium on the Dynamics of Explosions and Reactive Systems, McGill University, Montreal, Canada, July 31 – August 5, 2005.

Invited Speaker: Workshop on Reacting Compressible Flow, 14th U.S. National Congress of Theoretical and Applied Mechanics, Blacksburg, Virginia, June, 2002.

Chair of Local Committee: Combustion Institute Canadian Session Spring Technical Meeting, Montreal, May 13-16, 2001.

Service on Department of Mechanical Engineering Committees: Space Committee, Safety Committee, Secretarial Support Committee.

Service on Faculty of Engineering Committees: Space Planning Committee.

Chair of Sessions: Detonation Initiation, 18th International Colloquium on the Dynamics of Explosions and Reactive Systems, Seattle, Washington, July 29 - August 3, 2001; Detonation Initiation, 19th International Colloquium on the Dynamics of Explosions and Reactive Systems, Hakone, Japan, July 27 - August 1, 2003; 20th International Colloquium on the Dynamics of Explosions and Reactive Systems, McGill University, Montreal, Canada, July 31 – August 5, 2005; Detonation Structure, 22nd International Colloquium on the Dynamics of Explosions and Reactive Systems, Minsk, Belarus, July 27 – July 31, 2009; Detonations: Scramjet, 33rd International Symposium on Combustion, Beijing, China, August, 2010.

Reviewer for following journals: *Journal of Fluid Mechanics*, *Physics of Fluids*, *ALAA Journal*, *Combustion and Flame*, *Combustion Theory and Modelling*, *Journal of Propulsion and Power*, *European Physical Journal: Applied Physics*, *Shock Waves*, *Journal of Physical Chemistry*, *Journal of Energetic Materials*

Memberships

American Institute of Aeronautics and Astronautics, senior member

American Physical Society, member

Space Studies Institute, senior associate

The Combustion Institute, member

Mars Society, founding member

Publications and Papers

Book Chapters

1. Higgins, A.J., “Steady One-Dimensional Detonations,” *Detonation Dynamics*, Springer, 2012.
2. Higgins, A.J., Pinard, P.*, Yoshinaka, A.*, and Lee, J.H.S., “Sensitization of Fuel-Air Mixtures for Deflagration to Detonation Transition,” *High-Speed Deflagration and Detonation: Fundamentals and Control*, Elex-KM Publishers, Moscow, Russia, 2001, pp. 45-62.

Refereed Journal Articles

Published

1. Goroshin, S., Tang, F.D.*, Higgins, A.J., “Reaction-diffusion fronts in media with spatially discrete sources,” *Physical Review E*, Vol. 84, Issue 2, 2011, 027301.
2. Szirti, D.*, Loiseau, J.*, Higgins, A.J., and Tanguay, V., “Dynamics of explosively imploded pressurized tubes,” *Journal of Applied Physics*, 109, 2011, 084526.
3. Jette, F.X.*, Higgins, A.J., Goroshin, S., Frost, D.L., Charron-Tousignant, Y., Radulescu, M.I., and Lee, J.J., “In-situ measurements of the onset of bulk exothermicity in shock initiation of reactive powder mixtures,” *Journal of Applied Physics*, 109, 2011, 084905.
4. Goroshin, S., Tang, F.D.*, Higgins, A.J., and Lee, J.H.S., “Laminar dust flames in a reduced-gravity environment,” *Acta Astronautica*, Vol. 68, Issues 7-8, 2011, pp. 656-666.
5. Verreault, J.*, and Higgins, A.J., “Initiation of Detonation by Conical Projectiles,” *Proceedings of the Combustion Institute*, Vol. 33, Issue 2, 2011, pp. 2311-2318.
6. Tang, F.D.*, Goroshin, S., and Higgins, A.J., “Modes of Particle Combustion in Iron Dust Flames,” *Proceedings of the Combustion Institute*, Vol. 33, Issue 2, 2011, pp. 1975-1982.
7. Petel, O.*, and Higgins, A.J., “Shock Wave Propagation in Dense Particle Suspensions,” *Journal of Applied Physics*, Vol. 108(11), 2010, pp. 4918-4931.
8. Tanguay, V.*, Goroshin, S., Higgins, A.J., and Zhang, F., “Aluminum particle combustion in high-speed detonation products,” *Combustion Science and Technology*, Vol. 181, Issue 4, April 2009, pp. 670-693.
9. Jetté, F.X.*, Goroshin, S., Higgins, A.J., and Lee, J.J., “Experimental Investigation of Gasless Detonation in Metal-Sulfur Compositions,” *Combustion, Explosion, and Shock Waves*, Vol. 45, Number 2, March 2009, pp. 211-217.
10. Tang, F.D.*, Higgins, A.J., and Goroshin, S., “The effect of discreteness on heterogeneous flames: propagation limits in regular and random particle arrays,” *Combustion Theory and Modelling*, Vol. 13, Issue 2, 2009, pp. 319-341.

* Student supervised by A.J. Higgins.

11. Tang, F.D.* , Goroshin, S., Higgins, A.J., and Lee, J.H.S., “Flame propagation and quenching in iron dust clouds,” *Proceedings of the Combustion Institute*, Vol. 32, Issue 2, 2009, pp. 1905-1912.
12. Tanguay, V. * , Higgins, A.J., and Zhang, F., “A Simple Analytic Model for Reactive Particle Ignition in Explosives,” *Propellants, Explosives, and Pyrotechnics*, Vol. 32, Issue 5, October, 2007, pp. 371-384.
13. Petel, O.E.* , Mack, D.* , Higgins, A.J., Turcotte R., and Chan, S.K., “Minimum Propagation Diameter and Thickness of High Explosives,” *Journal of Loss Prevention in the Process Industries*, Vol. 20, No. 4, July, 2007, pp. 578-583.
14. Goroshin, S., Mamen, J.* , Higgins, A., Bazyn, T., Glumac, N., and Krier, H., “Emission Spectroscopy of Flame Fronts in Aluminum Suspensions,” *Proceedings of the Combustion Institute*, Vol. 31, Issue 2, January 2007, pp. 2011-2019.
15. Higgins, A.J., “Ram Accelerators: Outstanding Issues and New Directions,” *Journal of Propulsion and Power*, Vol. 22, No. 6, November-December, 2006, pp. 1170-1187.
16. Ng, H.D., Radulescu, M.I., Higgins, A.J., Nikiforakis, N., and Lee, J.H.S., “Numerical Investigation of the Instability for One-Dimensional Chapman-Jouguet Detonations with Chain-Branching Kinetics,” *Combustion Theory and Modelling*, Vol. 9, No. 3, August 2005, pp. 385-401.
17. Ng, H.D., Higgins, A.J., Kiyanda, C.B.* , Radulescu, M.I., Lee, J.H.S., Bates, K.R., Nikiforakis, N., “Nonlinear Dynamics and Chaos Analysis of One-Dimensional Pulsating Detonations,” *Combustion Theory and Modelling*, Vol. 9, No. 1, February 2005, pp. 159-170.
18. Radulescu, M.I., Sharpe, G.J., Lee, J.H.S., Kiyanda, C.* , Higgins, A.J., Hanson, R.K., “The Ignition Mechanism in Irregular Structure Gaseous Detonations,” *Proceedings of the Combustion Institute*, Vol. 30, Issue 2, January 2005, pp. 1859-1867.
19. Goroshin, S., Higgins, A.J., Jiang, L., MacKay, K., Ashrit, P.V., “Gasless Combustion-Driven Heating Elements for Materials Experiments in Space,” *Microgravity Science and Technology*, Vol. 16, No. 1, 2005, pp. 322-327.
20. Tanguay, V.* , and Higgins, A.J., “The Channel Effect: Coupling of the Detonation and the Precursor Shock by Precompression of the Explosive,” *Journal of Applied Physics*, 96(9), 2004, pp. 4894-4902.
21. Tanguay, V.* , and Higgins, A.J., “The Channel Effect: Influence of Boundary Layers on the Precursor Shock Wave,” *Journal of Applied Physics*, 95(11), 2004, pp. 6159-6166.
22. Pinard, P.F.* , Higgins, A.J., and Lee, J.H.S., “The Effects of Chemical Sensitization on Deflagration to Detonation Transition,” *Combustion and Flame*, 136, 2004, pp. 146–154.
23. Jetté, F.X.* , Yoshinaka, A.C.* , Higgins, A.J., and Zhang, F., “Effect of Scale and Confinement on Gap Tests for Liquid Explosives,” *Propellants, Explosives, and Pyrotechnics*, Vol. 28, Issue 5, 2003, pp. 240-248.
24. Radulescu, M.I., Higgins, A.J., Lee, J.H.S., and Murray, S.B., “An Experimental Investigation of the Direct Initiation of Cylindrical Detonations,” *Journal of Fluid Mechanics*, Vol. 480, 2003, pp. 1-24.

25. Romano, M.P., Radulescu, M.I., Higgins, A.J., and Lee, J.H.S., "Sensitization of Pentane-Oxygen Mixtures to DDT via Cool Flame Oxidation," *Combustion and Flame*, Vol. 132, 2003, pp. 387-394.
26. Kiyanda, C.B.* , Tanguay, V.* , Higgins, A.J., and Lee, J.H.S., "Effect of Transient Gas Dynamic Processes on the Impulse of Pulse Detonation Engines," *Journal of Propulsion and Power*, Vol. 18, No. 5, September 2002, 1124-1126.
27. Romano, M.P., Radulescu, M.I., Higgins, A.J., Lee, J.H.S., Pitz, W.J., and Westbrook. C.K., "Sensitization of Hydrocarbon-Oxygen Mixtures to Detonation via Cool Flame Oxidation," *Proceedings of the Combustion Institute*, Vol. 29, No. 2, 2002, pp. 2833-2838.
28. Radulescu, M.I., Higgins, A.J., Lee, J.H.S., and Murray, S.B., "On the Explosion Length Invariance in Direct Initiation of Detonation," *Proceedings of the Combustion Institute*, Vol. 28, 2000, pp. 637-644.
29. Lee, J.H.S. and Higgins, A.J., "Comments on Criteria for Direct Initiation of Detonation," *Philosophical Transactions of the Royal Society of London A*, Vol. 357, No. 1764, 1999, pp. 3503-3521.
30. Higgins, A.J., Radulescu, M.I., and Lee, J.H.S., "Initiation of Cylindrical Detonation by Rapid Energy Deposition along a Line," *Proceedings of the Combustion Institute*, Vol. 27, 1999, pp. 2215-2223.
31. Higgins, A.J., "Comment on 'Performance Limits for Projectile Flight in the Ram and External Propulsion Accelerators'," (Technical Comment), *Journal of Propulsion and Power*, Vol. 15, No. 1, 1999, pp. 159-160.
32. Bauer, P., Legendre, J.F., Knowlen, C., and Higgins, A.J., "A Review of Detonation Initiation Techniques for Insensitive Dense Methane-Oxygen-Nitrogen Mixtures," *European Physical Journal, Applied Physics*, Vol. 2, 1998, pp. 183-188.
33. Higgins, A.J., Knowlen, C., and Bruckner, A.P., "Ram Accelerator Operating Limits Part 1: Identification of Limits," *Journal of Propulsion and Power*, Vol. 14, 1998, pp. 951-958.
34. Higgins, A.J., Knowlen, C., and Bruckner, A.P., "Ram Accelerator Operating Limits Part 2: Nature of Observed Limits," *Journal of Propulsion and Power*, Vol. 14, 1998, pp. 959-966.
35. Chang, X., Higgins, A.J., Schultz, E., and Bruckner, A.P., "Operation of Quasi-Two-Dimensional Projectiles in a Ram Accelerator," *Journal of Propulsion and Power*, Vol. 13, No. 6, 1997, pp. 802-804.
36. Sasoh, A., Knowlen, C., Higgins, A.J., and Bruckner, A.P., "Hollow Projectile Operation in Ram Accelerator," *Journal of Propulsion and Power*, Vol. 12, No. 6, 1996, pp. 1183-1186.

Accepted, In Press

37. Loiseau, J., Szirti, D., Higgins, A.J., and Tanguay, V., "Experimental technique for generating fast high-density shock waves with phased linear explosive shock tubes," *Shock Waves*, in press.

Refereed Conference Proceedings

1. Higgins, A., “Shock-like and Detonation-like Waves in One-dimensional Lattice Chains,” *23rd International Colloquium on the Dynamics of Explosions and Reactive Systems*, Irvine, CA, July 24 –29, 2011.
2. Goroshin, S., Tang, F.D., and Higgins, A.J., “Flame Fronts in Iron Suspensions Dominated by the Effect of Discreteness,” *23rd International Colloquium on the Dynamics of Explosions and Reactive Systems*, Irvine, CA, July 24 –29, 2011.
3. Verreault, J., Radulescu, M.I., and Higgins, A.J., “Cellular Structure in an Oblique Detonation Wave,” *23rd International Colloquium on the Dynamics of Explosions and Reactive Systems*, Irvine, CA, July 24 –29, 2011.
4. Verreault, J., and Higgins A.J., “Oscillations in Shock-Induced Combustion near Conical Projectiles,” *23rd International Colloquium on the Dynamics of Explosions and Reactive Systems*, Irvine, CA, July 24 –29, 2011.
5. Choi, J.L., Verreault, J., and Higgins, A.J., “Numerical Simulation of the Oblique Detonation Waves in Different Regimes Initiated by Conical Projectile,” *23rd International Colloquium on the Dynamics of Explosions and Reactive Systems*, Irvine, CA, July 24 –29, 2011.
6. Jette, F.X.** , Goroshin, S., Higgins, A., Frost, D., and Lee, J., “Experimental Technique for Direct Observation of Onset of Reaction in Shocked Powder Mixtures,” *Shock Compression of Condensed Matter–2011*, Chicago, Illinois, June 26–July 1, 2011.
7. Serge, M.** , Szirti, D.* , Loiseau, J.* , Higgins A., and Tanguay, V., “Implosion-driven technique to create fast shock waves in high-density gas,” *Shock Compression of Condensed Matter–2011*, Chicago, Illinois, June 26–July 1, 2011.
8. Loiseau, J.** , Serge, M.* , Szirti, D.* , Higgins, A., and Tanguay, V., “Phase velocity enhancement of linear explosive shock tubes,” *Shock Compression of Condensed Matter–2011*, Chicago, Illinois, June 26–July 1, 2011.
9. Petel, O.* , Frost, D., Higgins, A., and Ouellet, S., “Lateral stress measurements in dense suspensions,” *Shock Compression of Condensed Matter–2011*, Chicago, Illinois, June 26–July 1, 2011.
10. Petel, O.** , Higgins, A., Frost, D., and Ouellet, S., “Shock-induced formation of a disordered solid from a dense particle suspension,” *Shock Compression of Condensed Matter–2011*, Chicago, Illinois, June 26–July 1, 2011.
11. Tanguay, V., and Higgins, A.J., “Development of Hypervelocity Launcher Driven by Implosion,” *11th Hypervelocity Impact Symposium*, Freiburg, Germany, April 11-15, 2010.
12. Verreault, J** , Batchelor, P.* , and Higgins, A.J., “Initiation of Detonation by Conical Projectiles,” *22nd International Colloquium on the Dynamics of Explosions and Reactive Systems*, Minsk, Belarus, July 27 – July 31, 2009.

** Presentation made by student supervised by A.J. Higgins

13. Mack, D. *, and Higgins, A.J., “The Dynamics of ‘Dark Waves’ in Homogeneous Liquid Nitromethane,” *22nd International Colloquium on the Dynamics of Explosions and Reactive Systems*, Minsk, Belarus, July 27 – July 31, 2009.
14. Higgins, A.J., “Detonation Propagation as a System of Randomized Discrete Energy Sources,” *22nd International Colloquium on the Dynamics of Explosions and Reactive Systems*, Minsk, Belarus, July 27 – 31, 2009.
15. Loiseau, J.** , Szirti, D.* , Higgins, A.J., Tanguay, V., and Zhang F., “Phase-Velocity Explosively Imploded Tubes as a Means to Generate Extremely Strong Shock Waves,” *27th International Symposium on Shock Waves*, St. Petersburg, Russia, July 19 – 24, 2009.
16. Petel, O.** , and Higgins, A.J., “Shock Hugoniot Measurements in Two-Phase (Solid-Liquid) Suspensions,” *27th International Symposium on Shock Waves*, St. Petersburg, Russia, July 19 – 24, 2009.
17. Verreault, J.** , Batchelor, P.* , and Higgins A.J., “Development of a Detonation-Driven Gas Gun Capable of 3 km/s Projectile Velocity,” *27th International Symposium on Shock Waves*, St. Petersburg, Russia, July 19 – 24, 2009.
18. Jetté, F.X.** , Goroshin, S., Higgins, A.J., Frost D., and Lee, J., “Time-Resolved Temperature Measurements of Shock Initiation in Heterogeneous Exothermic Mixtures,” *Shock Compression of Condensed Matter–2009*, Nashville, Tennessee, June 28 – July 3, 2009.
19. Higgins, A.J., “Measurement of Detonation Velocity for a Nonideal Heterogeneous Explosive in Axisymmetric and Two-Dimensional Geometries,” *Shock Compression of Condensed Matter–2009*, Nashville, Tennessee, June 28 – July 3, 2009.
20. Frost D., Jetté, F.X.* , Goroshin, S., Higgins, A.J., and Lee, J., “Effect of Particle Morphology on Critical Conditions for Shock-Initiated Reactions in Titanium-Silicon Powder Mixtures,” *Shock Compression of Condensed Matter–2009*, Nashville, Tennessee, June 28 – July 3, 2009.
21. Petel, O.** , and Higgins, A.J., “Planar Impact Study of a Shear Thickening Fluid,” *Shock Compression of Condensed Matter–2009*, Nashville, Tennessee, June 28 – July 3, 2009.
22. Jetté, F.X.** , Goroshin, S., and Higgins, A.J., “Experimental Investigation of Shock Initiation in Mixtures of Manganese and Sulfur,” *Shock Compression of Condensed Matter–2007*, Nashville, Tennessee, June 28 – July 3, 2009.
23. Knowlen, C., Higgins, A.J., and Harris, P., “Experimental Investigation of Shock-Induced Combustion Propulsion,” *21st International Colloquium on the Dynamics of Explosions and Reactive Systems*, Poitiers, France, July 23 – July 27, 2007.
24. Depraz, S., Knowlen, C., Bauer, P., Higgins, A.J., “New Tools for Ram Accelerator Performance Modeling,” *21st International Colloquium on the Dynamics of Explosions and Reactive Systems*, Poitiers, France, July 23 – July 27, 2007.
25. Tang, F.D.** , Higgins, A.J., and Goroshin, S., “Flame Propagation Limit in Solid Fuel Suspension without Heat Loss,” *21st International Colloquium on the Dynamics of Explosions and Reactive Systems*, Poitiers, France, July 23 – July 27, 2007.

26. Loiseau, J.* , and Higgins, A.J., “Statistical Measurement of Critical Tube Diameter,” *21st International Colloquium on the Dynamics of Explosions and Reactive Systems*, Poitiers, France, July 23 – July 27, 2007.
27. Vincent, T.** , Samuel G., Higgins, A.J., and Zhang, F., “Combustion of Metal Particles in Gaseous Detonation Products,” *21st International Colloquium on the Dynamics of Explosions and Reactive Systems*, Poitiers, France, July 23 – July 27, 2007.
28. Vu, P.* , Leung, H.W., Tanguay, V.* , Tahir, R., Higgins, A., and Timofeev, E. “Numerical and theoretical analysis of the precursor shock wave formation at high-explosive channel detonation,” *Proceedings of 26th International Symposium on Shock Waves*, Goettingen, Germany, July 15-20, 2007.
29. Loiseau, J.** , Szirti, D.* , Batchelor, P., Higgins, A., Tanguay, V., Yoshinaka, A., Zhang, Z., “Phase Velocity Generator for a Two-Stage Implosion Driven Hypervelocity Launcher,” *Shock Compression of Condensed Matter–2007*, American Institute of Physics, Kohala Coast, Hawaii, 2007, June 24–29.
30. Szirti, D.** , Loiseau, J.* , Batchelor, P.* , Higgins, A.J., Tanguay, V., and Zhang, F., “Development of a Single-Stage Implosion-Driven Hypervelocity Launcher,” *Shock Compression of Condensed Matter–2007*, Kohala Coast, Hawaii, June 24–29, AIP Conf. Proc. 955, 2007, pp. 1147-1150.
31. Jetté, F.X.** , and Higgins, A.J., “Critical Diameter Prediction for Steady Detonation in Gaseous Metal-Sulfur Compositions,” *Shock Compression of Condensed Matter–2007*, Kohala Coast, Hawaii, June 24–29, AIP Conf. Proc. 955, 2007, pp. 385-388.
32. Jetté, F.X.** , Goroshin, S., and Higgins, A.J., “Shock Reactivity of Non-Porous Mixtures of Manganese and Sulfur,” *Shock Compression of Condensed Matter–2007*, Kohala Coast, Hawaii, June 24–29, AIP Conf. Proc. 955, 2007, pp. 1033-1036.
33. Jetté, F.X.** , Goroshin, S., and Higgins, A.J., “Time-Resolved Temperature Measurements of Shock Initiation in a Manganese-Sulfur,” *Shock Compression of Condensed Matter–2007*, Kohala Coast, Hawaii, June 24–29, AIP Conf. Proc. 955, 2007, pp. 1037-1040.
34. Mack, D.** , Petel, O.* , and Higgins, A.J., “Detonation Failure Thickness Measurement in an Annular Geometry,” *Shock Compression of Condensed Matter–2007*, Kohala Coast, Hawaii, June 24–29, AIP Conf. Proc. 955, 2007, pp. 833-836.
35. Petel, O.E.** , Higgins, A.J., Yoshinaka A.C., and Zhang, F., “High-Speed Photography of Detonation Propagation in Dynamically Precompressed Liquid Explosives,” *Shock Compression of Condensed Matter–2007*, Kohala Coast, Hawaii, June 24–29, AIP Conf. Proc. 955, 2007, pp. 857-860.
36. Petel, O.E.* , Mack, D.* , Higgins, A.J., Turcotte, R., and Chan, S.K., “Comparison of the Detonation Failure Mechanism in Homogeneous and Heterogeneous Explosives,” *13th International Detonation Symposium*, Norfolk, Virginia, July, 2006.
37. Petel, O.E.** , Higgins, A.J., Yoshinaka, A.C., and Zhang, F., “Effect of Shock Compression on the Critical Diameter of Liquid Explosives,” *Shock Compression of*

Condensed Matter–2005, American Institute of Physics, Baltimore, Maryland, July 31-August 5, 2005.

38. Petel, O.E.** , and Higgins, A.J., “Comparison of Failure Thickness and Critical Diameter of Nitromethane,” *Shock Compression of Condensed Matter–2005*, American Institute of Physics, Baltimore, Maryland, July 31- August 5, 2005.
39. Higgins, A.J., “The Effect of Discrete Energy Sources on Detonation Propagation,” *20th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Montreal, Quebec, July 31 - August 5, 2005.
40. Kiyanda, C.B.** , and Higgins, A.J., “Photographic Study of the Two-Dimensional Dynamics of Irregular Detonation Waves,” *20th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Montreal, Quebec, July 31 - August 5, 2005.
41. Higgins, A.J., Knowlen, C., and Kiyanda, C.B.* , “Gasdynamic Operation of Baffled Tube Ram Accelerator in Highly Energetic Mixtures,” *20th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Montreal, Quebec, July 31 - August 5, 2005.
42. Tanguay, V. ** , and Higgins, A.J., “On the Inclusion of Frictional Work in Non-Ideal Detonations,” *20th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Montreal, Quebec, July 31 - August 5, 2005.
43. Mamen, J.** , Goroshin, S., and Higgins, A., “Spectral Structure of the Aluminum Dust Flame,” *20th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Montreal, Quebec, July 31 - August 5, 2005.
44. El-Saadi, R., Tanguay, V.* , and Higgins, A.J., “Combustion of Bulk Metals in Supersonic Flow,” *20th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Montreal, Quebec, July 31 - August 5, 2005.
45. Tanguay, V.** , Goroshin, S., Higgins, A., Yoshinaka, A., and Zhang, F., “Reaction of Metal Particles in Gas-Phase Detonation Products,” *20th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Montreal, Quebec, July 31 - August 5, 2005.
46. Tanguay, V.** , Higgins, A.J., “Simple Analytical Model for Metal Particle Ignition in Condensed Explosive,” *20th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Montreal, Quebec, July 31 - August 5, 2005.
47. Kiyanda, C.B.** , Chaput, P.* , Higgins, A.J., and Lee J.H.S., “Investigation of Imploding Shock Waves Using the Hydraulic Analogy,” *Proceedings of the 24th International Symposium on Shock Waves (ISSW)*, Beijing, China, July 11-16, 2004, pp. 571-576.
48. Jiang, L., Goroshin, S., Higgins, A.J., and Ashrit, P., “Gasless Combustion-Driven Heating Elements for Materials Experiments in Space,” *2nd International Symposium on Physical Sciences in Space/Spacebound 2004*, Toronto, May 23-27, 2004.
49. Landry, D.* , McIntosh, S.* , Grand, C., and Higgins, A.J., “Detonation Sensitization of Hydrocarbon Fuels via Peroxide Addition,” *19th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Hakone, Kanagawa, Japan, July 27 - August 1, 2003.

50. Tanguay, V.** , Mamen, J.* , and Higgins, A.J., “Propagation of Detonation Initiated by Precursor Shock Wave in Explosive Lined Channels,” *19th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Hakone, Kanagawa, Japan, July 27 - August 1, 2003.
51. Laviolette, J-P** , Higgins, A.J., Lee, J.H.S., “Interaction Between a Flame and a Rarefaction Wave,” *19th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Hakone, Kanagawa, Japan, July 27 - August 1, 2003.
52. Ng, H.D., Higgins, A.J., Kiyanda, C.B.* , Radulescu, M.I., Lee, J.H.S., Bates, K.R., Nikiforakis, N., “Nonlinear Dynamics and Chaos Analysis of One-Dimensional Pulsating Detonations,” *19th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Hakone, Kanagawa, Japan, July 27 - August 1, 2003.
53. Radulescu, M.I., Ng, H.D., Higgins, A.J., and Lee, J.H.S., “Influence of Channel Aspect Ratio on the Failure of Detonation in a Two-Dimensional Porous-Walled Channel,” *19th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Hakone, Kanagawa, Japan, July 27 - August 1, 2003.
54. Petel, O.E.** , Tanguay, V.* , Higgins, A.J., Yoshinaka, A.C., and Zhang, F., “Detonation Propagation in Shock-Compressed Liquid Explosives,” *Shock Compression of Condensed Matter–2003*, edited by M.D. Furnish, Y.M. Gupta, and J.W. Forbes, American Institute of Physics, Portland, Oregon, July 20-25, 2003, pp. 883-886.
55. Tanguay, V.** , and Higgins, A.J., “Comparison of Critical Conditions for Initiation of Porous PETN by Shock Waves Transmitted from Solids and Gases,” *Shock Compression of Condensed Matter–2003*, edited by M.D. Furnish, Y.M. Gupta, and J.W. Forbes, American Institute of Physics, Portland, Oregon, July 20-25, 2003, pp. 1049-1052.
56. Higgins, A.J., Jetté, F.X.* , Yoshinaka, A.* , and Zhang, F., “Initiation of Detonation in Liquid Explosives by Reflected Shock Wave,” *12th International Detonation Symposium*, San Diego, California, August, 2002.
57. Zhang, F., Murray, S.B., Yoshinaka, A., Higgins, A.J., “Shock Initiation and Detonability of Isopropyl Nitrate,” *12th International Detonation Symposium*, San Diego, California, August, 2002.
58. Pinard, P.** , Higgins, A.J., Lee, J.H.S, and Murray, S.B., “The Effect of Nitrates on Deflagration to Detonation Transition,” *18th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Seattle, Washington, July 29 - August 3, 2001.
59. Romano, M.P., Higgins, A.J., Lee, J.H.S., and Murray, S.B., “Sensitization of Hydrocarbon-Oxygen Mixtures to DDT via Cool Flame Oxidation,” *18th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Seattle, Washington, July 29 - August 3, 2001.
60. Jetté, F.X.** , Yoshinaka, A.C.* , Romano, M., Higgins, A.J., Lee, J.H.S., and Zhang, F., “Investigation of Lateral Effects on Shock Initiation of a Cylindrical Charge of Homogeneous Nitromethane,” *18th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Seattle, Washington, July 29 - August 3, 2001.

61. Tanguay, V.** , Kiyanda, C.B.* , Higgins, A.J., and Lee, J.H.S., “Effect of Transient Gas Dynamic Processes on Impulse of Pulse Detonation Engines,” *18th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Seattle, Washington, July 29 - August 3, 2001.
62. Higgins, A.J., Frost, D.L., Knowlen, C., Zhang, F., and Murray, S.B., “Combustion of Supersonic Metallic Spheres,” *18th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Seattle, Washington, July 29 - August 3, 2001.
63. Higgins, A.J., Jetté, F.X.* , Yoshinaka, A.C.* , Lee, J.H.S., and Zhang, F., “Detonation Initiation in Preshocked Liquid Explosives,” *Shock Compression of Condensed Matter–2001*, edited by M.D. Furnish, N.N. Thadhani, and Y. Horie, American Institute of Physics, Atlanta, Georgia, June 24 -29, 2001, pp. 1023-1026.
64. Frost, D.L., Zhang, F., McCahan, S., Murray, S.B., Higgins, A.J., Slanik, M., Casas-Cordero, M., and Ornthanalai, C., “Near-Field Impulse Effects from Detonation of Heterogeneous Explosives,” *12th Biennial International Conference of the APS Topical Group on Shock Compression of Condensed Matter*, Atlanta, Georgia, June 24-29, 2001.
65. Jetté, F.X.* , Yoshinaka, A.C.* , Higgins, A.J., Lee, J.H.S., and Zhang, F. “Effect of Scale on the Shock Initiation of Liquid Explosives,” *Shock Waves in Condensed Matter*, Saint Petersburg, Russia, October 8-13, 2000.
66. Higgins, A.J., Pinard, P.* , Yoshinaka, A.* , and Lee, J.H.S., “Sensitization of Fuel-Mixtures for Deflagration to Detonation Transition,” *Control of Detonation Processes*, Moscow, Russia, July 4-7, 2000.
67. Radulescu, M.I., Higgins, A.J., Mihalik, T., Lee, J.H.S., and Murray, S.B, “Large Scale Experiments on the Direct Initiation of Cylindrical Detonation,” *Proceedings of the 17th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Heidelberg, Germany, July 25- 30, 1999.
68. Frost, D., Kleine, H., Slanik, M., McCahan, S., Higgins, A.J., Zhang, F., and Murray, S.B., “Blast Waves from Heterogeneous Explosives,” *22nd International Symposium on Shock Waves*, London, United Kingdom, July 18-23, 1999.
69. Higgins, A.J., Knystautas, R., Lee, J.H.S., and Yoshinaka, A., “Re-Initiation of a Detonation Wave Downstream of a Packed Bed,” *16th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Cracow, Poland, August 3-8, 1997.
70. Bauer, P., Knowlen, C., Higgins, A.J., and Legendre, J.F., “Detonation Initiation of Insensitive Dense Gaseous Mixtures by Piston Impact,” *Proceedings of the 21st International Symposium on Shock Waves*, Great Keppel Island, Australia, July 20-25, 1997.
71. Higgins, A.J., and Bruckner, A.P., “Detonation Initiation by Supersonic Blunt Bodies,” *15th International Colloquium on the Dynamics of Explosions and Reactive Systems*, Boulder, CO, July 30-August 4, 1995.
72. Sasoh, A., Higgins, A.J., Knowlen, C., and Bruckner, A.P., “Ram-Accelerator Operation with Simplified Geometries,” *Proceedings of the 20th International Symposium on Shock Waves*, Pasadena, California, July 1995.

73. Knowlen, C., Higgins, A.J., Bruckner, A.P., and Hertzberg, A., "In-Tube Photography of Ram Accelerator Projectiles," *Proceedings of the 19th International Symposium on Shock Waves*, Marseille, France, July 26-30, 1993, Springer-Verlag, pp. 189-194.

Conference Papers

1. Goroshin, S., Higgins A., and Lee, J., "Laminar Dust Flames in Nonvolatile Suspensions: Fifteen Years of Experimental and Theoretical Studies at McGill – Parts I & II," Sixth International Symposium on Hazards, Prevention, and Mitigation of Industrial Explosions, Halifax, Nova Scotia, Canada, August 27 - September 1, 2006.
2. Tang, F.D.** , Higgins, A.J., and Goroshin, S., "Flame Propagation in Discrete Random Media," Combustion Institute/Canadian Section Spring Technical Meeting, Waterloo, Ontario, Canada, May 14-17, 2006.
3. Tanguay, V.** , Batchelor, P.* , El-Saadi, R.* , and Higgins, A.J., "Metal Combustion in High-Speed Flow," AIAA Paper 2005-0361, 43rd AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, 10-13 January 2005.
4. Tanguay, V.** , Vu, P.* , Oliver, P.J., Timofeev, E. and Higgins, A.J., "Effect of Fill Pressure on the Precursor Shock in the Channel Effect," AIAA Paper 2005-0278, 43rd AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, 10-13 January 2005.
5. Jiang, L., Goroshin, S., Higgins, A.J., and Ashrit, P., "Gasless Combustion-Driven Heating Elements for Materials Experiments in Space," 2nd International Symposium on Physical Sciences in Space/Spacebound 2004, Toronto, May 23 - 27, 2004.
6. Vu, P.** , Tanguay, V.* and Higgins, A.J., "Effect of Fill Pressure on the Existence of a Precursor Shock Wave in the Channel Effect," Combustion Institute / Canadian Section Spring Technical Meeting, Kingston, Ontario, May 9-12, 2004.
7. Batchelor, P.** and Higgins, A.J., "Ignition of Reactive Metal Particles in Supersonic Flow," Combustion Institute / Canadian Section Spring Technical Meeting, Kingston, Ontario, May 9-12, 2004.
8. Landry D.** , McIntosh S.* and Higgins, A.J., "Effect of Peroxide Additives on the Detonation Sensitivity of Hydrocarbon Fuels," AIAA-2003-5203, 39th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Huntsville, Alabama, July 2003.
9. Tanguay, V.** , and Higgins, A.J., "Coupling of the Precursor Shock Wave and the Detonation in Channels Lined with PETN," AIAA-2003-0246, 41st AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January, 2003.
10. Tanguay, V.** , Vu, P.* , Mamen, J.* , and Higgins, A.J., "Detonation Propagation in Channels Lined with Explosives," AIAA-2002-3554, 38th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Indianapolis, Indiana, July 2002.
11. Harris, P.G., Guzik, S., Farinaccio, R., Stowe R.A., Whitehouse, D., Josey T., Hawkin, D., Ripley, R., Link, R., Higgins, A.J., and Thibault, P.A., "Comparative Evaluation of Performance Models of Pulse Detonation Engines," AIAA 2002-3912, 38th

AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Indianapolis, Indiana, July 2002.

12. Laviolette, J.P. **, Kiyanda, C.B. *, A.J. Higgins, "The Effect of Friction and Heat Transfer on Impulse in a Detonation Tube," Canadian Section of the Combustion Institute Spring Technical Meeting, Windsor, Ontario, May, 2002.
13. Harris, P.G., Farinaccio, R., Stowe, R.A., Higgins, A.J., Thibault, and P.A., Laviolette, J.P. *, "The Effect of DDT Distance on Impulse in a Detonation Tube," AIAA Paper 2001-3467, 37th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Salt Lake City, Utah, 2001.
14. Goroshin S., Higgins, A.J., and Kamel, M., "Powdered Metals as Fuel for Hypersonic Ramjets," AIAA Paper 2001-3919, 37th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Salt Lake City, Utah, 2001.
15. Romano, M., Radulescu, M., Lee, J.H.S., and Higgins, A.J., "Sensitization of Pentane-Oxygen Mixtures to DDT Via Cool Flame Oxidation," Canadian Section of the Combustion Institute Spring Technical Meeting, Montreal, May, 2001.
16. Tanguay, V. **, Kiyanda, C.B. *, Lee, J.H.S., and Higgins, A.J., "Effect of Transient Gas Dynamic Processes on Impulse of Pulse Detonation Engines," Canadian Section of the Combustion Institute Spring Technical Meeting, Montreal, May, 2001.
17. Jetté, F.X. **, Romano, M., Yoshinaka, A. *, Higgins, A.J., and Lee, J.H.S., "Effect of Scale on Shock Initiation in Homogeneous Liquid Nitromethane," Canadian Section of the Combustion Institute Spring Technical Meeting, Ottawa, May, 2000.
18. Pinard, P. **, Higgins, A.J., and Lee, J.H.S., "Sensitization of Fuel-Air Mixtures for Deflagration to Detonation Transition," Canadian Section of the Combustion Institute Spring Technical Meeting, Ottawa, May, 2000.
19. Goroshin, S., Higgins, A.J., and Lee, J.H.S., "Powdered Magnesium-Carbon Dioxide Propulsion Concepts for Mars Missions," AIAA Paper 99-2408, 35th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Los Angeles, CA, 1999.
20. Higgins, A.J., and Lee, J.H.S., "A Quantitative Measurement of Detonation Wave Irregularity," Canadian Section of the Combustion Institute Spring Technical Meeting, Toronto, May, 1998.
21. Radulescu, M.I., Higgins, A.J., and Lee, J.H.S., "Quasi-Cylindrical Initiation of Detonation By Rapid Line Energy Deposition," Canadian Section of the Combustion Institute Spring Technical Meeting, Toronto, May, 1998.
22. Higgins, A.J., "The Effect of Confinement on Detonation Initiation by Blunt Projectiles," AIAA Paper 97-3179, 33rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Seattle, WA, 1997.
23. Higgins, A.J., "A Comparison of Distributed Injection Hypervelocity Accelerators," AIAA Paper 97- 2897, 33rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Seattle, WA, 1997.

24. Higgins, A.J. and Bruckner, A.P., "Experimental Investigation of Detonation Initiation by Hypervelocity Blunt Projectiles," AIAA Paper 96-0342, 34th AIAA Aerospace Sciences Meeting, Reno, NV, 1996.
25. Knowlen, C., Higgins, A.J., Bruckner, A.P., and Bauer, P., "Ram Accelerator Operation in the Superdetonative Velocity Regime," AIAA Paper 96-0098, 34th AIAA Aerospace Sciences Meeting, Reno, NV, 1996.
26. Bogdanoff, D. and Higgins, A.J., "Hydrogen Core Techniques for the Ram Accelerator," AIAA Paper 96-0668, 34th AIAA Aerospace Sciences Meeting, Reno, NV, 1996.
27. Bauer, P., Legendre, J.F., and Knowlen, C., Higgins, A.J., "Detonation of Insensitive Dense Gaseous Mixtures in Tubes," AIAA Paper 96-2682, 32nd AIAA/ASME/SAE/ASEE Joint Propulsion Conference, 1996.
28. Knowlen, C., Higgins, A.J., and Bruckner, A.P., "Aerothermodynamics of the Ram Accelerator," AIAA Paper 95-0289, 33rd AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 9-12, 1995
29. Higgins, A.J., Knowlen, C., and Bruckner, A.P. "Investigation of Ram Accelerator Performance Capabilities," 31st JANNAF Combustion Subcommittee Meeting, Sunnyvale, CA, October 17-21, 1994.
30. Knowlen, C., Higgins, A.J., and A.P. Bruckner, "Investigation of Operational Limits to the Ram Accelerator," AIAA Paper 94-2967, 30th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Indianapolis, IN, June 27-29, 1994.
31. Higgins, A.J., Knowlen, C., and Bruckner, A.P., "An Investigation of Ram Accelerator Gas Dynamic Limits," AIAA Paper 93-2181, 29th AIAA/SAE/ASME/ASEE Joint Propulsion Conference, Monterey, CA, June 28-July 1, 1993.
32. Knowlen, C., Higgins, A.J., Hinkey, J.B., Burnham, E.A., and Mattick, A.T., "Diagnostics Techniques for Ram Accelerator Phenomena," 43rd Meeting of the Aeroballistic Range Association, Columbus, OH, Sept. 28-Oct. 2, 1992.

Invited Presentations

1. Higgins, A.J. "Detonation as an Ensemble of Interacting Waves: An Approach to Modeling Heterogeneous Explosives," Seminars in Mechanics and Materials Engineering, University of California, San Diego, May 24, 2010.
2. Higgins, A.J., "Overview of Physical Sciences on Parabolic Flight Aircraft Platforms," plenary lecture, CSA Workshop on Suborbital Platforms and Nanosatellites, April 14–16, 2010, John H. Chapman Space Centre.
3. Higgins, A.J., "The Application of Detonation to Propulsion: From the 'Buzz Bomb' to the Stars," (Plenary Lecture) Combustion Institute – Canadian Section, Spring Technical Meeting, Université de Montréal, Québec, May 11-13, 2009.
4. Higgins, A.J., "Isolating a Global Mechanism for Self-Initiation of Detonation," 14th U.S. National Congress of Theoretical and Applied Mechanics, Blacksburg, Virginia, June, 2002.

Conference Presentations (without paper)

1. Goroshin, S., Higgins, A.J., Ringuette, S., Stowe, R., and Dubois, C., "Ignition of boron particle agglomerates," 32nd International Symposium on Combustion, Montreal, Quebec, Aug. 3-8, 2008.
2. Radulescu, M.I., Lee, J.H.S., Maxwell, B., and Higgins, A.J., "Role of instability in detonation re-initiation following large-scale gas-dynamic perturbations," 32nd International Symposium on Combustion, Montreal, Quebec, Aug. 3-8, 2008.
3. Batchelor, P.*, Verreault, J.*, and Higgins, A.J., "Investigation of oblique shock-induced combustion and detonation," 32nd International Symposium on Combustion, Montreal, Quebec, Aug. 3-8, 2008.
4. Higgins, A.J., "Initiation of Detonation by Supersonic Projectiles in Combustible Gas," Second International Meeting: Properties of Reactive Fluids and their Applications to Propulsion, Futuroscope, France, March 19-22, 1996.
5. Higgins, A.J., "Initiation of Detonation by Hypervelocity Projectiles," 2nd International Workshop on Ram Accelerators, Seattle, WA, July 17-20, 1995.
6. Higgins, A.J., "The Operational Limits of the Ram Accelerator," 1st International Workshop on Ram Accelerators, Saint-Louis, France, Sept. 7-10, 1993.

Theses

1. Higgins, A.J., "Investigation of Detonation Initiation by Supersonic Blunt Bodies," Ph.D. Dissertation, University of Washington, December, 1996.
2. Higgins, A.J., "Gas Dynamic Limits of the Ram Accelerator," Masters of Science Thesis, University of Washington, August, 1993.

Contract Reports

1. Tanguay, V.*, Higgins, A.J., and Goroshin, S., "Scaling of Fast Deflagration Initiation of Metal Particles," Final Report for DND/DRDC Contract W7702-03R973/001/EDM, submitted to the Defence R&D Suffield, Alberta, Canada, September, 2004.
2. Higgins, A.J., and Goroshin, S., "Preliminary Report on Explosion Hazards in Emergency Pack Disposal Procedure," submitted to Avestor, Boucherville, Quebec, April 2004.
3. Higgins, A.J., "Initiation and Sensitization of Detonable Hydrocarbon/Air Mixtures for Pulse Detonation Engines", Final Report for DND/DRDC Contract W7702-0-R803/001/EDM, submitted to the Defence R&D Suffield, Alberta, Canada, February, 2004.
4. Higgins, A.J., and Goroshin, S., "Demisability Study Using Exothermic Devices," submitted to Carleton Technologies Inc., Pressure Technologies Division, Westminster, Maryland, January, 2004.
5. Higgins, A.J., "Compendium of Detonation, Combustion, and Explosion Information," Final Report submitted to Pratt & Whitney Seattle Aerosciences Center, August, 2001.

6. Higgins, A.J., and Lee, J.H.S., "Measurement of the Limit of Shock Precompression and Induction Delay Time of Liquid Explosives," Final Report for DND/DRES Contract W7702-9-R747/001/EDM, submitted to the Defence Research Establishment Suffield, Alberta, Canada, January, 2001.
7. Goroshin, S., and Higgins, A.J., "Gasless Combustion-Driven Furnace for Materials Research in Microgravity," Final Report for NASA SBIR Contract NAS8-98113, submitted to Marshall Space Flight Center, Huntsville, AL, October, 1998.

Patents

1. Zhang, F., Murray, S.B., Higgins A.J., "Super compressed detonation method and device to effect such detonation," United States Patent 7,513,198, issued April 7, 2009.