

Robert L. Jackson
Associate Professor
Department of Mechanical Engineering
Auburn University

Professional Preparation

- Ph.D. Mechanical Engineering, Georgia Institute of Technology,
Thesis Title: *The Wear and Thermo-elastohydrodynamic Behavior of Thrust Washer Bearings Under Non-Axisymmetric Loads*
Major: Friction, Lubrication and Wear Minor: Dynamics and Vibrations
Advisor: Itzhak Green
- M.S. Mechanical Engineering, Georgia Institute of Technology
- B.S. Mechanical Engineering, Georgia Institute of Technology

Appointments

Auburn University – Department of Mechanical Engineering
Associate Professor, Oct. 2009-current

Description: Education and research in Mechanical Engineering, specifically multi-scale tribology and machine design.

Auburn University – Department of Mechanical Engineering
Assistant Professor, July 2004-Oct. 2009

The Center for Surface Engineering and Tribology – Georgia Institute of Technology
Graduate Research Assistant, 1998-2004

Description: Design, maintenance and operation of thrust washer bearing test rig.
Construction and implementation of numerical simulation of thrust washer bearing system.

Georgia Institute of Technology – The Woodruff School of Mechanical Engineering
Undergraduate Research Position, Summer 1997

Raytheon E-Systems Communications Division
Engineering Intern, Summer 1996

Achievements

- 2011 ASME Burt L. Newkirk Award for notable contributions to the field of Tribology as indicated by significant publications before reaching the age of 40.
- 2009 Erle Shobert Prize Paper Award at the 55th IEEE Holm Conference on Electrical Contacts for Jackson, R. L., Malucci, R. D., Angadi, S., Polchow, J. R., A Simplified Model of Multiscale Electrical Contact Resistance and Comparison to Existing Closed Form Models, *The 55th IEEE Holm Conference on Electrical Contacts*, Vancouver, BC, Canada, September 14-16, 2009.
- 2009 STLE Hunt Award: Best paper published in the field of lubrication for Jackson, R. L., Green, I., The Thermoelastic Behavior of Thrust Washer Bearings Considering Boundary Lubrication, Asperity Contact and Thermoviscous Effects, 2008, *Trib. Trans.*, 51, 1, pp. 19–32.
- 2009 Best Reviewer for the ASME Journal of Tribology
- 2008 Best Reviewer for the ASME Journal of Tribology
- Selected as author for chapter in new Encyclopedia of Tribology.
- NSF Fellowship – NSF Summer Institute on Science Fundamentals for Nano-and Bio-Mechanics of Materials, July 2006
- NSF Fellowship – Nanomechanics Summer Short Course on Nanocoatings, July 2004
- 2007 Marquis Who's Who in America
- 2006 Auburn Undergraduate Research Fellowship - Christine Taylor.
- 2008 NSF-CMMI CAREER Proposal Writing Workshop Attendee
- Eagle Scout
- 2001 Who's Who Among Students in American Universities and Colleges
- Pi Tau Sigma
- Gamma Beta Phi Honor Society

Refereed Journal Publications (Accepted:43, Submitted:9):

Accepted

1. Ibrahim Dickey, R., Jackson, R. L., Flowers, G. T. Measurement of Static Friction Coefficients and Comparison to Theoretical Models, Accepted to *J. of Tribol., Trans. ASME*.
2. Angadi, S., Jackson, R. L., Choe, S.-Y., Flowers, G. T., Lee, B.-Y., Zhong, L., A Multi-physics Finite Element Model of a 40A Automotive Connector including Multiscale Rough Surface Contact, Accepted to *J. of Electronic Packaging, Trans. ASME*.
3. Fu, R., Choe, S.-Y., Jackson, R. L., Flowers, G. T. Bozack, M., Zhong, L., Kim, D., Experimental Study of the Vibration-induced Fretting of Silver-plated High Power Automotive Connectors, Accepted to *IEEE Transactions on Components and Packaging Technologies*.
4. Dawkins, J. J., Jackson, R. L., Bevely, D. M., Fractal Terrain Generation for Vehicle Simulation, Accepted to *International Journal of Vehicle Autonomous Systems*.
5. Shah, S., Krithivasan, V., Jackson, R. L., An Electro-mechanical Contact Analysis of a Three-Dimensional Sinusoidal Surface against a Rigid Flat, 2011, *Wear*, 270, 11-12, pp. 914-921.
6. Marghitu, D., Cojocaru, D., Jackson, R. L. Elasto-Plastic Impact of a Rotating Link with a Massive Surface, 2011, *International Journal of Mechanical Sciences*, 53, 4, pp. 309-315.
7. Jackson, R. L., Green, I., On the Modeling of Elastic Contact Between Rough Surfaces, 2011, *Trib. Trans.*, 54, 2, pp. 300 – 314.
8. Kim, S. J., Dean, R., Jackson, R. L., Flowers, G., An Investigation of the Damping Effects of Various Gas Environments on a Vibratory MEMS Device, 2011, *Tribology International*, 44, 2, pp. 125-133.
9. H. Wang, M. Zou, R. L. Jackson, P. R. Larson, M. B. Johnson, Nanoindentation Modeling of a Nanodot-Patterned Surface on a Deformable Substrate, 2010, *International Journal of Solids and Structures*, 47, 22-23, pp. 3203-3213.
10. Wadwalkar, S. S., Jackson, R. L., Kogut, L., A Study of The Elastic Plastic Deformation of Heavily Deformed Spherical Contacts, 2010, *IMEchE Part J, Journal of Engineering Tribology*, 224, pp. 1091-1102.
11. Goedecke, A., Jackson, R. L., Mock, R., Asperity Creep under Constant Force Boundary Conditions, 2010, *Wear*, 268, 11-12, pp. 1285-1294.
12. Jackson, R. L., A Scale Dependent Simulation of Liquid Lubricated Textured Surfaces, 2010, *ASME J. Trib.*, 132, 2, pp. 022001.
13. Jackson, R. L., An Analytical Solution to an Archard-type Fractal Rough Surface Contact Model, 2010, *STLE Trib. Trans.*, 53, 4, pp.543 - 553.
14. Jackson, R. L., Green, I., Marghitu, D., Predicting the Coefficient of Restitution of Impacting Elastic-Perfectly Plastic Spheres, 2010, *Nonlinear Dynamics*, 60, 3, pp. 217–229.

15. Wilson, W. E., Angadi, S. V., Jackson, R. L., Surface Separation and Contact Resistance Considering Sinusoidal Elastic-Plastic Multi-Scale Rough Surface Contact, 2010, *Wear*, 268, 1-2, pp. 190-201.
16. Singh, R. A., Yoon, E.-S., Jackson, R. L., Biomimetics: The science of imitating nature, 2009, *Tribology & Lubrication Technology*, 65, 2, pp. 40-47.
17. Streater, J. L., Jackson, R. L., A Model for the Liquid-Mediated Collapse of 2-D Rough Surfaces, 2009, *Wear*, 267, 9-10, pp. 1436-1445.
18. Angadi, S. V., Jackson, R. L., Choe, S.-Y., Flowers, G. T., Suhling, J. C., Chang, Y.-K., Ham J.-K., Reliability and Life Study of Hydraulic Solenoid Valve - Part 1 - A Multi-physics Finite Element Model, 2009, *Engineering Failure Analysis*, 16, 3, pp. 874-887.
19. Angadi, S. V., Jackson, R. L., Choe, S.-Y., Flowers, G. T., Suhling, J. C., Chang, Y.-K., Ham J.-K., Bae, J.-I., Reliability and Life Study of Hydraulic Solenoid Valve - Part 2 - Experimental Study, 2009, *Engineering Failure Analysis*, 16, 3, pp. 944-963.
20. Duvvuru, R. S., Jackson, R. L., Hong, J. W., Self-adapting Micro Scale Surface Grooves For Hydrodynamic Lubrication, 2009, *Trib. Trans.*, 52, 1, pp.1-11.
21. Jackson, R. L., Krithivasan, V., Wilson, W. E., The Pressure to Cause Complete Contact between Elastic Plastic Sinusoidal Surfaces, 2008, *IMEchE J. of Eng. Trib.*, 222, 7, pp. 857-863.
22. Jackson, R. L., Bhavnani, S. H., Ferguson, T. P., A Multi-scale Model of Thermal Contact Resistance between Rough Surfaces, 2008, *J. of Heat Transfer, Trans. ASME*, 130, 8, pp. 081301.
23. Mahajan, M., Jackson, R. L., Flowers, G. T., Experimental and Analytical Investigation of a Dynamic Gas Squeeze Film Bearing, 2008, *Trib. Trans.*, 51, 1, pp. 57-67.
24. Jackson, R. L., Green, I., The Thermoelastic Behavior of Thrust Washer Bearings Considering Boundary Lubrication, Asperity Contact and Thermoviscous Effects, 2008, *Trib. Trans*, 51, 1, pp. 19-32.
25. Jackson, R. L., Green, I., An Experimental Investigation of Various Materials on Thrust Washer Bearing Operation, 2007, *IMEchE Part J*, 221, 7 pp. 761-770.
26. Krithivasan, V., Jackson, R. L., An Analysis of Three-Dimensional Elasto-Plastic Sinusoidal Contact, 2007, *Tribology Letters*, 27, 1, pp. 31-43.
27. Almeida, L., Ramadoss, R., Jackson, R. L., Ishikawa, K., Yu, Q., Laterally actuated multi-contact MEMS Relay fabricated using MetalMUMPS process: Experimental Characterization and Multiscale Contact Modeling, 2007, *J. Micro/Nanolith. MEMS MOEMS* , 6, 2, 023009.
28. Jackson, R. L., Kogut, L., Electrical Contact Resistance Theory for Anisotropic Conductive Films Considering Electron Tunneling and Particle Flattening, 2007, *IEEE Transactions on Components and Packaging Technologies*, 30, 1, pp. 59-66.
29. Jackson, R. L., Duvvuru, R. S., Meghani, H., Mahajan, M., An Analysis of Elasto-plastic Sliding Spherical Asperity Interaction, 2007, *Wear*, 262, 1-2, pp. 210-219.
30. Jackson, R. L., Streater, J. L., A Multiscale Model for Contact between Rough Surfaces, 2006, *Wear*, 261, 11-12, pp. 1337-1347.

31. Jackson, R. L., Self Adapting Mechanical Step Bearings for Variations in Load, 2005, *Tribology Letters*, 20, 1, pp. 11-20.
32. Jackson, R. L., The Effect of Scale Dependant Hardness on Elasto-plastic Asperity Contact between Rough Surfaces, 2006, *Trib. Trans.*, 49, 2, pp.135-150.
33. Almeida, L., Jackson, R., Ramadoss, R., Ishikawa, K., Yu, Q., Study of the electrical contact resistance of multi-contact MEMS relays fabricated using the MetalMUMPs process, 2006, *J. Micromech. Microeng.*, 16, 7, pp. 1189-1194.
34. Kim, D., Jackson, R. L., Green, I., Experimental Investigation of Thermal and Hydrodynamic Effects on Radial Grooved Thrust Washer Bearings, 2006, *Trib. Trans.* 49, 2, pp.192-201.
35. Jackson, R. L., Green, I., The Behavior of Thrust Washer Bearings Considering Mixed Lubrication and Asperity Contact, 2006, *Trib. Trans.*, 49, 2, pp.233-247.
36. Jackson, R. L., Kogut, L., A Comparison of Flattening and Indentation Approaches for Contact Mechanics Modeling of Single Asperity Contacts, 2006, *J. of Tribol., Trans. ASME*, 128, 1, pp. 209-212.
37. Kogut, L., Jackson, R. L., A Comparison of Elastic Contact Modeling Utilizing Statistical and Fractal Approaches, 2006, *J. of Tribol., Trans. ASME*, 128, 1, pp. 213-217.
38. Jackson, R. L., Green, I., 2005, A Finite Element Study of Elasto-plastic Hemispherical Contact Against a Rigid Flat, *J. of Tribol., Trans. ASME*, 127, 2, pp. 343-354.
39. Jackson, R. L., Chusoipin, I., Green, I., A Finite Element Study of the Residual Stress and Strain Formation in Spherical Contacts, 2005, *J. of Tribol., Trans. ASME*, 127, 3, pp. 484-493.
40. Jackson, R. L., Green, I., A Statistical Model of Elasto-plastic Asperity Contact of Rough Surfaces, 2006, *Tribol. Int.*, 39, 9, pp. 906-614.
41. Quicksall, J., Jackson, R. L., Green, I., 2004, Elasto-plastic Hemispherical Contact for Varying Mechanical Properties, *IMEchE J. of Eng. Trib.* 218, pp.313-322.
42. Jackson, R. L., Green, I., 2003, Experimental Analysis of the Wear, Life and Behavior of PTFE Coated Thrust Washer Bearings Under Non-axisymmetric Loading, *Trib. Trans.*, 46, 4, pp. 600-607.
43. Jackson, R. L., Green, I., 2001, Study of the Tribological Behavior of a Thrust Washer Bearing, *Trib. Trans.*, 44, 3, pp. 504-508.

Submitted

1. Fu, R., Choe, S.-Y., Jackson, R. L., Flowers, G. T., Kim, D., Modeling and Analysis of Vibration-induced Changes in Connector Resistance of High Power Electrical Connectors for Hybrid Vehicles, Submitted to *Mechanics Based Design of Structures and Machines*,
2. Polchow, J. R., Angadi, S., Fu, R., Choe, S.-Y., Jackson, R. L., Flowers, G. T., Lee, B.-Y., Zhong, L., A Multi-Physics Finite Element Analysis of Round Pin High Power Connectors, Submitted to *Tribology Letters*.

3. Goedecke, A., Jackson, R. L., Mock, R., A Fractal Expansion of a Three Dimensional Elastic-Plastic Multiscale Rough Surface Contact Model, Submitted to *Tribology International*.
4. Vadgama, B. N., Harris, Daniel K., Jackson, R. L., Molecular Dynamics Simulations of Dry Sliding Copper Asperities to Study Friction and Deformation, Submitted to the *ASME Journal of Tribology*.
5. Smyth, P. A., Rifkin, R. E., Jackson, R. L., Hanson, R. R., A Surface Roughness Comparison of Cartilage in Different Types of Synovial Joints, Submitted to the *Journal of Biomechanics*.
6. Smyth, P. A., Rifkin, R. E., Jackson, R. L., Hanson, R. R., The Fractal Structure of Equine Articular Cartilage, Submitted to the *Tribology Letters*.
7. Smyth, P. A., Rifkin, R. E., Jackson, R. L., Hanson, R. R., Equine Synovial Joint Cartilage Dehydration Study, Submitted to the *American Journal of Veterinary Research*.
8. Jackson, R. L., Ghaednia, H., Yasser, A. E., Bhavnani, S. Knight, R., A Closed-Form Multiscale Thermal Contact Resistance Model, Submitted to the *International Journal of Heat and Mass Transfer*.
9. Ghaednia, H., Jackson, R. L., Khodadadi, J., Experimental Analysis of Stable CuO Nanoparticle-Enhanced Lubricants, Submitted to the *STLE Tribology Transactions*.

Book Chapter:

Encyclopedia of Tribology
Tribology Handbook

Other Publications or Technical Reports:

Jackson, R. L., Willis, R. J., Arnold, M., Palmer, C., Synthesis of the Effects of Pavement Properties on Tire Rolling Resistance, 2011, NCAT Report 11-05.

Jackson, R. L., Green, I., Discussion of “Experimental Investigation of Fully Plastic Contact of a Sphere Against a Hard Flat” by J. Jamari and D. J. Schipper, *J. of Tribol., Trans. ASME*.

Proceedings and Conference Presentations (74):

1. Jackson, R. L., Green, I., An Investigation of a Tilted Thrust Washer Bearing Including TEHD, Asperity Contact and Boundary Lubrication Part 1: Numerical Model, *2004 STLE Annual Meeting*, Toronto, Ontario, Canada, May 16 – 20, 2004.
2. Jackson, R. L., Green, I., An Investigation of a Tilted Thrust Washer Bearing Including TEHD, Asperity Contact and Boundary Lubrication Part 2: Experimental Results, *2004 STLE Annual Meeting*, Toronto, Ontario, Canada, May 16 – 20, 2004.

3. Jackson, R. L., Chusoipin, I., Green, I., A Finite Element Study of the Residual Stress and Strain Formation in Spherical Contacts, *2004 ASME/STLE International Tribology Conference*, Long Beach, California, October 24-27, 2004.
4. L. Almeida, K. Ishikawa, Q. Yu, R. Jackson, and R. Ramadoss, "Reliability Study of Ohmic contact type MEMS Relay Fabricated Using MetalMUMPS Process," *IEEE International Microwave Symposium 2005*, Long Beach, California, June 11-17, 2005.
5. Jackson, R. L., The Effect of Scale Dependant Hardness on Elasto-plastic Asperity Contact between Rough Surfaces, *2005 STLE Annual Meeting*, Las Vegas, NV, May 15-19, 2005.
6. Kim, D., Jackson, R. L., Green, I., Experimental Investigation of Thermal and Hydrodynamic Effects on Radial Grooved Thrust Washer Bearings, *2005 STLE Annual Meeting*, Las Vegas, NV, May 15-19, 2005.
7. Quicksall, J., Jackson, R. L., Green, I., 2004, Elasto-plastic Hemispherical Contact for Varying Mechanical Properties, *2005 World Tribology Conference*, Washington, D.C., Sept. 12-16, 2005.
8. Jackson, R. L., Streater, J. L., A Model for Multi-scale Contact between Real Rough Surfaces, *2005 World Tribology Conference*, Washington, D.C., Sept. 12-16, 2005.
9. Kogut, L., Jackson, R. L., Comparison of Elastic Contact Modeling Utilizing Statistical and Fractal Approaches, *2005 World Tribology Conference*, Washington, D.C., Sept. 12-16, 2005.
10. Jackson, R. L., Self Optimizing 'Smart' Step Bearings, *2005 ASME International Mechanical Engineering Congress and Exposition*, Orlando, FL, Nov. 5-11, 2005.
11. Jackson, R. L., A Micro to Nano-scale Simulation of Liquid Lubricated Textured Surfaces, *2006 ECI Frontiers of Boundary Lubrication Conference*, Lyon, France, April 9-14, 2006.
12. L. Almeida , K. Ishikawa , Q. Yu, R. Jackson , and R. Ramadoss, "Experimental and Theoretical Investigation of Contact Resistance and Reliability of Lateral Contact type Ohmic MEMS Relays," (Invited paper) *SPIE & Photonics West MOEMS-MEMS MICRO & NANOFABRICATION Symposium*, San Jose, CA, Jan. 21-26, 2006.
13. Mahajan, M., Jackson, R. L., Flowers, G. T., Experimental and Analytical Investigation of a Dynamic Gas Squeeze Film Bearing, *2006 STLE Annual Meeting*, Calgary, Canada, May 7-11, 2006.
14. Jackson, R. L., Green, I., An Experimental Investigation of Various Materials on Thrust Washer Bearing Operation, *2006 STLE Annual Meeting*, Calgary, Canada, May 7-11, 2006.
15. Jackson, R. L., Investigating the Lubricating Properties of Biofuels, *Alternative Energy Solutions From Alabama's Natural Resources*, Auburn, AL, October 23-24, 2006.
16. Jackson, R. L., Almeida, L., Ramadoss, R., Multiscale Contact Resistance Modeling of Ohmic MEMS Relays including Scale Dependant Properties, Dry

- and Meniscus Adhesion, Proceedings of the 2006 *STLE/ASME International Joint Trib. Conference*, San Antonio, TX, Oct. 23-25, 2006.
17. Jackson, R. L., Kogut, L., Electrical Contact Resistance Theory for Anisotropic Conductive Films Considering Electron Tunneling and Particle Flattening. 2006 *STLE/ASME International Joint Trib. Conference*, San Antonio, TX, Oct. 23-25, 2006.
 18. Jackson, R. L., Duvvuru, R. S., Meghani, H., Mahajan, M., An Analysis of Elasto-plastic Sliding Spherical Asperity Interaction, 2006 *STLE/ASME International Joint Trib. Conference*, San Antonio, TX, Oct. 23-25, 2006.
 19. Jackson, R. L., Marghitu, D. B., Green, I., Predicting the Coefficient of Restitution of Impacting Elastic-Perfectly Plastic, 2006 *STLE/ASME International Joint Trib. Conference*, San Antonio, TX, Oct. 23-25, 2006.
 20. Jackson, R. L., Bhavnani, S. H., Ferguson, T. P., A Multi-scale Model of Thermal Contact Resistance between Rough Surfaces, 2006 *ASME International Mechanical Engineering Congress and Exposition*, Chicago, IL, USA – Nov. 5-10, 2006.
 21. Duvvuru, R. S., Jackson, R. L., Hong, J. W., Novel Micro Scale Surface Textures For Hydrodynamic Lubrication, 2007 *STLE Annual Meeting*, Philadelphia, PA, May 6-10, 2007.
 22. Lei, J., Jackson, R. L., A Numerical Simulation of Lubricated Grooved Self Adapting Surfaces, 2007 *STLE Annual Meeting*, Philadelphia, PA, May 6-10, 2007.
 23. Jackson, R. L., Ashurst, W. R., Flowers, G. T., Angadi, S., Choe, S., Bozack, M. J., The Effect of Initial Connector Insertions on Electrical Contact Resistance, *The 53rd IEEE Holm Conference on Electrical Contacts*, Pittsburg, PA, September 16-19, 2007.
 24. Streator, J. L., Jackson, R. L., Critical Conditions for Liquid Mediated Collapse of Two Dimensional Rough Surfaces, *STLE/ASME International Joint Trib. Conference*, San Diego, CA, October 22-24, 2007 (IJTC2007-44411).
 25. Wilson, W. E., Jackson, R. L., Angadi, S., Streator, J. L., Surface Separation and Contact Resistance considering Elasto-plastic Multi-Scale Rough Surface Contact, 2007 *STLE/ASME International Joint Trib. Conference*, San Diego, CA, October 22-24, 2007 (IJTC2007-44324).
 26. Krithivasan, V., Jackson, R. L., An Analysis of Three-Dimensional Elasto-Plastic Sinusoidal Contact, 2007 *STLE/ASME International Joint Trib. Conference*, San Diego, CA, October 22-24, 2007 (IJTC2007-44014).
 27. Jackson, R. L., A Multiscale Study of the Average Real Contact Pressure between Rough Surfaces, *ASME Chattahoochee Symposium on Contact Mechanics*, Auburn, AL, April 17, 2008
 28. Taylor, C.L., Came, D.G., Zabala, M., and Jackson, R.L., A High Temperature Test Rig to Evaluate Bearings Using in Food Baking Applications, 2008 *STLE Annual Meeting*, Cleveland, OH, May 18-22, 2008.
 29. Jackson, R.L., A Micro to Nano-scale Simulation of Liquid Lubricated Textured Surfaces, 2008 *STLE Annual Meeting*, Cleveland, OH, May 18-22, 2008.
 30. Wang, H., Zou, M., Jackson, R. L., Larson, P., Johnson, M., Nanoindentation on a Ni Nanodot-patterned Surface, *Proceedings of 2nd Integration &*

Commercialization of Micro & Nanosystems International Conference & Exhibition (MicroNano2008), Clear Water Bay, Kowloon, Hong Kong, June 3-5, 2008.

31. Jackson, R. L., Wilson, W. E., Multiscale Contact Modeling Using the Fourier Series and Some Recent Findings *Gordon Research Conference on Tribology*, Colby College, ME, July 6-11, 2008.
32. Wilson, W. E., Angadi, S., Jackson, R. L., Electrical Contact Resistance Considering Multi-Scale Roughness, *The 54th IEEE Holm Conference on Electrical Contacts*, Orlando, FL, October 27-29, 2008.
33. Angadi, S., Wilson, W. E., Jackson, R. L., Flowers, G. T., Rickett, B. I., A multi-physics finite element model of an electrical connector considering rough surface contact, *The 54th IEEE Holm Conference on Electrical Contacts*, Orlando, FL, October 27-29, 2008.
34. Jackson R. L., Wilson, W. E., Angadi, S., A Study of the Average Real Contact Pressure Between Rough Surfaces, *2008 STLE/ASME International Joint Trib. Conference*, Miami, FL, October 22-24, 2008.
35. Jackson R. L., Krithivasan, V., Wilson, W. E., The Pressure to Cause Complete Contact between Elastic Plastic Sinusoidal Surfaces, *2008 STLE/ASME International Joint Trib. Conference*, Miami, FL, October 22-24, 2008.
36. Wilson, W. E., Jackson R. L., Multiscale Prediction of the Surface Separation between Rough Surfaces, *2008 STLE/ASME International Joint Trib. Conference*, Miami, FL, October 22-24, 2008.
37. Huang, W., Jackson R. L., A Molecular Model of Asperity Contact and Comparison to Continuum Based Models, *2008 STLE/ASME International Joint Trib. Conference*, Miami, FL, October 22-24, 2008.
38. Wadwalker, S. Jackson R. L., Payton, L., A Study of Plastic Deformation of Heavily Loaded Spherical Surfaces, *2008 STLE/ASME International Joint Trib. Conference*, Miami, FL, October 22-24, 2008.
39. Angadi, S. V., Jackson, R. L., Choe, S.-Y., Flowers, G. T., Suhling, J. C., Chang, Y.-K., Ham J.-K., Reliability and Life Study of Hydraulic Solenoid Valve - Part 1 - A Multi-physics Finite Element Model, Submitted to *SAE 2009 World Congress*, Detroit, MI, April 20-23, 2009.
40. Angadi, S. V., Jackson, R. L., Choe, S.-Y., Flowers, G. T., Suhling, J. C., Chang, Y.-K., Ham J.-K., Bae, J.-I., Reliability and Life Study of Hydraulic Solenoid Valve - Part 2 - Experimental Study, Submitted to *SAE 2009 World Congress*, Detroit, MI, April 20-23, 2009.
41. Jackson, R.L., An Analytical Solution to an Archard-type Fractal Rough Surface Contact Model, *2009 STLE Annual Meeting*, Orlando, FL, May 17-21, 2009.
42. Jackson, R. L., Malucci, R. D., Angadi, S., Polchow, J. R., A Simplified Model of Multiscale Electrical Contact Resistance and Comparison to Existing Closed Form Models, *The 55th IEEE Holm Conference on Electrical Contacts*, Vancouver, BC, Canada, September 14-16, 2009.
43. Jackson, R. L., A Semi-analytical Model of Contact Resistance from Sinusoidal Asperity or Wavy Surface Contact, *The 55th IEEE Holm Conference on Electrical Contacts*, Vancouver, BC, Canada, September 14-16, 2009.

44. Dawkins, J. J., Bevly, D. M., Jackson, R. L., Multiscale Terrain Characterization Using Fourier and Wavelet Transforms For Unmanned Ground Vehicles, *ASME Dynamic Systems and Controls Conference*, Hollywood, CA, October 12-14, 2009
45. Kim, S. J., Dean, R., Jackson, R. L., Flowers, G., An Investigation of the Damping Effects of Various Gas Environments on a Vibratory MEMS Device (DETC2009/VIB-87640), *2009 ASME International Design Engineering Technical Conferences (IDETC) & Computers and Information in Engineering Conference (CIE)*, San Diego, CA, August 30 - September 2, 2009.
46. Krithivasan, V., Jackson, R. L., Green, R. W., Choe, S.-Y., "Characterization of Tire Behavior by a Finite Element Method", *Proceedings of the 28th Annual Meeting and Conference on Tire Science and Technology*, Akron, OH, September 15-16, 2009, pp. 3.2(14).
47. Jackson, R. L., Green, I., An FFT Deterministic Simulation of Elastic Rough Surfaces in Three-Dimensional Contact and Model Analysis, *ASME/STLE International Joint Tribology Conference*, Memphis, TN, October 19-21 , 2009.
48. Banu, E. A., Marghitu, D., Jackson, R. L., Impact of a Compound Pendulum with a Surface Using a Nonlinear Contact Force, *ASME/STLE International Joint Tribology Conference*, Memphis, TN, October 19-21 , 2009.
49. Goedecke, A., Jackson, R. L., Mock, R., Analytical Results for the Resolution-Dependent Progression of Contact Area in a Fractal Multi-scale Contact Model, *ASME/STLE International Joint Tribology Conference*, Memphis, TN, October 19-21 , 2009.
50. Wang, H., Zou, M., Jackson, R. L., Larson, P., Johnson, M., NanoIndentation of a Deformable Substrate Covered by Patterned Nanodot Asperities, *ASME/STLE International Joint Tribology Conference*, Memphis, TN, October 19-21 , 2009.
51. Wadwalker, S. S., Jackson, R. L., A Spherical Contact Model Including Severe Plastic Deformation, *ASME/STLE International Joint Tribology Conference*, Memphis, TN, October 19-21 , 2009.
52. Dawkins, J. J., Shah, S. G., Jackson, R. L., A Study of Real Area of Contact for Tire/Road Interface, *ASME/STLE International Joint Tribology Conference*, Memphis, TN, October 19-21 , 2009.
53. Polchow, J. R., Huang, W., Jackson, R. L. Effects of Lattice Orientation and Size on Molecular Asperity Contact Models, *ASME/STLE International Joint Tribology Conference*, Memphis, TN, October 19-21 , 2009.
54. Jackson, R.L., Hanson, R., Jackson, R. L., A Study of the Mechanical Self Adapting Ability of Lubricated Biological Joint Surfaces , *Third International Conference on Mechanics of Biomaterials and Tissues*, Clearwater, FL, December, 13-17, 2009.
55. Ibrahim, R., Jackson, R., Flowers, G. Measurement of Static Friction Coefficients and Comparison to Theoretical Models, *2010 STLE Annual Meeting*, Las Vegas, NV, May 16-20, 2010.
56. Jackson, R. L., Wilson, W. E., Marghitu, B. D., Craciunoiu, N., Multi-scale Thermal Contact Resistance, *2010 International Conference of Mechanical Engineering (ICOME)*, Craiova, Romania, April 17-30, 2010.

57. Krithivasan, V., Jackson, R. L., Green, R. W., Choe, S.-Y., "Sensor Module Development for Study of Tire Deformation ", *Proceedings of the 29th Annual Meeting and Conference on Tire Science and Technology*, Akron, OH, September 20-21, 2010.
58. Fu, R., Choe, S.-Y., Jackson, R. L., Flowers, G. T. Bozack, M., Zhong, L., Kim, D., Experimental Study of the Vibration-induced Fretting of Silver-plated High Power Automotive Connectors, *The Joint 25th International Conference on Electrical Contacts and the 56th IEEE Holm Conference on Electrical Contacts*, Charleston, SC, USA, October 4-7, 2010.
59. Polchow, J. R., Angadi, S., Fu, R., Choe, S.-Y., Jackson, R. L., Flowers, G. T., Lee, B.-Y., Zhong, L., A Multi-Physics Finite Element Analysis of Round Pin High Power Connectors, *The Joint 25th International Conference on Electrical Contacts and the 56th IEEE Holm Conference on Electrical Contacts*, Charleston, SC, USA, October 4-7, 2010.
60. Angadi, S., Jackson, R. L., Choe, S.-Y., Flowers, G. T., Lee, B.-Y., Zhong, L., A Multi-physics Finite Element Model of a 40A Automotive Connector including Multiscale Rough Surface Contact, *The Joint 25th International Conference on Electrical Contacts and the 56th IEEE Holm Conference on Electrical Contacts*, Charleston, SC, USA, October 4-7, 2010.
61. Gao, J., Chen, C., Flowers, G. T., Jackson, R. L., and Bozack, M., The Influence of the Particulate Contaminants on Vibration- Induced Fretting Degradation in Electrical Connectors, *The Joint 25th International Conference on Electrical Contacts and the 56th IEEE Holm Conference on Electrical Contacts*, Charleston, SC, USA, October 4-7, 2010.
62. Fu, R., Angadi, S., Shah, S., Jackson, R. L., Choe, S.-Y., An Analysis of Electro-Thermo-Mechanical Asperity Contact, *STLE/ASME International Joint Tribology Conference*, San Francisco, CA, October 17-20 , 2010.
63. Jackson, R. L., A Model for the Adhesion of Multiscale Rough Surfaces in MEMS, 2011 Joint IEEE International Conference on Industrial Electronics (ICIT), Auburn, AL, USA, March 14-17, 2011.
64. Vadgama, B., Harris, D., Jackson, R. L., Molecular Dynamics Simulations of Dry Sliding Copper Asperities to Study Friction and Frictional Energy Dissipation, *2011 STLE Annual Meeting*, Atlanta, GA, May 15-19, 2011.
65. Rifkin, R., Smyth, P., Jackson, R. L., Hanson, R., Surface Roughness Comparison of Synovial Joints, *2011 STLE Annual Meeting*, Atlanta, GA, May 15-19, 2011.
66. Smyth, P., Rifkin, R., Jackson, R. L., Hanson, R., The Fractal Structure of Equine Cartilage, *2011 STLE Annual Meeting*, Atlanta, GA, May 15-19, 2011.
67. Xu, Y., Marghita, D., Jackson, R. L., The Impact of Two Link Chain with a Flat Surface, *2011 STLE Annual Meeting*, Atlanta, GA, May 15-19, 2011.
68. Jackson, R. L., A Multi-scale Method for Calculating the Plasticity Index, *2011 STLE Annual Meeting*, Atlanta, GA, May 15-19, 2011.
69. Ghaednia, H., Jackson, R. L., Khodadadi, J., Experimental Analysis of Stable CuO Nanoparticle-Enhanced Lubricants *2011 STLE Annual Meeting*, Atlanta, GA, May 15-19, 2011.

70. Crandall, E. R., Flowers, G. T., Jackson, R., Lall, P., Bozack, M. J., Growth of Sn Whiskers Under Net Compressive and Tensile Stress States, *The 57th IEEE Holm Conference on Electrical Contacts*, Minneapolis, MN, USA, Sept. 11-14, 2011.
71. Rodekohl, C., Flowers, G. T., Bozack, M. J., Jackson, R. L., Martens, R. Zhao, Z., Crandall, E., Starman, V., Bitner, T., Street, J., Correlation of Intrinsic Thin Film Stress Evolution and IMC Growth with Whisker Growth, *The 57th IEEE Holm Conference on Electrical Contacts*, Minneapolis, MN, USA, Sept. 11-14, 2011.
72. Ghaednia, H., Jackson, R. L., A Contact Model for Rough Surfaces Separated by Nano Particle Laden Lubricants, 2011 *ASME/STLE International Joint Tribology Conference*, Los Angeles, CA, October 24-26, 2011.
73. Ghaednia, H., Jackson, R. L., An Analysis of the Adhesion of Contacting Three-dimensional Wavy or Sinusoidal Surfaces, 2011 *ASME/STLE International Joint Tribology Conference*, Los Angeles, CA, October 24-26, 2011.
74. Jackson, R. L., Ghaednia, H., Bhavnani, S., Knight, R., An Experimental Evaluation of a Closed-Form Multiscale Thermal Contact Resistance Model, 2011 *ASME/STLE International Joint Tribology Conference*, Los Angeles, CA, October 24-26, 2011.

Invited Lectures and Seminars: 13

1. "An Introduction to Tribology and Related Research at Auburn University," July 20, 2011, Renewable Fuels Workshop, Auburn University.
2. "Multiscale Electrical and Thermal Contact Resistance," Feb. 18, 2010, Physics Department, Auburn University.
3. "Hydraulic Solenoid Valve Reliability and Modeling Study," May 29, 2008, *Korea Testing Laboratory*, Seoul, Korea.
4. "Multiscale Contact Modeling: Incorporating Micro and Nano-scale Surface Contact Effects into Larger Scale Component Models," 2008 *Materials Engineering Seminar Series*, Auburn University.
5. "Multiscale Modeling of Contact and Friction," May 22, 2007, *Korea Institute of Science and Technology*, Seoul, Korea.
6. "Multiscale Contact Modeling: Incorporating Micro and Nano-scale Surface Contact Effects into Larger Scale Component Models," Symposium on Virtual Tribology, 2007 *STLE/ASME International Joint Trib. Conference*.
7. "Multi-scale 'Smart' Surfaces for Bearing and Machine Interfaces," March 31, 2006, *NASA Glenn Research Center*, Cleveland, OH.
8. "Multi-scale 'Smart' Surfaces for Bearing and Machine Interfaces," March 23, 2006, *Caterpillar Inc.*, Peoria, IL
9. "Compressible Squeeze Film Damping," January 24, 2006, *Qualcomm, MEMS Technologies*, San Jose, CA.
10. "Multi-scale 'Smart' Surfaces for Bearing and Machine Interfaces," December 14, 2005, *Hughes Christensen*, Houston, TX.

11. "The Behavior of Thrust Washer Bearings Considering the Effects of Thermoelastic Deformation and Asperity Contact," *March 30, 2005, Oak Ridge National Laboratory.*
12. "The Behavior of Thrust Washer Bearings Considering the Effects of Thermoelastic Deformation and Asperity Contact," *February 11, 2005, Society of Tribologists and Lubrication Engineers, Ohio Section, Dayton, Ohio.*
13. Jackson, R. L., Contact and Friction: From Asperity Interaction to Hardness Testing, *Chemical Engineering Seminars at Auburn University, September 10th, 2004.*

Professional Service

Executive Committee of the ASME Tribology Division, Chair (2011-)
 Executive Committee of the ASME Tribology Division, Secretary (2010-2011)
 Executive Committee of the ASME Tribology Division, Education Chair (2008-2010)
 Associate Editor ASME Journal of Tribology (2010-)
 IEEE Holm Technical Program Committee (2009-)
 Vice Chair, ASME Chattahoochee Section (2009-2010)
 Member, Mech. Eng. Graduate Program Committee (2009-)
 Member, Mech. Eng. E –Day Planning Committee (2006-)
 Session Chair, Contact Mechanics, 2011 STLE Annual Meeting
 Vice Chair, BioTribology Session, 2011 STLE Annual Meeting
 Manufacturing and Design Stem Committee
 ASME Faculty Advisor
 Auburn Univ. Mentor Grant Selection Committee, 2006, 2007
 Judge 2007 Undergraduate Research Forum
 Judge 2006 Graduate Research Forum
 NSF Proposal Review Panelists for the Materials and Surface Engineering Program
 Chair, 2007-2009 Steering Committee for Technical Committees and Industrial Boards (STLE)
 ASME 2007 Student Leadership Seminar
 Co-chair of Session at the 56th IEEE Holm Conference
 Member, ASME Nanotribology and Micro-/Nano-Systems Committee, 2006-2008
 Track Co-Chair, Nanotribology, ASME/STLE International Joint Tribology Conference, 2007-2008.
 Chair, ASME Chattahoochee Section, 2006-2008
 Faculty Advisor, ASME Auburn Student Section
 ASME 2007 Leadership Training Conference
 Judge for 2006 ASME Tribology Division Student Paper Competition
 Society of Tribologists and Lubrication Engineers (STLE) Awards Committee, 2004-2008
 PSC, Contact Mechanics Joint Session (STLE Materials Technical Committee), 2011
 Chair, PSC, STLE Surface Engineering Technical Committee, 2007, 2011
 Chair, Session 2E, Surface Engineering II, 2006 STLE Annual Meeting
 ASME Tribology Division Membership Committee

ASME Tribology Division Contact Mechanics Committee

Reviewer for the following journals:

Journal of Adhesion Science and Technology
Mechanics of Advanced Materials and Structures
Applied Surface Science
Philosophical Magazine
Acta Mechanica
IEEE Transactions on Components and Packaging Technologies
International Journal of Solids and Structures
ASME Journal of Vibrations and Acoustics
ASME Journal of Tribology
ASME Journal of Applied Mechanics
Powder Technology
STLE Tribology Transactions
IMEchE Journal of Engineering Tribology – Part J
Journal of Colloid and Interface Science
Tribology Letters
Wear
Computers and Structures
Transactions on Mechatronics
Tribology International

Reviewer of Book Chapter on “Mechanical characterization and properties of DLC films”

University Service

Member, Mech. Eng. E –Day Planning Committee (2006-)
Manufacturing and Design Stem Committee
ASME Faculty Advisor
Auburn Univ. Mentor Grant Selection Committee, 2006, 2007
Judge 2007 Undergraduate Research Forum
Judge 2006 Graduate Research Forum

Graduate Students Advised

Graduated

1. Manoj Mahajan, M.S. (Graduated, 2006)
Thesis Title – “Experimental and Analytical Investigation of a Dynamic Gas Squeeze Film Bearing Including Asperity Contact Effects”
2. Ravi Duvvuru, M.S. (Graduated, 2007)
Thesis Title – “Novel Self-Adapting Microscale Surface Textures for Hydrodynamic Lubrication”

3. Vijaykumar Krithivasan, M.S. (Graduated, 2008) Thesis Title – “Finite Element Analysis of Three-Dimensional Elasto-Plastic Sinusoidal Contact and Inclusion in a Multi-Scale Rough Surface Contact Model”
4. Santosh Angadi, M. S., (Graduated, Fall 2008)
Thesis Title – “Hydraulic Solenoid Valve Reliability and Modeling Study”
5. W. Everett Wilson, M. S., (Graduated, Fall 2008)
Thesis Title – “Surface Separation and Contact Resistance Considering Sinusoidal Elastic-Plastic Multi-Scale Rough Surface Contact”
6. Saurabh Wadwalkar, M. S., (Graduated, Fall 2009), Thesis Title – “A Study of Elastic Plastic Deformation of Heavily Deformed Spherical Surfaces”
7. J. Robert Polchow, M. S., (Graduated, Spring 2010), Thesis Title – “A Multi-Physics Finite Element Analysis of Round Pin High Power Connectors”
8. Rujian Fu, M. S., (Graduated, Spring 2011) – “Experimental and Theoretical Analysis of High Power Connectors for Hybrid Vehicles” - Co-advised with Song-Yul Choe
9. Russell Green, M. S., (Graduated, Summer 2011) Thesis Title – “A Non-contact Method for Sensing Tire Contact Patch Deformation Using a Monocular Vision System and Speckled Image Tracking” – Co-advised with Song-Yul Choe
10. Vijaykumar Krithivasan, Ph. D. (Graduated, Spring 2011), Dissertation Title – “Theoretical and Experimental Analysis of Strain in a Tire Under Static Loading and Steady-State Free-Rolling Conditions” - Co-advised with Song-Yul Choe
11. Santosh Angadi, Ph. D., (Graduated, Fall 2011) Dissertation Title – “An Experimental Investigation and a Multiscale Electro-thermo-mechanical Model of a 40A High Power Electrical Connector” - Co-advised with Song-Yul Choe

Current

Ph. D. Students

1. Hyeon Lee, Ph. D., (Began fall 2011)
2. Xianzhang Wang, Ph. D. (Began Summer 2011)
3. Hamed Ghaednia, Ph. D. (Began Fall 2010)
4. Jeremy J. Dawkins, Ph. D. (Began Spring 2008, Co-advised with Dr. D. Bevly)
5. Bhavin Vadgama, Ph. D. (Co-advised with Dr. Dan Harris)

M. S. Students

1. James Gatherer, M. S. (Began Summer 2011)
2. Cory Steigerwald, M. S. (Began Fall 2008)

Dr. Jackson served as a thesis committee member for the following students:

1. Dan Clary (Chemistry PhD)
2. Prajwal Swamy Sripathi (Masters to Completion)
3. Aimee Poda (ChemE PhD to Completion)
4. Rahul Jhaver (Masters to Completion)
5. Darshanuday Shinde (Masters to Completion)
6. Jordan Roberts (Masters to Completion)
7. Darrell Krueger (Masters to Completion)
8. Chris Johnson (Masters to Completion)

9. Piyush-chunilal Savalia (Masters to Completion)
10. Lia Almeida (EE Masters to Completion)
11. Paul Pearson (Masters to Completion)
12. Prakriti Choudhary (Masters to Completion)
13. Liwei Wang (Mat. Eng. PhD to Completion)
14. Kendall Hurst (ChemE PhD to Completion)
15. Dhananjay Panchagade (ME PhD to Completion)
16. Sameep U. Gupte, (ME Masters)
17. Chen Chen (ME PhD to Completion)
18. Eliza Banu (ME PhD)
19. Sakthivael Kandaswaamy (ME PhD)
20. Namu Pankaj Vijayakumar (Masters Project)
21. Namu Vijayakumar (Industrial and Systems Engineering PhD)
22. Harideepan Ravindran (ME Masters)
23. Naveed Ansari (ChemE PhD)

Undergraduate Research Projects: “The Effect of Pavement on Tire Rolling Resistance” – Michael Arnold, Clay Palmer, “Tribology of Cartilage” - Matthew Roberts, Dylan Alcorn, “The Reliability of Bolted Electrical Contacts” - Miles Ulm, Ross Warlick, Daniel Paulk, “Surface Roughness Comparison of Synovial Joints” - Patrick Smyth, “Finite Element Modeling of Sliding Asperity Contact” - Hasnain Meghani, “Hard Hybrid Transmissions” – Jenny Robinson, “Micro-encapsulated Friction Surfaces” – Michael Buder, “A Dry Coated Bearing for Baking Applications” – Christine Taylor, David Came, Michael Zabala, Bryant Hains, James Ratliff, Jared Whisenant “Experimental Investigation of Self Adapting Surfaces” - Andrew Nevins, Josh Westmoreland