Dr. George G. Adams

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EDUCATIONAL BACKGROUND:

University of California, Berkeley, CA, Mechanical Engineering, Ph.D., June 1975

University of California, Berkeley, CA, Mechanical Engineering, M.S., March 1972

Cooper Union, New York, NY, Mechanical Engineering, B.S., June 1969

PROFESSIONAL BACKGROUND:

Northeastern University, Boston, MA, Professor Emeritus of Mechanical and Industrial Engineering (July 2020 – present); College of Engineering Distinguished Professor (July 2004 – June 2020); Professor of Mechanical and Industrial Engineering (July 1986 – June 2020); Affiliated Appointment as Professor of Electrical and Computer Engineering (Jan. 2008 – June 2020); Affiliated Appointment as Professor of Civil and Environmental Engineering (July 2010 – June 2020); Associate Professor of Mechanical Engineering (July 1982 – June 1986); Tenured July 1983; Assistant Professor of Mechanical Engineering (Sept. 1979 – June 1982).

Research in contact mechanics, friction, adhesion, mechanics and tribology of MEMS, nanomechanics, and dynamic instabilities in frictional sliding.

Teaching graduate courses in solid mechanics (elasticity and plasticity, advanced mechanics of materials, vibrations, and advanced dynamics), Microelectromechanical Systems (MEMS), and mathematical methods; undergraduate courses in solid mechanics (statics, dynamics, vibration, and mechanics of materials), mechanical design, design projects, and computer software applications.

Oxford University, Oxford, UK. Academic Visitor, Department of Engineering Science, January – April 2014.

Brown University, Providence, RI. Visiting Professor of Engineering, January – May 2007.

Harvard University, Cambridge, MA. Visiting Scientist in Solid Mechanics, September 1999 – March 2000.

University of California, Berkeley, CA, Visiting Scholar, Mechanical Engineering Department, April – August 1979. Research in moving loads problems.

IBM Research Center, San Jose, CA, Research Associate in Mechanics and Hydrodynamics, January 1978 – March 1979. Analytical and numerical analysis of high-speed flexible rotating disks, including the effect of fluid coupling. Analysis of inkjet printing components.

Clarkson University, Potsdam, NY, Assistant Professor of Mechanical Engineering, September 1975 – August 1979 (on leave January 1978 – August 1979). Research in moving load problems, contact problems, and stress singularities. Taught graduate courses in solid mechanics, and undergraduate courses in solid mechanics and computer programming.

Curtiss-Wright Co., Woodbridge, NJ, Associate Engineer, September 1969 – August 1970. Vibration analysis of multi-mass structures using analytical and numerical methods.

HONORS AND PROFESSIONAL ORGANIZATIONS (past and present):

- Northeastern University *College of Engineering Distinguished Professor*.
- 2013 Captain Alfred E. Hunt Memorial Medal for the best paper of 2012 published by STLE.
- Fellow of the ASME.
- Fellow of the STLE.
- ASME Tribology Division 2009 *K.L. Johnson Award for the Best Paper in Contact Mechanics*.
- College of Engineering 2002 *Excellence in Research Award*.
- Listed in *Who's Who in America*.
- Chair of the *Executive Committee* of the ASME Tribology Division.
- Chair/Co-Founder *Contact Mechanics Technical Committee* of ASME Tribology Division.
- Chair of the Committee on Nanotribology and Micro-/Nano-Systems (NMNS) of the ASME Tribology Division.
- Member of the *Research Committee on Tribology* (RCT) of the ASME Tribology Division.
- Associate Editor of ASME *Journal of Tribology*.
- Associate Editor of *Microsystems Technologies.*
- Associate Editor of STLE *Tribology Transactions.*
- Associate Editor of *Journal of Information Storage and Processing Systems.*
- Member and Proceedings Chair of the *Executive Committee of the Information Storage and Processing Systems* division of the ASME.
- Director and Founder of the *Industrial Relations Group* and *ASME/IRG Connections* of the Boston Section of ASME, 1989-1991.
- Chair of the *Computers in Mechanical Engineering* Subchapter of the Boston Section of ASME, 1988-1989.
- Elected Member of the *Executive Committee of the Boston Section of ASME*.
- *Membership Development Committee of the Applied Mechanics Division* of the ASME.
- Reviewer for numerous technical journals.
- Chaired and organized many technical sessions at various national/international conferences.
- National Science Foundation Fellowship.

CONSULTING:

- Micro-Optical Engineering Corporation
- Polaroid Corporation
- IBM Office Products Division
- Turning Point Software
- Daymarc Corporation

RECENT INVITED TALKS AND SEMINARS:

- G.G. Adams, "Novel Approaches to Characterizing Nanoscale Friction and Work of Adhesion of CNTs Using Measurements Followed by Modelling," Keynote Address at the 9th International Conference on Micro- and Nanosystems, of the ASME IDETC/CIE 2015 Conference, Boston, MA, August 2-5, 2015.
- G.G. Adams, Seminar to the Mechanical Engineering and Applied Mechanics Department at the University of Pennsylvania, March 31, 2015, "Adhesion and Pull-Off Force of an Elastic Indenter from an Elastic Half-Space"
- G.G. Adams, Seminar to the Department of Engineering Science, Cambridge University, March 17, 2014, "A Model of Nanoscale Friction Between a Carbon Nanotube and Substrate"
- G.G. Adams, Seminar to the Institute of Mechanics and Advanced Materials, Cardiff University, March 11, 2014, "Characterizing Nanoscale Friction and Work of Adhesion of CNTs Using Measurements Followed by Modelling"
- G.G. Adams, N.E. McGruer, R.P. Hennessy, and A. Basu, "Reliability of Contacts in a Microswitch," IMECE, November 9-15, 2012, Houston, Texas, IMECE 2012-88558.
- G.G. Adams, "A Model of Nanoscale Friction Between a Carbon Nanotube and a Substrate," XXIII ICTAM, 19-24 August 2012, Beijing, China.
- G.G. Adams, Invited Talk at the STLE Annual Meeting, "A Numerical Model and Experimental Testing of Contacts in a MEMS Switch," May 19, 2010.
- G.G. Adams, AFOSR Sponsored Invited Workshop on Fundamentals of Tribology, May 10-11, 2010, University of Florida, Gainesville, FL.
- G.G. Adams, Keynote address at the Tribology Fundamentals Session entitled "A Multi-Scale Model of Contact and Adhesion," at the World Tribology Congress IV, September 2009.
- G.G. Adams, Invited Presentation at the third ADHESINT International Workshop on Adhesive interactions between particles and surfaces at micro and nano-scales, supported by the Leverhulme Trust, Repino, St. Petersburg, July 1-3, 2009, "Experiments and Multiscale Modeling of Contact and Adhesion in a Microswitch"
- G.G. Adams, Seminar to the Department of Mechanical Engineering and Applied Mechanics of the University of Pennsylvania, February 12, 2009, "Contact and Adhesion in a Microswitch – Ductile and a

- G.G. Adams, Seminar to the Department of Mechanical Science and Engineering at the University of Illinois at Urbana-Champaign, February 25, 2008, "A Numerical and Experimental Investigation of Adhesion In Microcontacts − Ductile And Brittle Separation"
- G.G. Adams, Invited presentation at the NSF Workshop: A Workshop on Friction: A Grand Challenge at the Interface of Solid and Fluid Mechanics, Montreux, Switzerland, March 14, 2008, "Dynamics Instabilities in Frictional Sliding"
- G.G. Adams, Seminar presented at the Georgia Institute of Technology Structural Mechanics Seminar Series, January 18, 2007, "Adhesion Modeling with Applications to a Micromechanical Switch"
- G.G. Adams, Keynote address at the Friction Session entitled "Asperity-Based Models of Micro-Scale Friction," at the World Tribology Congress III, September 2005.
- G.G. Adams, Seminar presented to Division of Engineering and Applied Science, California Institute of Technology, October 27, 2004, "A Scale-Dependent Model for Contact and Friction"
- G.G. Adams, Seminar presented at the Princeton Materials Institute, Princeton University, March 5, 2003, "Scale-Dependent Models for Multi-Asperity Contact and Friction and for Electrical Contacts in a MEMS Switch"
- G.G. Adams, Seminar at the MIME Colloquia Series at Northeastern University, "Asymmetric Asperity Height Distributions in a Scale-Dependent Model for Contact and Friction," October 17, 2003.
- G.G. Adams, Invited talk entitled "A Multi-Asperity Contact and Friction Model With Adhesion," Materials Research Society, Fall 2002.
- G.G. Adams, Seminar at the Northeastern University Civil and Environmental Engineering Seminar, "Self-Excited Oscillations and Interface Stick-Slip in the Sliding of Two Elastic Bodies", January 28, 2000.
- G.G. Adams, Northeastern University Physics Seminar, "Self-Excited Oscillations and Interface Stick-Slip In the Sliding of Two Elastic Bodies," April 13, 2000.
- G.G. Adams, Harvard University Solid Mechanics Seminar "A New Intersonic Steady Slip Pulse Solution Along a Bimaterial Interface," March 7, 2000.
- G.G. Adams, Harvard University Applied Mechanics Colloquium, "MEMS Sensors for a Biomimetic Lobster Robot," March 22, 2000.
- G.G. Adams, Clarkson University Mechanical Engineering Seminar, "MEMS Sensors for a Biomimetic Lobster Robot," February 4, 2000.
- G.G. Adams, Georgia Institute of Technology Structural Mechanics Seminar, "Self-Excited Oscillations and Interface Stick-Slip in the Sliding of Two Elastic Bodies," October 19, 2000.
- G.G. Adams, Invited talk entitled "Contact Modeling – Forces," at *Tribology of Information Storage Devices*, (TISD'99), 1999.
- G.G. Adams, Two Presentations to the Industrial Mathematics Seminar Program at Northeastern University: "Mechanics of Flexible Disks in Information Storage and Processing Systems," Oct. 27, 1999; "Mechanics of Flexible Tapes in Information Storage and Processing Systems," Nov. 10, 1999.

- G.G. Adams, Cornell University, Theoretical and Applied Mechanics Department Seminar, "Self-Excited Oscillations and Interface Stick-Slip in the Sliding of Two Elastic Half-Spaces With Constant Friction," Feb. 11, 1998.
- G.G. Adams, Harvard University, Solid Mechanics Seminar, "Two Elastic Half-Spaces in Relative Sliding Motion Without Slipping," March 16, 1998.
- G.G. Adams, University of Rhode Island, Mechanical Engineering and Applied Mechanics Department Seminar, "Self-Excited Oscillations and Interface Stick-Slip in the Sliding of Two Elastic Half-Spaces With Constant Friction," March 31, 1998.
- G.G. Adams, Boston University, Aerospace and Mechanical Engineering Department Seminar, "Self-Excited Oscillations and Interface Stick-Slip in the Sliding of Two Elastic Half-Spaces With Constant Friction," Dec. 4, 1998.

PATENTS:

- S. Somu, A. Busnaina, N. McGruer, P. Ryan, G.G. Adams, X. Xiong, and T. Kim, *System and Method for integrating a single nanowire into a nanocircuit,* United States Patent 9,117,601, August 25, 2015.
- S. Somu, A. Busnaina, N. McGruer, P. Ryan, G.G. Adams, X. Xiong, and T. Kim, *Method of integrating a single nanowire into a nanocircuit,* United States Patent 8,637,356, January 28, 2014.
- S. Somu, A. Busnaina, N. McGruer, P. Ryan, G.G. Adams, X. Xiong, and T. Kim, *Bistable Nanoswitch,* United States Patent 8,211,765, July 3, 2012.
- S. Somu, A. Busnaina, N. McGruer, P. Ryan, G.G. Adams, X. Xiong, and T. Kim, *Bistable Nanoswitch,* United States Patent 8,031,514, October 4, 2011.
- N.M. Rensing, G.G. Adams, N.E. McGruer, R.W. McClelland, P.M. Zavracky, *Micro-electromechanical optical switch assembly for optical data networks,* United States Patent 6,701,038, March 2, 2004.

UNIVERSITY SERVICE (past and present):

Committee chaired:

Financial Affairs Committee of the Faculty Senate
Mechanical and Industrial Engineering (MIE) Graduate Committee
Mechanical and Industrial Engineering Department Chair Search Committee
MIE Committee on Affiliated Faculty Appointments
NU Administrative Evaluation Oversight Committee of Faculty Senate
NU Faculty Handbook Committee of Faculty Senate
MIE Faculty Search Committees
MIE Merit Review Task Force
MIE Career Development Committees
MIE Coop Liaison Committee
Mechanical, Industrial and Manufacturing Engineering (MIME) Promotion Committee
ME Research Committee
ME Mechanics Division
Faculty Development Committee of the Faculty Senate

ME Graduate Student Seminar Committee
ME Research Colloquium Series

Member of:
Faculty Senate
Faculty Senate Agenda Committee
College of Engineering Faculty Council
STRIDE committee of the AVANCE program
University Graduate Council
College of Engineering Tenure and Promotion Committee
College of Engineering Undergraduate Curriculum Committee
Presidential Commission on the Freshman Year
Graduate Program Review Committee of the Graduate Council
University Undergraduate Curriculum Committee
College of Engineering Strategic Planning Committee
ME Undergraduate Curriculum Committee
Computer Policy Committee of the Department and College
ME Chairperson Review Committee
ME Promotion Committee
ME Merit Review Committee
ME Expectations Committee
ME Accreditation Committee
ME Senior Council
ME Awards Committee

Adviser to:
ASME Student Section.
Freshman, Upperclassman, and Graduate Students.
Tau Beta Pi

RESEARCH GRANTS AND CONTRACTS:

- N.E. McGruer and G.G. Adams (co-PI, 40%), "Design Fundamentals of High Power MEMS," sub-contract through UC San Diego, July 2010 – June 2013, $515,658.
- N.E. McGruer and G.G. Adams (co-PI, 33%), "Center for MEMS Reliability and Design Fundamentals," sub-contract through UC San Diego, Jan. 2007 – June 2010, $763,409.
- N.E. McGruer and G.G. Adams (co-PI, 40%), "Northeastern/Honeywell High-Performance Switch Design and Test," Advanced Sensor Technology, Honeywell, Inc., Aug. 2006 – Dec. 2009, $345,203.
- N.E. McGruer and G.G. Adams (co-investigator, 33%), "High Reliability, One Watt, Contact-Type RF Micromechanical Switches," DARPA, Phase II, Feb. 2005 – Aug. 2006, $1,159,242 ($854,128 is sub-contracted to MicroAssembly Technologies Co., $305,114 stays at NU).
- S. Wadia-Fascetti, M. Sasani, D. Bernal, G.G. Adams (co-PI, 15%), C. Rappaport and B. Shafai, "Interdisciplinary Graduate Program in Sensing, Diagnostics, and Rehabilitation of Structural Systems," US Department of Education GANN, Sept. 2004 – Aug. 2007, $340,785.

- A. Busnaina, many others, G.G. Adams (co-investigator, 5%), "NSEC Center for High-Rate Nanomanufacturing," National Science Foundation, Sept. 2004 – Aug. 2009, $12,400,000.
- N.E. McGruer and G.G. Adams (co-PI, 33%), "Electromechanical Modeling and Microrelay Reliability Physics, Extension," Radant MEMS, Inc., Sept. 2004 – Jan. 2005, $19,777.
- N.E. McGruer and G.G. Adams (co-PI, 33%), "Electromechanical Modeling and Microrelay Reliability Physics," Radant MEMS, Inc., Aug. 2003 – Aug. 2004, $114,853.
- N.E. McGruer and G.G. Adams (co-investigator, 33%), "High Reliability, One Watt, Contact-Type RF Micromechanical Switches," DARPA, Phase I, Sept. 2003 – Feb. 2005, $721,704 ($376,226 is sub-contracted to MicroAssembly Technologies Co., $345,478 stays at NU).
- A. Busnanina, G.G. Adams (co-PI), J. Hopwood, N. Israeloff, and S. Müftü, "Establishing an IUCRC Center Site for Microcontamination Control at Northeastern University," National Science Foundation, July 2002 – June 2007, $250,000.
- A. Busnanina, G.G. Adams (co-PI), J. Hopwood, N. Israeloff, and S. Müftü, "Establishing an IUCRC Center Site for Microcontamination Control at Northeastern University: A Planning Meeting Proposal," Co-PI, National Science Foundation, Aug. 2001 – July 2007, $10,000.
- G.G. Adams (PI-100%), "Modeling and Simulation of a MEMS Micro-Mirror – Phase II," Areté Associates, April 2002 – July 2003, $40,266.
- G.G. Adams (PI-100%), "Modeling and Simulation of a MEMS Micro-Mirror – Phase I," Areté Associates, June 2001 – Dec. 2001, $14,400.
- N.E. McGruer and G.G. Adams (co-PI, 33%), "Micromachined Switches and Relays: Fundamentals and Enhanced Structures II," Analog Devices, Inc., July 2001 – June 2002, $193,481.
- N.E. McGruer and G.G. Adams (co-PI, 33%), "Micromachined Switches and Relays: Fundamentals and Enhanced Structures," Analog Devices, Inc., July 2000 – June 2001, $263,184.
- G.G. Adams (PI-100%), "An Investigation of Certain Dynamic Instabilities in Dry Sliding," National Science Foundation, August 1996 – July 1999, $144,716.
- G.F. Kent and G.G. Adams (co-PI, 44%), "Analytical and Experimental Determination of Failure Mechanisms in the Feeding of Neoprene Compound Into a Molding Machine," joint sponsorship between Barry Controls and the Greater Boston Manufacturing Partnership, February – July 1995, $9,800.
- G.G. Adams (PI-100%), "Impact of a Slider onto a Disk," Seagate Technology, July – October 1992, $17,985.
- Y. Levendis and G.G. Adams (co-PI, 50%), "Mechanical Engineering Research Colloquia Series," Northeastern University Faculty Development Fund, September 1989 – June 1990, $5,000.
- G.G. Adams (PI-100%), "Feeding of Paper Through a Curved Guideway," IBM Office Products Division, August 1983 – September 1984, $35,600.

- G.G. Adams (PI-100%), "A Computer Model of the Flexible Disk/Head Interface," Magnetic Peripherals, Inc., January 1982 – December 1982, $25,600.
- G.G. Adams (PI-100%), "Two-Dimensional Steady Contact Problems in Elasticity," Northeastern University Research and Scholarship Development Fund, July 1980 – June 1981, $2,500.
- G.G. Adams (PI-100%), "An Elastic Layer Resting on an Elastic Foundation and Subjected to a Moving Load," National Science Foundation, July 1978 – August 1979, $30,000.
- G.G. Adams (PI-100%), **"**Moving Load on an Elastic Layer Resting on an Elastic Foundation," National Science Foundation Research Initiation, April 1976 – March 1978, $20,000.

JOURNAL PUBLICATIONS:

1. G.G. Adams, "Spontaneous De-Bonding, Buckling and Delamination of an Elastic Plate Adhering to a Rigid Base: Theoretical Limits," *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences,* Vol. A 480, 2024, 20230578.
2. Y. Chen, G.G. Adams, and D.A. Hills, "Investigation of Stress States Around a Finite-Height Crack," *International Journal of Solids and Structures,* Vol. 284, 2023, 112499.
3. G. G. Adams, "The Contact Stress Distribution in a Receding Contact of an Elastic Layer With a Rigid Base," *International Journal of Solids and Structures,* Vol. 238, 2022, 111384.
4. G.G. Adams, "Buckling of an Elastic Plate/Layer Along a Rigid Base With Adhesion," *Journal of Applied Mechanics,* Vol. 87, No. 2, 2020, 021006, pp. 1-5.
5. D. Hu, J. Papadopoulos, and G.G. Adams, "Prying action in an elastic T-stub tensile connection," *Journal of Constructional Steel Research,* Vol. 169, 2020, 106027, pp. 1-11.
6. G. Adams, "A Crack Close to and Perpendicular to an Interface: Resolution of Anomalous Behavior With a Cohesive Zone," *Journal of Applied Mechanics,* Vol. 86, 2019, 031008, pp. 1-7.
7. D. Hu, J. Papadopoulos, and G.G. Adams, "Prying Action in a Bolted Cantilever Analyzed as a Receding Contact Problem," *Journal of Engineering Mechanics,* Vol. 145, 2019, 04019018, pp. 1-8.
8. G.G. Adams, "A Semi-Infinite Strip Pressed Against an Elastic Half-Plane With Frictional Slip," *Journal of Applied Mechanics,* Vol. 85, 2018, 061001, pp. 1-7.
9. N.K. Mohammadi and G.G. Adams, "Self-Excited Oscillations of a Finite-Thickness Elastic Layer Sliding Against a Rigid Surface With a Constant Coefficient of Friction," *Journal of Applied Mechanics,* Vol. 85, 2018, 021005, pp. 1-7.
10. D. Hu and G.G. Adams, "A Boundary Condition Correction for the Clamped Constraint of Elastic Plate/Beam Theory," *International Journal of Solids and Structures,* Vol. 124, 2017, pp. 229-234.
11. A. Basu, G.G. Adams, and N.E. McGruer, "A Review of Micro-Contact Physics, Materials, and Failure Mechanisms in Direct-Contact RF MEMS Switches," *Journal of Micromechanics and Microengineering,* Vol. 26, 2016, 104004.
12. D. Hu and G.G. Adams, "Adhesion of a Micro-/Nano- Beam/Plate to a Sinusoidal/Grooved Surface," *International Journal of Solids and Structures,* Vol. 99, 2016, pp. 40-47.

13. G.G. Adams, "Frictional Slip of a Rigid Punch on an Elastic Half-Plane," *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, Vol. A 472, 2016, 20160352, pp. 1-12.
14. G. Stan and G.G. Adams, "Adhesive Contact Between a Rigid Spherical Indenter and an Elastic Multi-Layer Coated Substrate," *International Journal of Solids and Structures*, Vol. 87, 2016, pp. 1-10.
15. F. Oweiss and G.G. Adams, "Adhesion of an Axisymmetric Elastic Body: Ranges of Validity of Monomial Approximations and a Transition Model," *Tribology International*, Vol. 100, 2016, pp. 287-292.
16. J.R. Parent, and G.G. Adams, "Adhesion-Induced Tangential Driving Force Acting on a Spherical Particle Lying on a Sinusoidal Surface," *Journal of Adhesion*, Vol. 92, 2016, pp. 273-281.
17. G.G. Adams, "Critical Value of the Generalized Stress Intensity Factor for a Crack Perpendicular to an Interface," *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, Vol. 471, 2015, 20150571, pp. 1-14.
18. S. Berger, N.E. McGruer, and G.G. Adams, "Simulation of Dielectrophoretic Assembly of Carbon Nanotubes using 3D Finite Element Analysis," *Nanotechnology*, 2015, Vol. 26, 155602, pp. 1-10.
19. H. Pan, Y.-C. Wu, G.G. Adams, N.E. McGruer, "Interfacial shear stress between a single-walled carbon nanotube and a gold surface after different physical treatments," *Journal of Colloid and Interface Science*, 2015, Vol. 447, pp. 92-96.
20. G.G. Adams, "Stick, Partial Slip and Sliding in the Plane Strain Micro Contact of Two Elastic Bodies," *Royal Society Open Science*, Vol. 1, 2014, 140363.
21. G.G. Adams and D.A. Hills, "Analytical Representation of the Non-Square-Root Singular Stress Field at a Finite Angle Sharp Notch," *International Journal of Solids and Structures*, Vol. 51, 2014, pp. 4485-4491.
22. A. Basu, R.P. Hennessy, G.G. Adams, and N.E. McGruer, "Hot Switching Damage Mechanisms in MEMS Contacts – Evidence and Understanding," *Journal of Micromechanics and Microengineering*, Vol. 24, 2014, 105004.
23. G.G. Adams, "Adhesion and Pull-Off Force of an Elastic Indenter from an Elastic Half-Space," *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, Vol. 470, 2014, 20140317.
24. Y.-C. Wu, P.J. Ryan, N.E. McGruer, and G.G. Adams, "Separation and Re-Adhesion Processes of Two Adhered Single-Walled Carbon Nanotube Bundles," *Journal of Physics D: Applied Physics*, Vol. 47, 2014, 115301.
25. H. Pan, Y.-C. Wu, G.G. Adams, G.P. Miller, and N.E. McGruer, "Interfacial Shear Stress Between Single-Walled Carbon Nanotubes and Gold Surfaces With and Without an Alkanethiol Monolayer," *Journal of Colloid and Interface Science*, Vol. 407, 2013, pp. 133-139.
26. J.R. Parent and G.G. Adams, "A Model of a Trapped Particle Under a Plate Adhering to a Rigid Surface," *Journal of Applied Mechanics*, Vol. 80, 2013, 051011.

27. Y.-C. Wu, N.E. McGruer, and G.G. Adams, "Adhesive Slip Process Between a Carbon Nanotube and a Substrate," *Journal of Physics D: Applied Physics,* Vol. 46, 2013, 175305.
28. R.P. Hennessy, A. Basu, G.G. Adams, and N.E. McGruer, "Hot-switched lifetime and damage characteristics of MEMS switch contacts," *Journal of Micromechanics and Microengineering,* Vol. 23, 2013, 055003, pp. 1-11.
29. R.P. Hennessy, N.E. McGruer, and G.G. Adams, "Modeling of a Thermal-Electrical-Mechanical Coupled Field Contact," *Journal of Tribology,* Vol. 134, 2012, 041404.
30. L. Chen, Z.J. Guo, H. Joshi, H. Eid, G.G. Adams, and N.E. McGruer, "An Improved SPM-Based Contact Tester for the Study of Microcontacts," *Journal of Micromechanics and Microengineering,* Vol. 22, 2012, 045017.
31. H. Eid, G.G. Adams, N.E. McGruer, A. Fortini, S. Buldyrev, and D. Srolovitz, "A Combined Molecular Dynamics and Finite Element Analysis of Contact and Adhesion of a Rough Sphere and a Flat Surface," *Tribology Transactions,* Vol. 54, 2011, pp. 920-928.
32. H. Eid, N. Joshi, N.E. McGruer, and G.G. Adams, "A Model of Contact With Adhesion of a Layered Elastic-Plastic Microsphere With a Rigid Flat Surface," *Journal of Tribology,* Vol. 133, 2011, 031406.
33. P. Ryan, Y.-C. Wu, S. Somu, G.G. Adams, and N.E. McGruer, "Single-Walled Carbon Nanotube Electromechanical Switching Behavior With Shoulder Slip," *Journal of Micromechanics and Microengineering,* Vol. 21, 2011, 045028.
34. G.G. Adams and N.E. McGruer, "A Review of Adhesion in an Ohmic Microswitch," *Journal of Adhesion Science and Technology,* Vol. 24, 2010, pp. 2571–2595.
35. C. Majidi and G.G. Adams, "Adhesion and Delamination Boundary Conditions for Elastic Plates with Arbitrary Contact Shape," *Mechanics Research Communications,* Vol. 37, 2010, pp. 214-218.
36. Y.-C. Wu and G.G. Adams, "A Robust Analysis of the Actuation of a Carbon-Nanotube-Based Nanoswitch with Sidewall Slip," *Journal of Applied Physics,* Vol. 106, 2009, 054310.
37. G.G. Adams, P. Nagappan, and N.E. McGruer, "Continuum Modeling and Analysis of the Frictional Interaction Between a CNT and a Substrate During Dragging," *Journal of Tribology,* Vol. 131, No. 3, 2009, 032002.
38. C. Majidi and G.G. Adams, "A Simplified Formulation of Adhesion Problems With Elastic Plates," *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences,* Vol. 465, 2009, pp. 2217-2230.
39. Y.-C. Wu and G.G. Adams, "Plastic Yield Conditions for Adhesive Contacts Between a Rigid Sphere and an Elastic Half-Space," *Journal of Tribology,* Vol. 131, 2009, No. 1, 011403.
40. L. Chen, N.E. McGruer, G.G. Adams, and Y. Du, "Separation Modes in Microcontacts Identified by the Rate-Dependence of the Pull-Off Force," *Applied Physics Letters,* Vol. 93, 2008, 053503.
41. J.C. Aceros, N.E. McGruer, and G.G. Adams, "MEMS Microhotplates for Reliability Testing of Thin Films and Nanowires," *Journal of Vacuum Science and Technology B,* Vol. 26, No. 3, 2008, pp. 918-926.
42. P.J. Ryan, G.G. Adams, and N.E. McGruer, "Modeling of a One-Sided Bonded and Rigid Constraint Using Beam Theory," *Journal of Applied Mechanics,* Vol. 75, No. 3, 2008, 031008.

43. Y. Du, G.G. Adams, N.E. McGruer, and I. Etsion, "A Parameter Study of Separation Modes in Adhering Microcontacts," *Journal of Applied Physics,* Vol. 103, 2008, 064902.

44. H. Eid and G.G. Adams, "An Elastic–Plastic Finite Element Analysis of Interacting Asperities in Contact With a Rigid Flat," *Journal of Physics D: Applied Physics*, Vol. 40, 2007, pp. 7432–7439.

45. Z.J. Guo, N.E. McGruer, and G.G. Adams, "Modeling, Simulation, and Measurement of the Dynamic Performance of an Ohmic Contact, Electrostatically Actuated RF MEMS Switch," *Journal of Micromechanics and Microengineering,* Vol. 17, 2007, pp. 1899-1909.

46. L. Chen, H. Lee, Z. J. Guo, N.E. McGruer, K. W. Gilbert, S. Mall, K. D. Leedy, and G. G. Adams, "Contact Resistance Study of Noble Metals and Alloy Films Using a Scanning Probe Microscope Test Station," *Journal of Applied Physics*, Vol. 102, 2007, 074910.

47. A. Pamp, and G.G. Adams, "Deformation of Bowed Silicon Chips Due to Adhesion and Applied Pressure," *Journal of Adhesion Science and Technology,* Vol. 21, 2007, pp. 1021-1043.

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