

Archival Journal Articles

Hassan Aref

1. H. Aref, "Something old, something new." *Philosophical Transactions of the Royal Society*, London A **366**, 2649-2670 (2008) (invited paper)
2. L. Tophøj & H. Aref, "Chaotic scattering of two identical point vortex pairs revisited." *Physics of Fluids* **20**, 093605 (2008) 10pp.

Romesh Batra

3. R. C. Batra, Optimal Design of Functionally Graded Isotropic and Incompressible Linear Elastic Cylinders and Spheres, *AIAA J.*, **46**, 2050-2057, 2008.
4. S. S. Gupta and R. C. Batra, Continuum Structures Equivalent in Normal Mode Vibrations to Single-Walled Carbon Nanotubes, *Computational Materials Science*, **43**, 715-723, 2008.
5. R. C. Batra and S. S. Gupta, Wall Thickness and Radial Breathing Modes of Single-walled Carbon Nanotubes, *J. Appl. Mechs. – T ASME*, **75**, 061010, 2008.
6. W. Jiang and R. C. Batra, Identification of Elastic Constants of FCC Metals from 2D Load-Indentation Curves, *Computational Materials Science*, **45**, 511-515, 2009.
7. R. C. Batra and W. Jiang, Analytical Solution of the Contact Problem of a Rigid Indenter and an Anisotropic Linear Elastic Layer, *International J. of Solids and Structures*, **45**, 5814-5830, 2008.
8. A.A. Pacheco and R. C. Batra, Instabilities in Shear and Simple Shear Deformations of Gold Crystals, *J. of the Mechanics and Physics of Solids*, **56**, 3116-3143, 2008.
9. R. C. Batra and A. Bahrami, Inflation and Eversion of Functionally Graded Nonlinear Elastic Incompressible Cylinders, *Int. J. of Non-Linear Mechanics* **44**, 311-323, 2009.
10. K. Das and R. C. Batra, Pull-in and Snap-through Instabilities in Transient Deformations of Microelectromechanical Systems, *J. Micromech. Microeng.*, **19**, 035008, 2008.
11. R. C. Batra and G. L. Iaccarino, Exact Solutions for Radial Deformations of Functionally Graded Isotropic and Incompressible Second-order Elastic Cylinders, *Int. J. of Non-Linear Mechanics*, **43**, 383-398, 2008.
12. R. C. Batra and M. Porfiri, Analysis of Rubber-like Materials using Meshless Local Petrov-Galerkin (MLPG) Method, *Communications in Numerical Methods in Engineering*, **24**, 1781-1804, 2008.
13. R. C. Batra, M. Porfiri, and D. Spinello, Vibrations and Pull-in Instabilities of Microelectromechanical von Karman Elliptic Plates Incorporating the Casimir Force, *J. of Sound and Vibration*, **315**, 939-960, 2008.
14. Z. Qin and R. C. Batra, Local Slamming Impact of Sandwich Composite Hulls, *International Journal of Solids and Structures*, **46**, 2011-2035, 2009.
15. D. J. Hasanyan, R. C. Batra and S. Harutyunyan, Pull-in Instabilities in Functionally Graded Microthermoelectromechanical Systems, *J. of Thermal Stresses*, **31**, 1006-1021, 2008.
16. M. C. Ray and R. C. Batra, Effective Properties of Carbon Nanotube and Piezoelectric Fiber Reinforced Hybrid Smart Composites, *J. of Applied Mechanics – Trans. ASME*, **76**, Art. No. 034503 (4pp), 2009.
17. M. C. Ray and R. C. Batra, Smart Constrained Layer Damping of Functionally Graded Shells using Vertically/Obliquely Reinforced 1-3 Piezocomposite under

- Thermal Environment, *Smart Materials and Structures*, **17**, Art. No. 055007 (13pp), 2008.
18. G. M. Zhang and R. C. Batra, Symmetric Smoothed Particle Hydrodynamics (SSPH) Method and its Application to Elastic Problems, *Computational Mechanics*, **43**, 321-340, 2009.
 19. A. J. M. Ferreira, G. E. Fasshauer, R. C. Batra, Natural Frequencies of Thick Plates Made of Orthotropic, Monoclinic, and Hexagonal Materials by a Meshless Method, *J. of Sound and Vibration*, **319**, 984-992, 2009.
 20. A. J.M. Ferreira, G.E. Fasshauer, R.C. Batra and J.D. Rodrigues, Static Deformations and Vibration Analysis of Composite and Sandwich Plates Using a Layerwise Theory and RBF-PS Discretizations with Optimal Shape Parameter, *Composite Structures*, **86**, 328-343, 2008.

Scott W. Case

21. Y. Li, J.K. Quincy, S.W. Case, M.W. Ellis, D.A. Dillard, Y-H Lai, M.K. Budinski, C.S. Gittleman, "Characterizing the Fracture Resistance of Proton Exchange Membranes," *Journal of Power Sources*, **185**, 2008, pp. 374–380.
22. K. Patankar, D.A. Dillard, S.W. Case, M.W. Ellis, Y-H Lai, M.K. Budinski, C.S. Gittleman, "Hygrothermal Characterization of the Viscoelastic Properties of Gore® Select 57 Proton Exchange Membrane", *Mechanics of Time-Dependent Materials*, **12**, 2008, pp. 221–236.
23. N.L. Post, F. Riebel, A. Zhou, T. Keller, S.W. Case, J.J. Lesko, "Investigation of 3D Moisture Diffusion Coefficients and Damage in a Pultruded E-glass/Polyester Structural Composite," *Journal of Composite Materials*, published online November 13, 2008 as doi:10.1177/0021998308098152.
24. N.L Post, S.W. Case, J.J. Lesko, "Modeling the Variable Amplitude Fatigue of Composite Materials: a Review and Evaluation of the State of the Art for Spectrum Loading," *International Journal of Fatigue*, **30**(12), 2008, pp. 2064-2086.

Rafael V. Davalos (Affiliate Faculty, publications with EM students)

25. H. Shafiee, J.L. Caldwell, M.B. Sano, R.V. Davalos, "Contactless Dielectrophoresis for Particle Manipulation On-Chip," *Biomedical Microdevices*, published online May 5, 2009 as DOI: 10.1007/s10544-009-9317-5.
26. H. Shafiee, P.A. Garcia, R.V. Davalos, "Delineation of Irreversible Electroporation (IRE) from Joule Heating Effects using the Thermal Damage Equation," *Journal of Biomechanical Engineering*, **131**, 2009, pp. 074509:1-5.

Raffaella De Vita

27. 25. De Vita, R., Stewart, I. W., "Influence of Weak Anchoring upon the Alignment of Smectic A Liquid Crystals with Surface Pretilt", *Journal of Physics: Condensed Matter*, **20**:335101, 2008.

David A. Dillard

28. D. A. Dillard, A. Mallick, D. Ohanehi, J-H Yu, and D. R. Lefebvre, "A High Precision Experimental Method to Determine Poisson's Ratios of Encapsulant Gels and Other Elastomers", *Journal of Electronic Packaging*, Transactions of the ASME, **130**(3), 2008, 031006-7 (7 pages).

29. K. Himebaugh, R. H. Plaut, D. A. Dillard, "Finite Element Analysis of Bonded Insulated Rail Joints" *Int. J. Adhesion & Adhesives*, **28**(3) 2008, 142-150.
30. K. Patankar, D. A. Dillard, S. W. Case, M. W. Ellis, Y-H. Lai, M. K. Budinski, and C. S. Gittleman, "Hygrothermal Characterization of the Viscoelastic Properties of Gore® Select 57 Proton Exchange Membrane", *Mechanics of Time-Dependent Materials*, **12**(3) 2008, 221-236.
31. Y. Li, J. K. Quincy, Scott W. Case, Michael W. Ellis, David A. Dillard, Yeh-Hung Lai, Michael K. Budinski, Craig S. Gittleman, "Characterizing the Fracture Resistance of Proton Exchange Membranes Corresponding", *Journal of Power Sources*, **185**(1), 2008, 374-380.
32. H. K. Singh, K-T. Wan, J. G. Dillard, and D. A. Dillard, P. Reboa, J. Smith, E. Chappell, and A. Sharan, "Subcritical Delamination in Epoxy Bonds to Silicon and Glass Adherends: Effect of Temperature and Preconditioning", *The Journal of Adhesion*, **84**(7) 2008, 619-637.
33. D. P. Makhecha, R. K. Kapania, E. R. Johnson, D. A. Dillard, J. C. Jacob, and J. M. Starbuck, "Rate-Dependent Cohesive Zone Modeling of Unstable Crack Growth in an Epoxy Adhesive", *Mechanics of Advanced Materials and Structures*, **16**(1) 2009, 12-19.
34. M. A. Turner, R. H. Plaut, D. A. Dillard, J. R. Loferski, R. Caudill, "Tests of Adhesives to Augment Nails in Wind Uplift Resistance of Roofs", *The Journal of Structural Engineering*, **135**(1) 2009, 88-93.
35. Y-H. Lai., C.K. Mittelsteadt, C.S. Gittleman, and D.A. Dillard, "Viscoelastic Stress Analysis of Constrained Proton Exchange Membranes Under Humidity Cycling", *Journal of Fuel Cell Science and Technology*, 2009. **6**(2): p. 021002 (13 pages).

Norman Dowling

36. N. E. Dowling, C. A. Calhoun, and A. Arcari, "Mean Stress Effects in Stress-Life Fatigue and the Walker Equation," *Fatigue and Fracture of Engineering Materials and Structures*, Vol. **32**, No. 3, March 2009, pp. 163-179.

Muhammad Hajj

37. Y.M. El-Okda, S.A. Ragab, M.R. Hajj, "Large-eddy simulation of flow over a surface-mounted prism using a high-order finite-difference scheme", *Journal of Wind Engineering and Industrial Aerodynamics*, Volume **96**, Issues 6-7, June-July 2008, Pages 900-912
38. Mohamed A.K. Elsayed, Zhongfu Ge, Muhammad R. Hajj, Henry W. Tieleman "Extreme value distributions for peak pressure and load coefficients", *Journal of Wind Engineering and Industrial Aerodynamics*, Volume **96**, Issues 6-7, June-July 2008, Pages 1111-1123
39. Muhammad Hajj, Virginia Tech; Philip Beran, Air Force Research Laboratory, "Higher-Order Spectral Analysis of Limit Cycle Oscillations of Fighter Aircraft", *Journal of Aircraft* 2008, vol.**45** no.6 Pages 1917-1923 doi: 10.2514/1.34841
40. Chabalko, Air Force Research Laboratory; M. Hajj, Virginia Tech; W. Silva, NASA LaRC, "Interrogative Testing for Nonlinear Identification of Aeroelastic Systems" *AIAA Journal* 2008, vol.**46** no.11 Pages 2657-2658 doi: 10.2514/1.40092

Michael W. Hyer

41. Paschero, M. and M.W. Hyer, "Improvement of the axial load capacity of elliptical cylindrical shells," *AIAA J.*, vol. **47**, no. 1, pp. 142-56, 2009
42. Paschero, M. and M.W. Hyer, "Axial buckling of an orthotropic circular cylinder: Application to orthogrid concept," *Int. J. of Solids and Structures*, vol. **46**, pp. 2151-71, 2009, DOI information: 10.1016/j.ijsolstr.2008.08.033

John J. Lesko

43. N.L. Post, S.W. Case, J.J. Lesko, "Modeling the Variable Amplitude Fatigue of Composite Materials: a Review and Evaluation of the State of the Art for Spectrum Loading," *International Journal of Fatigue*, DOI information: 10.1016/j.ijfatigue.2008.07.002
44. N.L. Post, F. Riebel, A. Zhou, T. Keller, S.W. Case, J.J. Lesko, "Investigation of 3D Moisture Diffusion Coefficients and Damage in a Pultruded E-glass/Polyester Structural Composite," *Journal of Composite Materials*, Vol. **43**, No. 1, January 2009, pp 75-96.

Michael Madigan

45. Lin D, Seol H, Nussbaum M, Madigan ML. "Reliability of COP-based postural sway measures and age-related differences". *Gait and Posture* (2008) **28**: 337-42.
46. Matrangola SM, Madigan ML, Nussbaum MA, Ross R, Davy KD. "Changes in body segment inertial parameters of obese with weight loss". *Journal of Biomechanics* **41** (2008), pp. 3278-3281
47. Anderson DA, Madigan ML, Nussbaum MA. "An algorithm for directly fitting a moment-angle-angular velocity model to maximum voluntary muscular moment measured with an isokinetic dynamometer". *Isokinetics and Exercise Science* **17** (2009) 51-56.
48. Davidson BS, Madigan ML, Nussbaum MA, Wojcik LA. "Effects of localized muscle fatigue on recovery from a postural perturbation without stepping". *Gait Posture* (2009), doi:10.1016/j.gaitpost.2008.12.011
49. Bieryla KA, Anderson DA, Madigan ML. "Estimations of relative effort during sit-to-stand increase when accounting for variations in maximum voluntary torque with joint angle and angular velocity". *Journal of Electromyography and Kinesiology* (2009) **19**:139-144.

Roop L. Mahajan

50. Serrell, D.B.; Law, J; Slifka, A.J.; Mahajan, R.L.; and Finch, D.S., "A Uniaxial BioMEMS Device for Imaging Single Cell Response during Quantitative Force-Displacement Measurements", *J. Biomedical Microdevices*, v. **10**, Issue 6, pp. 883-889.
51. G. Singh, P. Rice, R.L. Mahajan and J.R. McIntosh. "Fabrication and characterization of a CNT based nano-knife". *Nanotechnology*, 20, 095701.
52. M. Karmarkar, G. Singh, S. Shah, R.L. Mahajan, and S. Priya. "Large piezoresistivity phenomenon in SiCN – (La,Sr)MnO₃ composites". *Applied Physics Letters*, 94, 072902.

Ali H. Nayfeh

53. A. H. Nayfeh, "Order Reduction of Retarded Nonlinear Systems - The Method of Multiple Scales vs. Center-Manifold Reduction," *Nonlinear Dynamics*, Vol. **51**, No. 4, March 2008, pp. 483-500.
54. M. F. Daqaq, E. M. Abdel-Rahman, and A. H. Nayfeh, "Towards a Stable Low-Voltage Torsional Microscanner," *Journal of Micromechanics and Microengineering*, Vol. **14**, 2008, pp. 725-737.
55. K. A. Alhazza, M. F. Daqaq, A. H. Nayfeh, and D. J. Inman, "Non-Linear Vibrations of Parametrically Excited Cantilever Beams Subjected to Non-Linear Delayed-Feedback Control," *International Journal of Non-Linear Mechanics*, Vol. **43**, 2008, pp. 801-812.
56. M. F. Daqaq, K. C. Reddy, and A. H. Nayfeh, "Input-Shaping Control of Nonlinear MEMS," *Nonlinear Dynamics*, Vol. **54**, 2008, pp. 167-179.
57. A. H. Nayfeh and S. Emam, "Exact Solution and Stability of Postbuckling Configurations of Beams," *Nonlinear Dynamics*, Vol. **54**, 2008, pp. 395-408.
58. K. A. Alhazza, A. H. Nayfeh, and M. F. Daqaq, "On Utilizing Delayed Feedback for Active-Multimode Vibration Control of Cantilever Beams," *Journal of Sound and Vibration*, Vol. **319**, 2009, pp. 735-752.
59. S. A. Emam and A. H. Nayfeh, "Postbuckling and Free Vibrations of Composite Beams," *Composite Structures*, Vol. **88**, 2009, pp. 636-642.
60. M. F. Daqaq, E. M. Abdel-Rahman, and A. H. Nayfeh, "Two-to-One Internal Resonance in Microscanners," *Nonlinear Dynamics*, online, in press.

Marie Parette

61. Richter, D. M. and M. C. Parette (2009). "Identifying Barriers to and Outcomes for Interdisciplinarity in the Engineering Classroom." *European Journal of Engineering Education* **34**(1): 29-45.
62. Borrego, M., C. B. Newswander, L. D. McNair, S. McGinnis and M. C. Parette (2009). "Using Concept Maps to Assess Interdisciplinary Integration of Green Engineering Knowledge." *Advances in Engineering Education* **2**(1): 1-26. Available at <http://advances.asee.org/vol01/issue03/05.cfm>.
63. McNair, L. D., M. C. Parette and A. Kakar (2008). "Case Study of Prior Knowledge: Expectations and Identity Constructions in Interdisciplinary, Cross-Cultural, Virtual Collaboration." *International Journal of Engineering Education* **24**(2): 386-399.
64. Parette, M. C. (2008). "Teaching Communication in Capstone Design: The Role of the Instructor in Situated Learning." *Journal of Engineering Education* **97**(4): 491-503.

Ishwar K. Puri

65. Roy, T., Sinha, A., Chakraborty, S., Ganguly, R., and Puri, I. K., "Magnetic Microsphere-Based Mixers for Micro-Droplets," *Physics of Fluids*, **21**, 027101, 2009.
66. Murad, S., and Puri, I. K., "Nanoscale Thermal Transport Across Hydrophilic Interfaces," *Chemical Physics Letters*, **467**, 100-113, 2008.
67. Balasubramanian, G., Banerjee, S., and Puri, I. K., "Unsteady Nanoscale Thermal Transport Across a Solid-Fluid Interface," *Journal of Applied Physics*, **104**, 064306, 2008.
68. Banerjee, S., Naha, S., and Puri, I. K., "Molecular Simulation of the Carbon Nanotube Growth Mode During Catalytic Synthesis," *Applied Physics Letters*, **92**,

233121, 2008. Also selected for publication in Virtual Journal of Nanoscale Science & Technology, June 30, 2008.

69. Berta, P., Aggarwal, S. K., Puri, I. K., Granata S., Faravelli, T., and Ranzi, E. "Experimental and Numerical Investigation of n-Heptane/Air Counterflow Nonpremixed Flame Structure," *Journal of Propulsion and Power*, **24**, pp. 797-804, 2008.
70. De, A. K., Mukhopadhyay, A., and Puri, I. K., "Lattice Boltzmann Method Simulation of Electro-Osmotic Stirring in a Microscale Cavity," *Microfluidics and Nanofluidics*, **4**, 463-470, 2008.

Saad A. Ragab

71. El-Okda, Y.M., Ragab, S. A., and Hajj, M. R., "Large-eddy simulation of flow over a surface-mounted prism using a high-order finite difference scheme," *J. Wind Eng. and Industrial Aerodynamics*, Vol. **96**, 2008, pp. 900-912.
72. Charonko, J. J., Ragab, S. A., and Vlachos, P. P., "A scaling parameter for predicting pressure wave reflection in stented arteries," *J. Medical Devices, Transactions of the ASME*, Vol. **3**, Issue 1, March 2009, pp. 011006-(1-10).

Shane Ross

73. P. Tallapragada, S. Ross [2008] "Particle segregation by Stokes number for small neutrally buoyant spheres in a fluid", *Physical Review E*, **78**, 036308. (ISI Impact Factor: 2.483; 4 of 43 in Physics, Mathematical)
74. J.A. Norris, A.P. Marsh, K.P. Granata, S.D. Ross [2008] "Revisiting stability of 2D passive biped walking: Local behavior", *Physica D: Nonlinear Phenomena*, **237**, 3038-3045. (ISI Impact Factor: 1.735; 10 of 165 in Mathematics, Applied)
75. P. Grover, S.D. Ross [2009] "Designing trajectories in a planet-moon environment using the controlled Keplerian map", *Journal of Guidance, Control, and Dynamics* **32**(2), 436-443 (ISI Impact Factor: 1.150; 3 of 24 in Engineering, Aerospace)
76. M.L. Tanaka, S.D. Ross [2009] "Separatrices and basins of stability from time series data: an application to biodynamics", *Nonlinear Dynamics*, doi:10.1007/s11071-008-9457-9. (ISI Impact Factor: 1.045; 21 of 107 in Engineering, Mechanical)
77. S. Jerg, O. Junge, S.D. Ross [2009] "Optimal capture trajectories using multiple gravity assists", *Communications in Nonlinear Science and Numerical Simulation*, doi:10.1016/j.cnsns.2008.12.009 (ISI Impact Factor is not available since journal less than two years old in category Physical, Chemical and Earth Sciences) (Invited paper)
78. M.L. Tanaka, M.A. Nussbaum, S.D. Ross [2009] "Evaluation of the threshold of stability for the human spine", *Journal of Biomechanics*, doi:10.1016/j.jbiomech.2009.02.008 (ISI Impact Factor: 2.897; 6 of 44 in Engineering, Biomedical)

Mahendra P. Singh

79. Kachroo, P., Wadoo, S., Al-Nasur, S., Shende, A., Singh, M. and Ozbay, K., "Information technology requirements for intelligent evacuation systems", *World review of intermodal transportation research*, Vol. **2**, Nos. 2/3, pp. 127-144, 2009.

Jake Socha

80. Lee, W.-K. and J.J. Socha. "Direct visualization of hemolymph flow in the heart of a grasshopper (*Schistocerca americana*)". *BMC Physiology* **9**:2. ['Highly accessed' status]
81. Socha, J.J., W.-K. Lee, J.F. Harrison, J.S. Waters, Fezzaa, K., M.W. Westneat. 2008. "Correlated patterns of tracheal compression and convective gas exchange in a carabid beetle". *Journal of Experimental Biology* **211**: 3409-3420. [Cover]

Mark Stremler

82. D.G. Walker, M.A. Stremler, J. Johnston, D. Bruff & S.P. Brophy, "Case study on the pedagogical impact of tablet PCs as a presentation medium in engineering classrooms," *International Journal of Engineering Education* **24**(3), 606–615 (2008).
83. V. Somashekar, M.G. Olsen & M.A. Stremler, "Flow structure in a wide microchannel with surface grooves," *Mechanics Research Communications* **36**, 125–129 (2009).
84. J. Chen & M.A. Stremler, "Topological chaos and mixing in a three-dimensional channel flow," *Physics of Fluids* **21**, 021701, 4pp (2009).

New Research Proposals Funded

Romesh Batra

- Equation of State Evaluation for Solar Plus Program, The Johns Hopkins University, \$50,000, 1/1/09-5/31/09, Batra (100%).
- Fracture of Adhesive Bonds under Mixed Mode Loading: Experiments in a Dual Actuator Load Frame and Numerical Simulations, NSF, \$438,218, 08/01/08-07/31/11, David A.Dillard (25%), Donatus C. Ohanehi (25%) R. C. Batra (25%) John Dillard (25%)
- VT-WSU-MDTC Collaborative Center, AFRL, \$2.5M, 01/30/09-12/31/14
- REU-Fracture of Adhesive Bonds Under Mixed Mode Loading: Experiments in a Dual Actuator Load Frame and Numerical Simulations, NSF, \$12,000, 4/13/09-4/12/10, Co-investigators: David A.Dillard (25%), Donatus C. Ohanehi (25%) R. C. Batra (25%) John Dillard (25%), Funded
- Nano-Bio: The Next Transformative Convergence, \$40K, 4/08-11/2/08, Campbell (50%), Batra (50%), Humboldt Foundation, Funded.
- S. Case, R. Batra, M. Hyer, J. Lesko, "Characterization and Modeling of Constituents and Composites for Lightweight Hybrid Armor Applications," Army Research Lab, 5/10/09-5/9/10, \$250,000, (25%).
- J. Lesko, R. Moffitt, S. Case, R. Batra, D. Peairs, "Large Volume Nanofiller Dispersion and Assessment In Fluids For Production Scale Multifunctional Composites," 4/16/08-4/15/09, \$146,709, (20%).
- Multi task technologies, MCOE, Army Research Lab., 450K (15%).

Scott W. Case

- S. Case, "Distributed Fiber Optic Twist Measurement in Shape Sensing Tethers," Luna Innovations, 7/1/08-4/30/09, \$30,525, (100%).
- J. Lesko, R. Moffitt, S. Case, R. Batra, D. Peairs, "Large Volume Nanofiller Dispersion and Assessment In Fluids For Production Scale Multifunctional Composites," 4/16/08-4/15/09, \$146,709, (20%).

- D. Dillard, S. Case, M. Ellis, and R. Moore, "PEM and MEA characterization and modeling," General Motors, 1/1/09-12/31/09, \$173,100, (25%).
- D. Dillard, S. Case, M. Ellis, and R. Moore, "PEM and MEA: Shorting Study," General Motors, 1/1/09-12/31/09, \$66,902, (25%).
- S. Case, "Characterization and Modeling of Constituents and Composites for Lightweight Hybrid Armor Applications," Army Research Lab, 5/10/09-5/9/10, \$100,425, (100%).
- S. Case, R. Batra, M. Hyer, J. Lesko, "Characterization and Modeling of Constituents and Composites for Lightweight Hybrid Armor Applications," Army Research Lab, 5/10/09-5/9/10, \$250,000, (25%)

Rafael V. Davalos

- R.V. Davalos, "Modeling of Irreversible Electroporation," Angiodynamics 2009-10, \$15,000
- P. Gatenholm, R.V. Davalos, "Customizable Meniscus Implant Prepared by Dielectrophoretic Biofabrication," National Science Foundation: STTR, 8/15/09-8/14/10, \$100,000.
- R.V. Davalos, M.N. Rylander, J.L. Robertson, Y.W. Lee, "Combinatorial Brain Cancer Therapy through Irreversible Electroporation and Carbon Nanotubes," National Science Foundation, 8/15/09-8/14/12, \$300,000.

David A. Dillard

- D. A. Dillard and C. V. Martin, "Micro Wind Energy in SWVA: YMCA Center Demonstration Site and Education Center", Office of the Vice President for Research, Community Action Grant, \$14,750
- D. A. Dillard, S. W. Case, M. W. Ellis, and R. B. Moore, "Proton Exchange Membrane (PEM) and Membrane Electrode Assembly (MEA): Shorting Study, General Motors, 1 April 2009 – 3 April 2010, \$66,900.
- D. A. Dillard, S. W. Case, M. W. Ellis, and R. B. Moore, "Proton Exchange Membrane (PEM) and Membrane Electrode Assembly (MEA) Characterization and Durability Modeling," General Motors, 1 April 2009 – 3 April 2010, \$173,100.
- D. A. Dillard, D. C. Ohanehi, R. Batra, and J. Dillard, "Fracture of Adhesive Bonds Under Mixed Mode Loading: Experiments in a Dual Actuator Load Frame and Numerical Simulations" (REU Supplement), National Science Foundation, 19 April 2009 – 31 July 2009, \$12,000
- D. A. Dillard, D. C. Ohanehi, R. Batra, and J. Dillard, "Fracture of Adhesive Bonds under Mixed Mode Loading: Experiments in a Dual Actuator Load Frame", National Science Foundation, 10 August 2008 – 09 August 2011, \$438,218.
- R. L. West Jr. and D. A. Dillard, "Characterization of Pressure Sensitive Window Adhesive/Sealant and Window Joint – Year 2", Dow Corning, 1 July 2008 – 31 August 2009, \$70,000, (\$32,612).

Norman E. Dowling

- "Enhanced Strain-Based Fatigue Methodology for Aircraft Applications," 3rd year renewal, to Integrated Systems Solutions, Inc., California, MD, on

research for the U. S. Naval Air Systems Command (NAVAIR), Patuxent River, MD, April 9, 2008, for \$54,000, for period 8/16/08 to 8/15/09. N. E. Dowling (100%).

John C. Duke, Jr.

- ASNT Faculty Grant \$8,000 12 months (Responsibility 100%)
- ASNT Fellowship Grant (Douglas Harold) \$15,000 7/1/09-6/30/11 (Responsibility 100%)

Muhammad Hajj

- A Functional Approach for the Analysis of Peak Wind Loads on Houses Exposed to Hurricanes and Validation of Wind Tunnel Simulations, National Science Foundation. . Responsibility (70%). Co-PI with Henry Tieleman, 05/01/2009 – 04/30/2012, \$224,998
- AFRL-VT Collaborative Center on Multidisciplinary Analysis and Design of Future Aerospace Vehicles, Air Force Research Laboratory/WP. Responsibility (15%). Co-PI with R. K. Kapania and others 12/22/2008 – 12/21/2013, \$2,250,000

Michael W. Hyer

- Degradation of Polymer Matrix Composite Material, Metis Design Corp., \$20,028, 1/1/09-12/31/09, M. Co-PI's: W. Hyer (50%), S. W. Case (50%).
- R & D Funding for Center of Excellence for Composites, Pratt & Whitney, \$306,005, 5/10/09-5/11/12, Co-PI's: S. W. Case (20%), R. C. Batra (20%), M. W. Hyer (20%), R. Kapania (20%), R. Devita (10%), J.C. Duke (10%).

John J. Lesko

- J. Lesko, R. Moffitt, S. Case, R. Batra, D. Peairs, "Large Volume Nanofiller Dispersion and Assessment In Fluids For Production Scale Multifunctional Composites," ONR, 4/2/08-12/31/08, \$146,709, (20%)

Donatus C. Ohanehi

- "Fracture of Adhesive Bonds under Mixed-Mode Loading: Experiments in a Dual Actuator Load Frame and Numerical Simulations," National Science Foundation; \$ 438,218. Duration: 3 years. Percent Level of Responsibility: 20% Co-Principal Investigators: D. A. Dillard, J. G. Dillard, R. C. Batra Submitted: February 15, 2008
- "Fracture of Adhesive Bonds under Mixed-Mode Loading: Experiments in a Dual Actuator Load Frame and Numerical Simulations," National Science Foundation; REU Supplement: \$ 12,000. Duration: 1 year. Percent Level of Responsibility: 20% Co-Principal Investigators: D. A. Dillard, J. G. Dillard, R. C. Batra. Submitted: April 1, 2009

Marie C. Parette

- CAREER: An Exploration of Expert Teaching and Student Learning in Capstone Experiences. Sponsor: National Science Foundation. Amount: \$405,307.00. Level of Responsibility: PI (100%) Dates: 1/1/09-12/31/13

- Building Connections within the Engineering Education Research Community
Sponsor: National Science Foundation Amount: \$307,468 Level of Responsibility: Co-PI (25%) Co-Investigators: Lisa D. McNair (PI), Hayden Griffin, Aditya Johri, Jenny Lo, Chris Williams. Dates: 5/1/08-12/31/10
- Increasing the Participation of Women in Engineering: An Examination of Gender Stereotypes, Self-Beliefs, Choice of Major, Academic Achievement, and Program Withdrawal. Led to GSE/RES submission above. Sponsor: Institute for Society, Culture, and Environment (ISCE). Amount: \$12,950 Level of Responsibility: Co-PI. Co-Investigator: Brett Jones (PI), Serge Hein, Tamara Knott. Dates: Summer 2008

Ishwar K. Puri

- Lambda Instruments, Inc., STTR Phase II Project, Blacksburg, Virginia: Heat Flux Sensor Development (January 1, 2009–December 31, 2010); \$300,000. Mr. Jonathan Greene, Program Director. Principal Investigators: Joseph A. Schetz and Ishwar K. Puri.
- National Science Foundation, Ethics Education in Science and Engineering Program, Arlington, Virginia: GILEE: Establishing a Graduate Interdisciplinary Liberal Engineering Ethics Curriculum (August 15, 2008–August 14, 2011); \$298,000. Dr. Carter Kimsey, Program Director. Principal Investigators: Ishwar K. Puri, Vinod K. Lohani and Roop L. Mahajan, Joseph C. Pitt and Richard E. Wokutch.

Saad A. Ragab

- “Numerical Simulations of Flow in Flotation Machines,” FLSmidth Minerals, \$46,305, 5/5/08-2/4/09, PI, 100%.
- “Expanded Scope: Development of Comprehensive Model for Simulation, Scale-up and Design of Large Flotation Machines,” FLSmidth Minerals, \$515,123.00, 6/1/08-12/31/09, 36.2% (\$186,585.00), PI with Yoon, Telionis, Luttrell, and Vlachos.
- “Aerodynamics of a DiscRotor Aircraft,” Boeing/DARPA, \$662,774.00, 2/2/2009-2/1/2011, 41.8% (\$276,872.00), PI with Telionis.
- “Special Topics on Computation and Experimental Calibration of Multihole Probes,” Aeroprobe, \$53,152.00, 50% (\$26,576), 6/1/08-5/31/10, PI with Telionis.

Jake Socha

- “The evolution of rhythmic tracheal compression in carabid beetles”, Advanced Photon Source, Argonne National Laboratory, General User Program (GUP) proposal #10643. Proposal request for 40 hrs beamtime use at beamline 32-ID. Equivalent value \$10,000. Level of responsibility 100%. PI: J. Socha.
- “X-ray CT of small biological specimens”, Advanced Photon Source, Argonne National Laboratory, General User Program (GUP) proposal #5623. Proposal request for 24 hrs beamtime use at beamline 2-BM. Equivalent value \$6,000. Level of responsibility 100%. PI: J. Socha.
- “How caterpillars locomote, characterized by hemolymph and internal tissue dynamics”, Advanced Photon Source, Argonne National Laboratory, General User Program (GUP) proposal #9009. Proposal request for 48 hrs beamtime

use at beamline 32-ID. Equivalent value \$12,000. Level of responsibility 20%.
PI: W. Woods, Co-PI's: B. Trimmer, M. Simon, W.K. Lee, J. Socha.

- “Anatomical and functional bioacoustics of praying mantis ear evolution”, Advanced Photon Source, Argonne National Laboratory, General User Program (GUP) proposal #9543. Proposal request for 48 hrs beamtime use at beamline 2-BM. Equivalent value \$12,000. Level of responsibility 50%. PI: David Yager, Co-PI: J. Socha.
- “Modeling insect midgut development with X-ray CT”, Advanced Photon Source, Argonne National Laboratory, General User Program (GUP) proposal #11788. Proposal request for 48 hrs beamtime use at beamline 2-BM. Equivalent value \$12,000. Level of responsibility 50%. PI: Drew Kirkhoff, Co-PI: J. Socha.

Mark A. Stremler

- “Glass extrusion process analysis and optimization research” Virginia CIT; \$451,013; 1/1/08–12/31/09; 25%; Ron Moffitt (IALR, PI), Gary Pickrell (MSE)

Demetri Telionis

- “Expanded Scope: Development of Comprehensive Model for Simulation, Scale-up and Design of Large Flotation Machines,” FLSmidth Minerals, \$515,123.00, 6/1/08-12/31/09, 31.0% (\$110,000.00), PI with R. Yoon, S. Ragab, G. Luttrell, and P. Vlachos.
- “Aerodynamics of a DiscRotor Aircraft,” Boeing/DARPA, \$662,774.00, 2/2/2009-2/1/2011, 58.0% (\$276,872.00), PI with S. Ragab.
- “Special Topics on Computation and Experimental Calibration of Multi-hole Probes,” Aeroprobe, \$53,152.00, 50% (\$26,576), 6/1/08-5/31/10, PI with S. Ragab.

Surot Thangjitham

- “Online Health Monitoring of Structural Systems Using Multiple Sensor-Based Input/Output Measurements,” NSF-SGER Program, \$60,910, PI: S. Thangjitham (100%), 09/01/08-08/31/09.

Graduate Student Advising by Primary Advisor

Hassan Aref

- Vasileios Vlachakis, PhD, 2010

Romesh C. Batra

- Kaushik Das, PhD, anticipated, Fall 2009.
- Gautam Gopinath, PhD, anticipated, Sept. 2010
- Alireza Chedagani, PhD, anticipated, Dec. 2011
- Chialiang Tsai, PhD, anticipated, Spring 2012
- Xiao, PhD, anticipated, Spring 2012
- Mohammad Islam, PhD, anticipated, Dec. 2011
- Tim Hartmann, PhD (co-advisor with Scott Case), Dec. 2012
- Wilson Johnson, MS, anticipated, Fall 2009.

Scott W. Case

- Vlastimil Kunc, PhD, EM, anticipated December 2009
- Zhenyu Zhang, PhD, EM, anticipated May 2010
- Rich Speckart, PhD, EM, anticipated May 2010 (co-advisor)
- Jessica Dibelka, PhD, EM, anticipated August 2013
- Tim Hartman, PhD, EM, anticipated August 2012 (co-advisor)
- Pierce Umberger, MS, EM, anticipated 2009
- Fred Cook, MS, EM, anticipated 2009

Mark S. Cramer

- F. Bahmani, PhD, anticipated May 2012
- M. Morrison, MS, anticipated January 2010

Rafaella De Vita

- Ratchada Sopakayang, Fall 2010
- Zheyang Guo, PhD, ESM, 2010
- Frances Davis, PhD, ESM, 2012
- Paolo Finotelli, PhD, ESM, 2012

David A. Dillard

- Youliang Guan, PhD, EM, anticipated 2013
- Edoardo Nicoli, PhD, EM, anticipated 2010
- Geoffrey Tizard, MS, EM, anticipated 2010

Norman Dowling

- Attilio Arcari, PhD

John C. Duke, Jr.

- Douglas Harold, MS, Summer 2009, continuing for PhD
- Arnab Gupta, PhD, June 2011

Muhammad Hajj

- Giancarlo Bordonaro, PhD, EM, anticipated Fall 2009
- Andrea Mola, PhD, EM, anticipated Spring 2010
- Mehdi Ghommem, PhD, anticipated Spring 2012
- Giovanni Sansavini, PhD, anticipated Fall 2010

Scott L. Hendricks

- Grant Vogl, PhD (through December, 2008)

Michael W. Hyer

- Hung-Chieh Lo, PhD, May 2010 (anticipated)
- Grant Vogl, PhD, May 2010 (anticipated)
- Gabriela Wolford, PhD, May 2012 (anticipated)

L. Glenn Kraige

- Jeffrey Bolton, PhD

John J. Lesko

- Rich Speckart, EM, anticipated 2009
- Cory Hilton, EM anticipated 2009

Michael L. Madigan

- Dennis Anderson, ESM, PhD, Spring 2010

Roop L. Mahajan

- Pegah Ghanbari Bavarsa

Ali H. Nayfeh

- Arash Bahrami (in progress)

Ishwar K. Puri

- Mehdi Ghommen, PhD, EM 2010 (anticipated, co-advisor)
- Giovanni Sansavini, PhD, EM, 2010 (anticipated, co-advisor).
- Ganesh Balasubramanian, PhD, EM, 2011 (anticipated).
- Monrudee Liangruksa, PhD, EM, 2011 (anticipated).
- Michelle Cooper, MS, EM, 2009 (anticipated)

Saad A. Ragab

- Tong Qin, PhD, Spring 2012
- Kareem Akhtar, MS, Fall 2009

Shane Ross

- Piyush Grover, PhD, EM, anticipated Spring 2010.
- Carmine Senatore, PhD, EM, anticipated Spring 2010.
- Phanindra Tallapragada, PhD, EM, anticipated Fall 2010.
- Jeffrey Twigg, MS, EM, anticipated 2009

Mahendra P. Singh

- Saurabh S. Bisht, anticipated December 2009
- Harsh Nandan, anticipated August 2010.
- H. Kunaporn, anticipated August 2010

Jake Socha

- Farid Jafari, PhD, ESM, Summer 2012

Anne E. Staples

- Omer San, PhD, anticipated Summer 2012
- Yasser Aboelkassem, PhD, anticipated Summer 2011

Mark A. Stremmer

- Mohsen Gheisarieha, PhD, 2010 (anticipated)
- Pankaj Kumar, PhD, 2010 (anticipated)
- Alireza Salmanzadeh, PhD, 2011 (anticipated)

Demetri Telionis

- Yihong Yang, PhD, anticipated Summer 2010
- Hyun Do, PhD, anticipated December 2010

Surot Thangjitham

- Yunkai Lu, PhD, October 2009
- Chalitphan Kunaporn (co-chair with M. P. Singh), PhD, 2010
- Harsh Handan (co-chair with M. P. Sing), PhD, 2010
- Saurabh S. Bisht (co-chair with M. P. Singh), PhD, 2009
- Pong-Gun Song, PhD, 2010

Graduate Student Advising by Affiliate Faculty Members

Rafael Davalos:

- Hadi Shafiee, anticipated PhD 2010
- M. Sano, MS

Scott Huxtable:

- Harikrishna, PhD

Dan Inman:

- Alper Erturk, PhD, anticipated 2009
- Mohamed Amin Karami, PhD, anticipated 2011

Rakesh Kapania:

- Ali Tamijani, PhD, anticipated 2011
- Davide Locatelli, PhD, anticipated 2010

Mark Paul:

- Alireza Karimi, PhD, anticipated 2011

Ray Plaut:

- Pranitha Gottipati, PhD, anticipated 2010

Pavlos Vlachos:

- Michael Brady, PhD, anticipated 2009

Roe-Hoan Yoon

- Hyun Do, PhD, anticipated December 2010 (co-advisor)

Recent Graduates by Primary Advisor

Romesh Batra

- Anoop G. Varghese, PhD, 2008
- Shakti S. Gupta, PhD, 2009
- Alejandro A. Pacheco, PhD, 2009

Scott W. Case

- Jacob Grohs, MS, EM, 2009

David A. Dillard

- Yongqiang (Ron) Li, PhD, EM, 2009
- Hitendra Singh, PhD, EM, 2009

John C. Duke, Jr.

- Douglas Harold, MS, 2009

Ronald D. Kriz

- Miguel Ortega, MS, EM, 2009
- Arun Nair, PhD, EM, 2008

John J. Lesko

- Joshua Wargo, EM, 2009
- Theophanis Theophanous, EM, 2008

Michael L. Madigan

- Joe Welker, 5yr BS/MS, ESM, 2009
- Michael Whitley, 5yr BS/MS, ESM and SBES, 2008

Ali H. Nayfeh

- Imran Akhtar, 2008
- B. Hammad, 2008
- Osama Marzouk, 2009

Ishwar K. Puri

- Anindya Kanti De, PhD, EM, 2008.
- Soumik Banerjee, PhD, EM, 2008.
- Sayangdev Naha, PhD, EM, 2008.
- Ashok Sinha, PhD, EM, 2008.

Saad A. Ragab

- Jesse Wells, MS, 2009

Mahendra P. Singh

- Apoorva Shende, PhD, EM, 2008
- Hyun Shin, 2009

Mark A. Stremler

- Jie Chen, PhD, 2008

Demetri Telionis

- Jose Rullan, PhD, 2009

Suroth Thangjitham

- Pridsadang Kadkhuntod, MS, 2008

Major Advisees Outside ESM

Hassan Aref

- Laust Tophøj, DTU, PhD, 2011
- Johan Rønby Pedersen, DTU, PhD, 2011
- Teis Schnipper, DTU (co-advisor)
- Kåre Hartvig Jensen, DTU (co-advisor)

Scott W. Case

- Michael Pestrak, PhD, MACR, anticipated December 2009

David A. Dillard

- Kshitish Patankar, PhD, MACR, anticipated 2009
- Ben Townsend, MS, CEE, 2008
- John Hennage (co-advised with Larry Mitchell), PhD, ME, anticipated 2010
- Katherine Finlay, PhD, MACR, anticipated 2013

John J. Lesko

- Stephen Kalista, MACR

Michael L. Madigan

- Greg Slota, SBES, PhD, anticipated 2008
- Katie Bieryla, ME, PhD, anticipated 2009
- Sara Matrangola, SBES, PhD, anticipated 2011
- Emily Miller, SBES, PhD, anticipated 2010

Donatus C. Ohanehi

- Ben Townsend, MS, Civil & Environmental Engineering, September 2008

Marie C. Parette

- David Richter, EngE, PhD, anticipated 2010
- James Pembridge, EngE, PhD, anticipated 2012
- Raymond Tucker, CEE, PhD, anticipated 2010

Ishwar K. Puri

- Sonal Mazumder, MACRO, PhD 2011 (with Chris Cornelius, advisor)