

Archival Journal Articles

Hassan Aref

1. F. L. Ponta and H. Aref, "Numerical experiments on vortex shedding from an oscillating cylinder." *J. Fluids & Structures* 22, 327-344, 2006.
2. H. Aref, "Vortices and polynomials." *Fluid Dynamics Research* 39, 5-23, 2007. Memorial issue for Professor Isao Imai (invited paper)
3. H. Aref, M. A. Stremler, and F. L. Ponta, "Exotic wakes – point vortex solutions." *J. Fluids & Structures* 22, 929–940, 2006. [Special issue with papers from the Fourth Symposium on Bluff Body Wakes and Vortex Induced Vibrations, Santorini, June 2005.]
4. V. V. Meleshko and H. Aref, "A bibliography of vortex dynamics 1858-1956." *Advances in Applied Mechanics* 41, 197-292, 2007.
5. H. Aref, "Point vortex dynamics – a classical mathematics playground." *J. Math. Phys.* **48**, 065401 (2007) 23 pp.
6. H. Aref, S. Hutzler & D. Weaire, "Toying with Physics", *EuroPhysics News* **38**(3), 23-26 (2007)

Romesh C. Batra

7. R. C. Batra and B. M. Love, "Multiscale Analysis of Adiabatic Shear Bands in Tungsten Heavy Alloy Particulate Composites," *Int. J. Multiscale Computational Engineering*, 4:(1), 95-114, 2006.
8. R. C. Batra and B. M. Love, "Consideration of Microstructural Effects in the Analysis of Adiabatic Shear Bands in a Tungsten Heavy Alloy," *Int. J. Plasticity*, 22, 1858-1878, 2006.
9. R. C. Batra, M. Porfiri and D. Spinello, "Electromechanical Model of Electrically Actuated Narrow Microbeams," *J. MicroElectroMechanical Systems*, 15:5, 175-1189, 2006.
10. R.C. Batra, M. Porfiri and D. Spinello, "Analysis of Electrostatic MEMS using Meshless Local Petrov-Galerkin Method," *Engineering Analysis with Boundary Elements*, 30, 949-962, 2006.
11. R. C. Batra, M. Porfiri and D. Spinello, "Capacitance Estimate for Electrostatically Actuated Narrow Microbeams," *Micro & Nano Letters*, 1:2, 71-73, 2007.
12. R. C. Batra, M. Porfiri and D. Spinello, "Effects of Casimir Force on Pull-in Instability in Micromembranes," *Europhysics Letters*, 77, 20010, 2007.
13. A. Caba, A.L. Loos and R.C. Batra, "Fiber-Fiber Interactions in Carbon Mat Thermoplastics," *Composites A*, 38, 469-483, 2007.
14. R. C. Batra and N. M. Hassan, "Response of fiber reinforced composites to underwater explosive loads," *Composites B*, 38, 448-458, 2007.
15. R. C. Batra, "Torsion of a Functionally Graded Cylinder," *AIAA J.*, 44:6, 1363-1365, 2006.
16. S.R. Li, R.C. Batra and L.-S. Ma, "Vibration of Thermally Post-Buckled Orthotropic Circular Plates," *J. Thermal Stresses*, 30, 43-57, 2007.
17. S.-R. Li and R. C. Batra, "Buckling of Axially Compressed Cylindrical Shells with Functionally Graded Middle Layer," *J. of Thin-Walled Structures*, 44, 1039-1047, 2006.
18. S.-R. Li and R. C. Batra, "Thermal Buckling and Post-Buckling of Euler-Bernoulli Beams Supported on Nonlinear Elastic Foundations," *AIAA J.*, 45:3, 712-720, 2007.
19. R. C. Batra and Z. G. Wei, "Instability Strain and Shear Band Spacing in Simple Tensile/Compressive Deformations of Thermoviscoplastic Materials," *Int. J. Impact Engng*, 34, 448-461, 2007.
20. Z. G. Wei and R. C. Batra, "Dynamic Buckling of the Thermoviscoplastic Cylindrical Shell under Radial Impulsive Loading," *J. of Thin-Walled Structures*, 44, 1109-1117, 2006.
21. A.J.M. Ferreira, R.C. Batra, C.M.C. Roque, L.F. Qian, R.M.N. Jorge, "Natural Frequencies of Functionally Graded Plates by a Meshless Method," *Composite Structures*, 75, 593-600, 2006.
22. Z.H. Jin and R.C. Batra, "Crack Tip Fields in Functionally Graded Materials with Temperature-Dependent Properties," *AIAA J.*, 44:9, 2129-2130, 2006.
23. D.F. Gilhooley, R.C. Batra, J.R. Xiao, M.A. McCarthy, and J.W. Gillespie Jr., "Analysis of Thick Functionally Graded Plates by using Higher-Order Shear and Normal Deformable Plate Theory and MLPG Method with Radial Basis Functions," *Composite Structures*, 80, 538-552, 2007.
24. J. R. Xiao, R. C. Batra, D. F. Gilhooley, J. W. Gillespie Jr. and M. A. McCarthy, "Analysis of Thick Plates by using a Higher-Order Shear and Normal Deformable Plate Theory and MLPG Method with Radial Basis Functions," *Computer Methods in Applied Mechanics and Engineering*, 196, 979-987, 2007.

25. G. M. Zhang and R. C. Batra, "Wave Propagation in Functionally Graded Materials by Modified Smoothed Particle Hydrodynamics (MSPH) Method," *J. Computational Physics*, 222, 374-390, 2007.
26. S. Aimmanee and R. C. Batra, "Analytical Solution for Vibration of an Incompressible Isotropic Linear Elastic Rectangular Plate, and Frequencies Missed in Previous Solutions," *J. Sound and Vibration*, 302, 613-620, 2007.

Scott W. Case

27. Post, J.V. Bausano, S.W. Case and J.J. Lesko, "Modeling the Remaining Strength of Structural Composite Materials Subjected to Fatigue," *International Journal of Fatigue*, Vol. 28, October 2006, pp. 1100-1108.
28. Li, F. Wang, J. Yang, D. Liu, A. Roy, S. Case, J. Lesko, and J. E. McGrath, "Synthesis and characterization of controlled molecular weight disulfonated poly(arylene ether sulfone) copolymers and their applications to proton exchange membranes," *Polymer*, Vol. 47(11), May 2006, pp. 4210-4217.
29. Liu, and S. Case, "Durability study of proton exchange membrane fuel cells under dynamic testing conditions with cyclic current profile," *Journal of Power Sources*, Vol. 162, pp. 521-531.
30. Liu, M.A. Hickner, S.W. Case, and J.J. Lesko, "Relaxation of Proton Conductivity and Stress in Proton Exchange Membranes Under Strain," *Journal of Engineering Materials and Technology*, Vol. 128, October, 2006, pp. 503-508.
31. S.E. Boyd, J.J. Lesko, and S.W. Case, "The Thermo-Viscoelastic, Viscoplastic Characterization of Vetrotex 324/Derakane 510A-40 Through T_g," *Journal of Engineering Materials and Technology*, Vol. 128, October, 2006, pp. 586-594.

Mark S. Cramer

32. Cramer, M.S. and C. Webb, "A modified Zabolotskaya-Khokhlov equation for systems having small quadratic nonlinearity," *Journal of Wave Motion*, Vol. 44, Issue 5, pp.323-339, 2007.

Raffaella DeVita

33. R. De Vita, D.J. Leo, K.D. Woo, and A.C. Nah, "Constitutive Law for Poly (Butylene Terephthalate) Nanofibers Mats," *Journal of Applied Polymer Science*, 102(6): 5280-5283, 2006.
34. R. De Vita, and W.S. Slaughter, "A Constitutive Equation for the Failure Behavior of Medial Collateral Ligaments," *Biomechanics and Modeling in Mechanobiology*, 6(3): 189-197, 2007.

David A. Dillard

35. E. Neyman, D.A. Dillard, and J.G. Dillard, "Plasma and Silane Surface Modification of SiC/Si: Adhesion and Durability for the Epoxy-SiC System," *Journal of Adhesion*, 82, 2006, 331-353.
36. S. Guo, D.A. Dillard, and R. Plaut, "Effect of Boundary Conditions and Spacers on Single-lap Joints Loaded in Tension or Compression," *International Journal of Adhesion and Adhesives*, 26, 2006, 629-638.
37. R.H. Plaut, D.A. Dillard, and L.N. Virgin, "Postbuckling of Columns with Second-Mode Imperfection," *Journal of Engineering Mechanics*, 132 (8), 2006, 898-901.
38. C.L. Randow and D.A. Dillard, "Optimizing the mismatch in curvature between a flexible adherend and a rigid substrate," *J. Adhesion Sci. Technol.*, 20 (14), 2006, 1595-1613.

J. Wally Grant

39. J.H. Nam, J.R. Cotton, J.W. Grant, "A virtual hair cell: I. Addition of gating spring theory into a 3-D bundle mechanical model," *Biophysical J.*, Vol 92, pp. 1918-1928, 2007. (Journal Impact Factor 4.8)
40. J.H. Nam, J.R. Cotton, J.W. Grant, "A virtual hair cell: II. Evaluation of mechanoelectric transduction parameters," *Biophysical J.*, Vol 92, pp. 1929-1937, 2007. (Journal Impact Factor 4.8)
41. J.H. Nam, J.R. Cotton, J.W. Grant, "Mechanical properties and consequences of the stereocilia and the extracellular links in the vestibular hair bundle," *Biophysical J.*, Vol. 90, No. 8, p.p. 2786-2795, 2006. (Journal Impact Factor 4.8)

Muhammad R. Hajj

42. C.C. Chabalko, M.R. Hajj, and W.A. Silva, "Time/Frequency Analysis of the Flutter of the Flexible HSCT Semispan Model," *Journal of Aircraft*, AIAA, Vol. 43, No. 3, 2006, 743 – 74.

43. C.C. Chabalko, Z. Ge, M.R. Hajj and W.A. Silva, "Analysis Tools for the Detection of Intermittent Nonlinear Aeroelastic Phenomena," *Journal of Aircraft*, AIAA, Vol. 43, No. 4, 2006, 1082-1088.
44. H.W. Tieleman, M.A.K. Elsayed, and M.R. Hajj, "Peak Wind Load Comparison: Theoretical Estimates and ASCE 7," *ASCE Journal of Structural Engineering*, Vol. 132, No 7, 2006, 1150-1158.
45. H.W. Tieleman, Z. Ge, and M.R. Hajj, "Theoretically Estimated Peak Wind Loads," *Journal of Wind Engineering and Industrial Applications*, Vol. 95, Issue 2, 2007, 113-132.

John J. Lesko

46. J.J. Cain, N.L. Post, J.J. Lesko, S.W. Case, Y.N. Lin, J.S. Riffle, P.E. Hess, "Post Curing Effects on Marine VARTM FRP Composite Material Properties for Test and Implementation," *ASME J. of Engineering Materials and Technology*, v.128, pp. 34-40, 2006.
47. N.L. Post, J.V. Bausano, S.W. Case, J.J. Lesko, "Modeling the Remaining Strength of Structural Composite Materials Subjected to Fatigue," *International Journal of Fatigue*, pp. 11001108, v.28, 2006.
48. M.D. Hayes, and J.J. Lesko, "Failure analysis of a hybrid composite structural beam," *Composites Part A: Applied Science and Manufacturing*, v 38, n 3, pp. 691-698, March 2007.
49. M. D. Hayes and J. J. Lesko, "Measurement of the Timoshenko Shear Stiffness. I: Effect of Warping," *J. Compos. for Constr.*, Volume 11, Issue 3, pp. 343-349, May/June 2007.
50. M. D. Hayes and J. J. Lesko, "Measurement of the Timoshenko Shear Stiffness. II: Effect of Transverse Compressibility," *J. Compos. for Constr.*, Volume 11, Issue 3, pp. 336-342, May/June 2007.
51. J. V. Bausano, S. E. Boyd, J. J. Lesko, and S. W. Case, "Composite Life Under Sustained Compression and One Sided Simulated Fire Exposure: Characterization and Prediction," *Composites Part A*, Vol. 37, pp. 1092-1100, 2006.
52. D. Liu, S. Kyriakides, S. Case, J. Lesko, Y. Li, and J. McGrath, "Tensile Behavior of Nafion and Sulfonated Poly(arylene ether sulfone) Copolymer Membranes and its Morphological Correlations," *Journal of Polymer Science, Part B: Polymer Physics*, Vol. 44, pp. 1453-1465, 2006.
53. D.C. Haeberle, J.J. Lesko, S.W. Case, J.S. Riffle, and K.N.E. Verghese, "The Use of a Modified Microindentation Technique to Evaluate EnviroMechanical Changes in Composite Interphase Properties," *Journal of Adhesion Science and Technology*, Volume 21, Number 1, pp. 3550, January 2007.
54. S.E. Boyd, S.W. Case and J.J. Lesko, "Compression creep rupture behavior of a glass/vinyl ester composite subject to isothermal and one-sided heat flux conditions," *Composites Part A: Applied Science and Manufacturing*, Volume 38, Issue 6, pp. 1462-1472, June 2007.
55. S.E. Boyd, J.J. Lesko and S.W. Case, "Compression Creep Rupture Behavior of a Glass/Vinyl Ester Composite Laminate Subject to Fire Loading Conditions," *Composites Science and Technology*, In Press, Accepted Manuscript, p. 1472, Available online 21 April 2007.
56. S.E. Boyd, J.J. Lesko, and S.W. Case, "The thermoviscoelastic, viscoplastic characterization of Vetrotex 324/Derakane 510A40 through T_g," *Journal of Engineering Materials and Technology*, Transactions of the ASME, v 128, n 4, pp. 586-594, October 2006.
57. Y. Li, F. Wang, J. Yang, D. Liu, A. Roy, S. Case, J. Lesko and J.E. McGrath, "Synthesis and characterization of controlled molecular weight disulfonated poly(arylene ether sulfone) copolymers and their applications to proton exchange membranes," *Polymer*, Volume 47, Issue 11, pp. 4210-4217, 17 May 2006.
58. D. Liu, M.A. Hickner, S.W. Case, J.J. Lesko, "Relaxation of proton conductivity and stress in proton exchange membranes under strain," *Journal of Engineering Materials and Technology*, Transactions of the ASME, v 128, n 4, pp. 503-508, October 2006.

Michael L. Madigan

59. M.L. Madigan, "Age-related differences in muscle power during single step balance recovery," *Journal of Applied Biomechanics* 22, pp.185-92, 2006.
60. C. Herrmann, M. Madigan, B. Davidson, K. Granata, "Effect of lumbar extensor fatigue on paraspinal reflexes," *Journal of Electromyography and Kinesiology* 16, pp. 637-41, 2006.
61. M.L. Madigan, B.S. Davidson, M.A. Nussbaum, "Postural sway and joint kinematics during quiet standing are affected by lumbar extensor fatigue," *Human Movement Science* 25, pp. 788-799, 2006.

62. Line KP, Madigan ML, Nussbaum MA. Influence of fatigue time and level on increases in postural sway. *Ergonomics* 49(15), 2006. 1639-1648.
63. Bieryla KA, Madigan ML, Nussbaum MA. Practicing recovery from a simulated trip improves recovery kinematics after an actual trip. *Gait & Posture*, Volume 26, Issue 2, July 2007, pages 208-213.

Ali H. Nayfeh

64. A.H. Nayfeh and H.N. Arafat, "Axisymmetric Vibrations of Closed Spherical Shells: Equations of Motion and Bifurcation Analysis," *Structural Control and Health Monitoring*, Vol. 13, No. 1, pp. 388-416, 2006. Thomas K. Caughey Memorial Issue, G. W. Housner, J. K. Knowles, T. Kobori, and S. F. Masri, eds.
65. M. Baccouch, S. Choura, S. El-Borgi, and A.H. Nayfeh, "Selection of Physical and Geometrical Properties for the Confinement of Vibrations in Nonhomogeneous Beams," *Journal of Aerospace Engineering*, Vol. 19, No. 3, pp. 158-168, July 2006.
66. F. Najjar, S. Choura, E. M. Abdel-Rahman, S. El-Borgi, and A. Nayfeh, "Dynamic Analysis of Variable-Geometry Electrostatic Microactuators," *Journal of Micromechanics and Microengineering*, Vol. 16, pp. 2449-2457, 2006.
67. P. Malatkar and A.H. Nayfeh, "Steady-State Dynamics of a Linear Structure Weakly Coupled to an Essentially Nonlinear Oscillator," *Nonlinear Dynamics Special Issue in Honor of the 60th Birthday of Professor G. Rega*, Vol. 47, pp. 167-179, 2007.
68. G.W. Vogl and A.H. Nayfeh, "Primary Resonance Excitation of Electrically Actuated Clamped Circular Plates," *Nonlinear Dynamics*, Vol. 47, pp. 181-192, 2007.
69. H. Nayfeh, M.I. Younis, E.M. Abdel-Rahman, "Dynamic Pull-In Phenomenon in MEMS Resonators," *Nonlinear Dynamics*, Vol. 48, pp. 153-163, 2007.

Ishwar K. Puri

70. S. Murad, and I.K. Puri, "Nanoscale Jet Collision and Mixing Dynamics", *Nano Letters*, 7, pp. 707-712, 2007.
71. S. Banerjee, S. Murad, and I.K. Puri, "Hydrogen Storage in Carbon Nanostructures: Possibilities and Challenges for Fundamental Molecular Simulations," *Proceedings of the IEEE*, 94, pp. 1806-1814, 2006.
72. S. Banerjee, S. Murad, and I.K. Puri, "Preferential Ion and Water Intake Using Charged Carbon Nanotubes," *Chemical Physics Letters*, 434, pp. 292-296, 2007.
73. P. Berta, I.K. Puri, and S.K. Aggarwal, "An Experimental and Numerical Investigation of n-heptane/air Counterflow Partially Premixed Flames and Emission of NO_x and PAH species," *Combustion and Flame*, 145, pp. 740-764, 2006.
74. S. Naha, S. Sen, A.K. De, and I.K. Puri, "A Detailed Model for the Flame Synthesis of Carbon Nanotubes and Nanofibers," *Proceedings of The Combustion Institute*, 31, pp. 1821-1829, 2007.
75. R. Ganguly, and I.K. Puri, "Field-Assisted Self-Assembly of Superparamagnetic Nanoparticles for Biomedical, MEMS and BioMEMS Applications," *Advances in Applied Mechanics*, 41, pp. 293-335, 2007.

Shane D. Ross

76. P.K. Newton and S.D. Ross, "Chaotic advection in the restricted four-vortex problem on a sphere," *Physica D: Nonlinear Phenomena*, 223, pp. 36-53, September 2006.

Mahendra P. Singh

77. M.P. Singh, L.M. Moreschi, L.E. Suárez and E.E. Matheu, "Seismic Design Forces: I - Rigid Nonstructural Components," *Journal of Structural Engineering, ASCE*, Vol. 132, No. 10, pp. 1524-1532, October 2006.
78. M.P. Singh, L.M. Moreschi, L.E. Suárez and E.E. Matheu, "Seismic Design Forces: II - Flexible Nonstructural Components," *Journal of Structural Engineering, ASCE*. Vol. 132, No. 10, pp. 1533-1542 October 2006.

Mark A. Stremler

79. H. Aref, M.A. Stremler and F.L. Ponta, "Exotic vortex wakes – point vortex solutions," *Journal of Fluids and Structures* 22(6-7), pp. 929–940, Aug-Oct 2006.

80. R. Crawford, G.E. Cook, A.M. Strauss, D.A. Hartman and M.A. Stremmer, "Experimental defect analysis and force prediction simulation of high weld pitch friction stir welding," Science and Technology of Welding and Joining 11(6), pp. 657–665, November 2006.

Demetri P. Telionis

81. P.P. Vlachos and D.P. Telionis, "The Effect Of Free Surface On The Vortex Shedding From Inclined Circular Cylinders," Journal of Fluids Engineering.
82. M.R. Brady, D.P. Telionis, P.P. Vlachos and R.-H. Yoon, "Evaluations of Multiphase Flotation Models in Grid Turbulence via Particle Image Velocimetry," International Journal of Mineral Engineering, Volume 80, Issues 2-4 , pp. 133-143, September 2006.

Research Proposals Funded

Hassan Aref

- "150 years of vortex dynamics", IUTAM, \$5,000 from IUTAM, October 12-17, 2008, 100%, local organizing committee to be named; international scientific committee has been named.
- "Niels Bohr Visiting Professor – Fundamental Problems in Fluid Dynamics", Danish National Research Foundation and Danish Technical University, DKK 10,044,056 (≈ USD 1.7 M), 7/1/2006 - 12/31/2010, 100%, Prof. T. Bohr, Department of Physics, Technical University of Denmark, is local PI. (In-kind and graduate fellowship matching by DTU not included.)

Romesh C. Batra

- "Multilayered Technologies for Armored Structures and Composites" (Army Center of Excellence in Polymers) (PI; T. Long), \$800K, 6/06-12/07.
- "DURIP - Acquisition of Counter-Rotating Mandrel Die" (PI: R. C. Moffitt), ARO, \$140K, 4/07-.3/08.

Scott W. Case

- Lesko, S.W. Case, "Next Navy Composites (N2C): Multifunctional Composites for Next Navy Seaframes," ONR, 5/12/06-12/31/07; \$2,125,417. (50%)
- A. Dillard, S. W. Case, J. J. Lesko, and J. Dillard, "Characterizing Durability of Fuel Cells," UTC Fuel Cells, LLC, 1/1/07 – 12/31/08, \$367,999.00, (25%)
- S.W. Case, "Structure-Property Relationships for Charred Insulating Composite Materials," Air Force Flight Test Center, 12/1/06-11/30/07; \$48,000 (100%)

Mark S. Cramer

- "Effect of Large Bulk Viscosity on High-Speed Separation," NSF, \$209,539, 2/15/07-2/14/08, 100%

David A. Dillard

- D.A. Dillard, S.W. Case, and M.W. Ellis, "PEM Characterization: Test Method Development and Implementation," GM, 1 July 2006 – 30 June 2007, \$182,377, (\$61,000).
- M.C. Paretti, L.D. McNair, M.J. Borrego, S. McGinnis, S. Kampe, J.J. Lesko, D.A. Dillard, and R. Grisso, "Building Interdisciplinary Collaboration Skills Through a Green Engineering Capstone Design Experience," NSF, 1 January 2007 – 31 December 2008, \$142,715.
- D.A. Dillard, S.W. Case, J.J. Lesko, and J.G. Dillard, "Characterizing Durability of Fuel Cells", United Technologies Fuel Cell, LLC, 1 January 2007-31 December 2008, \$368,000, (\$123,000).
- D.A. Dillard and J. Heyman, "Developing NDE Technologies for Adhesives and Sealants", The Adhesive and Sealant Council, Inc. 9 May 2007- 8 May 2008, \$200,000.
- D.A. Dillard, "Support of the 30th Adhesion Society Meeting," AFSR, 1 November 2006 – 30 April 2007, \$5,000.
- D.A. Dillard, "Preparing Specimens to Evaluate Effect of Aligned Nanotubes on Fracture Energy of Adhesively Bonded Joints," ORNL CNMS, funded to provide internal funds to ORNL to support fabrication of specimens for our research.

Norman E. Dowling

- N. E. Dowling, "Enhanced Strain-Based Fatigue Methodology for Aircraft Applications," 2nd year renewal, to Integrated Systems Solutions, Inc., California, MD. Research for the U. S. Naval Air

Systems Command (NAVAIR), Patuxent River, MD. April 29, 2007, for \$156,228, for period 8/16/06 to 8/15/09, (100%).

John C. Duke

- J.C. Duke, Jr. "Thermomechanical Sensing of Component Degradation," Siemens Power Embryonic Research, \$50,000 1yr.
- J.C. Duke, Jr. and M.R. Hajj "Highly Integrated DSS," Luna Innovations, NASA STTR, \$180,000 24 months (Responsibility 67%)
- J.C. Duke, Jr. and M.R. Hajj "Survey of Health Prognosis via Induced Nonlinear Vibration Analysis," TTCI/RTL \$25,000 direct money (50%) responsibility

J. Wally Grant

- A five year renewal of an ongoing project titled: "Biomechanics of vestibular hair cells: Experimental and computational analysis." National Institute of Health (NIH). \$2,498,265, Responsibility \$818,924. 9-1-06 to 8-31-11. co-investigators: Ellengene Peterson, Ohio University, Athens OH, Ruth Anne Eatock, Baylor College of Medicine, Houston, TX.

Muhammad R. Hajj

- J.C. Duke and M.R. Hajj, "Survey of Health Prognosis via Induced Nonlinear Vibration Analysis" Railway Technologies Laboratory, 11/01/2006 – 10/30/2007 \$30,000 + student tuition for one year (50%)

Ron D. Kriz

- R.D. Kriz, "Maintain SGI Legacy Power Onyx, Rock and IRIX-OS," Nutter, McClennen and Fish (1 year), (\$52,186), 10/15/06 – 10/14/07, 100%.
- R.D. Kriz, "Extensible 3-D (X3D) graphics loader for Open Scene Graph (OSG)," Naval Post Graduate School, (1 month), (\$5,000), 9/01/06 – 9/30/06, 100%.

John J. Lesko

- S.W. Case, J. Duke, and J.J. Lesko, "Reliability of Secondary Bonded Composite Doubler Plate Joints," Funding Amount & Source: \$95,000, Naval Surface Warfare Center Period of Grant: 1 August 2005 – 1 December 2006, (40%)
- S.W. Case and J.J. Lesko, "Combined Mechanism Durability Modeling and Validation for Composite Naval Structures," Funding Amount & Source: \$80,000, Naval Surface Warfare Center Period of Grant: 16 July 2005 – 15 December 2006, (50%)
- J.J. Lesko, "LightWeight Flame Retardant Ammunition Packaging, Phase II SBIR," Funding Amount & Source: \$150,000, Luna Innovations Period of Grant: 1 July 2005 – 28 February 2007, (100%)
- J.J. Lesko, "LightWeight Flame Retardant Ammunition Packaging, Option Three," Funding Amount & Source: \$65,378, Luna Innovations Period of Grant: 1 January 2006 – 31 December 2006, (100%)
- S. Case, D. Dillard, J. Dillard, and J. Lesko, "Characterizing Durability of Fuel Cells," Funding Amount & Source: \$368,000, UTC Fuel Cells, LLC Period of Grant: 1 January 2007 – 31 December 2008, (25%)
- D. Baird, R. Batra, S. Case, J. Duke, M. Ellis, J. Heflin, M. Hyer, J.J. Lesko, T. Long, R. Moffitt, K. Logan, J. Riffle, R. Turner, "Virginia Tech ARL Material Center of Excellence for Composite Materials Research: Multifunctional Composite Materials & Structures," Funding Amount & Source: \$18,000,000, Army Research Laboratory – Materials Center for Excellence Period of Grant: 1 January 2006 – 31 December 2014 (Segments of the proposal were funded under Dr. Tim Long's ARL MCOE Polymers), (20%)
- S. Case and J. Lesko, "Next Navy Composites (N2C): Multifunctional Composites for Next Navy Seaframes," Funding Amount & Source: \$2,125,417, ONR Period of Grant: 1 June 2006 – 30 November 2007, (50%)
- T. Cousins and J. Lesko, "Rapid Replacement of Tangier Island Bridges Including Lightweight & Durable FRP Deck Systems," Funding Amount & Source: \$264,154, VTRC Period of Grant: 1 July 2006 – 30 June 2008, (50%)

Michael L. Madigan

- M. Madigan, "Support for Suzanne Nicewonder," Wake Forest University Health Sciences, \$11,739, Aug 2006 – Dec 2006, Level of responsibility 100%
- M. Madigan, Co-PI: K Davy (HNFE), "Effect of Obesity on Trip Recovery" Claude D. Pepper Older Americans Independence Center of Wake Forest, \$45,300, Aug 2006 – July 2007, Level of responsibility 90%,

Ishwar K. Puri

- Michael W. Ellis, Nancy G. Love, and Ishwar K. Puri, "Development of a Nitrifying Microbial Fuel Cell for Sustainable Wastewater Treatment," *Water Environmental Research Foundation*, Alexandria, Virginia: (March 1, 2007–May 31, 2008); \$153,325.

Mahendra P. Singh

- M. P. Singh, "Sensor Based Damage Detection and Quantification in Bridges Under Traffic and Environmental Effects," National Science Foundation, \$99,995, May 1, 2007 – April 30, 2009, (100%)
- Research Liaison Professor at NIA, College of Engineering, Virginia Tech, \$20,000, Summer 2007.

Mark A. Stremler

- Collaborative Research: "Topological Fluid Mechanics of Stirring," NSF Division of Mathematical Sciences (DMS). \$213,818 from 9/15/06 to 8/31/09. In collaboration with P. Boyland, U. Florida
- "Laminar Mixing in Micro- and Meso-Scale Flows: Enhancing Heat and Mass Transfer with Chaotic Advection," Vanderbilt University (subcontract of previous ARO funding). \$24,347 from 12/25/06 to 10/9/07.

Demetri P. Telionis

- D.P. Telionis, P.P Vlachos, and S. Ragab, "Aerodynamics and Flight Control of a Circulation Control Disk/Rotor Aircraft" submitted to Boeing/DARPA by, \$240,000, January 2007 to December 2007. Responsibility: 40%.

Surot Thangjitham

- S. Thangjitham, "Evaluation of the Mechanical Interaction of Pallet Structural Systems," PalletOne, \$116,405, (100%)

Graduate Student Advising (EM Students)

Hassan Aref

- Vasilieos Vlakakis, PhD

Romesh C. Batra

- Wen Jiang, PhD
- Kaushik Das, PhD, December 2008
- Gautam Gopinath, PhD, December 2009
- Shakti Gupta, PhD, December 2008
- Zheyang Guo, PhD
- Harikrishna, PhD, December 2009
- Alejandro Pacheco, PhD, December 2008
- Anoop Varghese, PhD, May 2008

Scott W. Case

- Jason Cain, PhD, December 2007
- Nicole Jackson, MS, May 2008
- Vlastimil Kunc, PhD, June 2008
- Nathan Post, PhD, December 2007 (co-advisor)
- Rich Speckart, PhD, June 2008 (co-advisor, not enrolled)
- Zhenyu Zhang, PhD, June 2009

Mark S. Cramer

- Michael Morrison, MS, June 2008 (not enrolled)
- Clifford E. Webb, MS, June 2008 (not enrolled)

David A. Dillard

- Yongqiang (Ron) Li, PhD, 2008
- Edoardo Nicoli, PhD, 2009
- Hitendra Singh, PhD, 2009

Norman E. Dowling

- Attilio Arcari, PhD, 2009

John C. Duke

- Douglas Harold, PhD, Spring 2010
- Kunlin Hsieh, MS completed May 2007
- Prakash Kumar, PhD (Withdrew)

J. Wally Grant

- Julian Davis, PhD

Muhammad R. Hajj

- Giancarlo Bordonaro, PhD, Fall 2008

Scott L. Hendricks

- Grant Vogl, PhD, Spring 2011 (Co-advisor with Meirovitch)

Michael W. Hyer

- Maurizio Paschero, PhD, December 2007
- Miao Sun, PhD, December 2006
- Waddy Haynie, PhD, August 2007

Ron D. Kriz

- Arun Nair, PhD, Fall 2007 (Co-advised with Dr. Diana Farkas, MSE)

John J. Lesko

- Jeffrey Bolton, PhD, May 2009
- Prasun Majumdar, PhD, December 2007
- Nathan Post, PhD, May 2008 (Co-advised with Scott Case, ESM)
- Rich Speckart, PhD, December 2008 (not enrolled)
- Theophanis Theophanous, PhD, December 2007

Michael L. Madigan

- Dennis Anderson, PhD, 2008
- Steve Hanson, MS, 2007

Ali H. Nayfeh

- Imran Akhtar, in progress
- Bashar Hammad, in progress
- Osama Marzouk, in progress

Ishwar K. Puri

- Soumik Banerjee, PhD, Fall 2008
- Anindya De, PhD, Summer 2008
- Sayangdev Naha, PhD, Spring 2008
- Ashok Sinha, PhD, Fall 2008

Shane D. Ross

- Piyush Grover, PhD, May 2009
- Carmine Senatore, PhD, May 2009
- Phanindra Tallapragada, PhD, May 2011

Mahendra P. Singh

- Apoorva Shende, PhD, May 2008
- Saurabh S. Bisht, PhD, May 2008
- Harsh Nandan, PhD, May 2009

Mark A. Stremler

- Jie Chen, PhD, Fall 2008
- Sebastian Eluvathingal, PhD (transferred to ME in summer '07)
- Pankaj Kumar, PhD, Fall 2010

Demetri P. Telionis

- Michael Brady, PhD, Fall 2007
- Hyunsun Do, PhD
- Jose Rullan, PhD, June 2007 (not enrolled)
- Yihong Yang, PhD

Surot Thangjitham

- Chalitphan Kunaporn, PhD, 2010
- Monrudee Liangruska, MS, 2008
- Yunkai Lu, PhD, 2007
- Erik Saether, PhD, 2007 (enrolled part-time)
- Ratchada Sopakayang, PhD, 2010

Recent Graduates**Romesh C. Batra**

- Gianni L. Iaccarino, MS, September 2006
- Aaron Sears, PhD, November 2006
- Davide Spinello, PhD, September 2006
- Phanikrishna Thota, PhD, February 2007

Scott W. Case

- Dan Liu, PhD, MACR, August 2006

David A. Dillard

- Harpreet S. Chadha, MS, August 2006
- David J. Pohlit, MS, June 2007

Norman E. Dowling

- Steve Ryan, MS, May 2006

John C. Duke

- Kunlin Hsieh, MS, April 2007
- Byungseok Yoo, MS, December 2006

Muhammad R. Hajj

- Christopher Chabalko, PhD, March 2007

Michael W. Hyer

- Christopher Abada, MS, June 2006

- W. Thomson Haynie, PhD, August 2007
- Miao Sun, PhD, November 2006

John J. Lesko

- Steven Boyd, PhD, November 2006

Michael L. Madigan

- Hyunwook Lee, MS, SBES, Spring 2007

Ali H. Nayfeh

- Mohammad Daqaq, PhD, 2006
- Greg Vogl, PhD, December 2006

Saad A. Ragab

- Abdel-Halim Salem-Said, PhD, Summer II 2007

Major Advisees Outside ESM

Romesh C. Batra

- Brad Klenow, PhD, AE
- K. Konda, PhD, ME
- J. Li, PhD, AE
- Ashley Nisewonder, PhD, AE
- H. Soliman, PhD, AE

Scott W. Case

- Steven Kyriakides, PhD, MSE
- Michael Pestrak, PhD, MACR, May 2010
- Vernon Webb, PhD, MACR (co-advisor, withdrew)

David A. Dillard

- Josh Grohs, MS, ME, 2007
- John Hennage, PhD, ME, 2007
- Kshitish Patankar, PhD, MACR, 2009

Norman E. Dowling

- S. Katicha, PhD, CEE
- H. Wang, PhD, CEE (transfer to UI)

J. Wally Grant

- Corrie Spoon, PhD, SBES

John J. Lesko

- John Bausano, PhD, MACR, December 2007
- Corey Hilton, PhD, MACR, December 2008
- Zihong Liu, CEE, August 2007 (co-advisor with Tommy Cousins, CEE)
- Juan Mejia-Ariza, PhD, MACR, December 2007
- Vernon Webb, PhD, MACR (co-advisor, withdrew)

Michael L. Madigan

- Katie Bieryla, PhD, ME, Spring 2009
- Bradley Davidson, PhD, SBES (not enrolled, but expected to finish Fall 2007)
- Sara Matrangola, ESM and SBES 5yr BS/MS student, Spring 2008
- Gregory Slota, PhD, SBES, Spring 2008
- Michael Whitley, ESM and SBES 5yr BS/MS student, Spring 2008

Ishwar K. Puri

- Andrew Lock, PhD (completed 2006 from University of Illinois at Chicago). Currently NRC postdoctoral researcher at NIST, Gaithersburg, Maryland.

Shane D. Ross

- Martin Tanaka, PhD, SBES, August 2008 (co-advised with Dr. Maury Nussbaum, ISE/SBES)

Madendra P. Singh

- Hyun Shin, PhD (co-chair with Professor Ray Plaut from CEE)