



MARK G. STRAUSS, PH.D.

PH.D. IN BIOMEDICAL ENGINEERING
B.S. in Mechanical Engineering

CURRENT EMPLOYMENT

Ruhl Forensic, Inc., since 1993.

Areas of consultation include industrial, vehicular and construction forensic investigation and reconstruction, especially involving biomechanics, human factors, injury causation, product safety, instrumentation and measurement. Research topics include: cargo movement in tractor-trailers; air turbulence generated from passing vehicles; kinematics of air-ride seats; assessing the accuracy of witness testimony on distance and time.

University of Illinois at Urbana-Champaign, since August 1987.

Adjunct Full Professor, Department of Industrial and Enterprise Systems Engineering (formerly known as Department of General Engineering). Content of courses taught includes engineering graphics/computer automated design, finite element analysis, mechanisms, engineering design, electronics, structural analysis and testing techniques, data acquisition, experimental procedures, biomechanics, ergonomics, rehabilitation engineering, anatomy, physiology, reflexes, and adaptive technology.

PREVIOUS APPOINTMENTS

- 4/94-1/98 Project Director of a National Science Foundation sponsored program to research the causes of under-representation of persons with disabilities in science, engineering and mathematics careers.
- 6/92-8/95 Project Director of RSA sponsored program on long term training of graduate level rehabilitation engineers.
- 6/88-6/94 Project Director of National Science Foundation sponsored program to improve the problem solving and design skills of engineering undergraduates.
- 3/91-12/91 Steering Committee Chairman of the Illinois Assistive Technology Project.
- 8/90-12/91 Member of Advisory Council and Committee on Assistive Technology Training for the Illinois Assistive Technology Project, PL 100-407.
- 1/89-5/93 Hearing Officer, Illinois Department of Rehabilitation Services.
- 9/88-9/90 Visiting Research Associate, Hines V.A. Medical Center, Rehabilitation Research and Development, Hines, Illinois.
- 6/83-8/87 Engineering supervisor of the research program "Non-invasive Quantification of Fracture Healing," Veterans Administration Medical Center, Dallas, Texas.

Ruhl Forensic, Inc.
1210 Lancaster Drive
Champaign, IL 61821-7028

www.ruhl.com

mgstrauss@ruhl.com
(800) 355-7800
(217) 355-7900 Fax

Researched the development of a technique to non-invasively assess the functional state of a fractured bone. Designed and performed human, animal and finite element studies to evaluate the breaking strength of bone.

9/79-7/81 Rehabilitation Engineering Fellow, Rehabilitation Engineering Center, Charlottesville, Virginia. Clinical observations and assessments, designing and fabricating devices for persons with acute and chronic injuries, and disabilities. The design of an acrylic cervical orthosis which would provide for an unobstructed x-ray view of the cervical spine culminated in a patent application.

EDUCATION

Ph.D., 1988: University of Texas at Arlington and University of Texas Health Science Center at Dallas
Major Field: Biomedical Engineering / Biomechanics

M.E., 1981: University of Virginia, Charlottesville, Virginia
Major Field: Biomedical Engineering

Graduate, 1981: Rehabilitation Engineering Center, Charlottesville, Virginia
Rehabilitation Engineering

B.S., 1979: Polytechnic Institute of New York, Brooklyn, New York
Major Field: Mechanical Engineering

CERTIFICATIONS

Aerial Lift Inspector for vehicle mounted lifts, manually propelled lifts, boom supported lifts, scissors-lifts and airline ground support lift devices (2010)

OSHA Certified Forklift Operator (October 2006)
Class IV - 5,000 pounds
Class V - 21,000 pounds

Class A Commercial Drivers License
Air brake endorsement
Combination Vehicles endorsement

Crash Data Retrieval (CDR) System Operator

Private Investigator, State of Texas (Registration #545398)

HONORS AND AWARDS

2008 Faculty advisor to students who were awarded 1st place in the Whirlpool Student design competition

2007 Engineer in Residence, Department of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana-Champaign

2006 Faculty advisor to students who were awarded the 2nd place Larson Award for design

- 2003 Research publication SAE 2003-01-3363 judged by peers to be among the most outstanding technical research published in the field in 2003
- 2002 Research publication SAE 2002-01-3104 judged by peers to be among the most outstanding technical research published in the field in 2002
- 2001 Research publication SAE 2001-01-2755 judged by peers to be among the most outstanding technical research published in the field in 2001
- 2000 Faculty advisor to students who were awarded The National Lincoln Arc Welding Merit Award for Design
- 1997 Faculty advisor to students who were awarded The National Lincoln Arc Welding Merit Award for Design
- 1996 Faculty advisor to students who won 3rd place award at the University of Illinois Engineering Open House for graduate research
- 1995 Faculty advisor to students who won 3rd place award at the University of Illinois Engineering Open House for graduate research
- 1995 "Outstanding Student Advisor," awarded by the Dean's Student Advisory Committee
- 1994 "Outstanding Student Advisor," awarded by the Dean's Student Advisory Committee
- 1993 Faculty advisor to students who won 1st place award at the University of Illinois Engineering Open House for interdisciplinary research
- 1993 Faculty advisor to graduate student group who won 1st place award for research in General Engineering
- 1993 Faculty advisor to student who won 3rd place award at the University of Illinois Engineering Open House for undergraduate research
- 1992 Faculty advisor to student who was awarded The National Lincoln Arc Welding Silver Award for Design
- 1992 Faculty advisor to 2nd and 4th place student awards at the University of Illinois Engineering Open House
- 1991 Faculty advisor to student group awarded The Larson Award for Engineering Design
- 1991 Nominated for the Everitt Award for Teaching Excellence
- 1991 Faculty advisor to 1st place award for Interdisciplinary Research at the University of Illinois Engineering Open House
- 1990 Faculty advisor to student group receiving award from the National Lincoln Arc Welding design competition.
- 1990 United Way award for Community Service, "Using Engineering to Alleviate Problems of the Disabled."
- 1990 "Outstanding Student Advisor," awarded by the Dean's Student Advisory Committee
- 1990 Faculty advisor to 3rd place award for Original Undergraduate Research at University of Illinois Engineering Open House
- 1989 Faculty advisor to 4th place award for Central Exhibit at University of Illinois Engineering Open House
- 1988 Faculty advisor to 3rd place award for Original Undergraduate Research at University of Illinois Engineering Open House
- 1988 Nominated Outstanding Alumnus of the University of Texas at Arlington Biomedical Engineering Program
- 1985 Outstanding Biomedical Engineering Student Award
- 1982-1984 Elected Vice President Biomedical Engineering Society Student Chapter
- 1983 First Place, Engineering School Laboratory Presentation
- 1979-1981 RSA, Rehabilitation Engineering Fellowship

PROFESSIONAL ASSOCIATIONS

American College of Forensic Examiners, Diplomate (10 year member)
American Society of Biomechanics (ASB) (21 year member)
Association for the Advancement of Automotive Medicine (AAAM)
Engineering Society for Advancing Mobility- Land, Sea, Air and Space (SAE)
Human Factors and Ergonomics Society (HFES)
Illinois Association of Technical Accident Investigators (IATAI)
The Institute of Electrical and Electronic Engineers (IEEE)
National Association of Professional Accident Reconstruction Specialists (NAPARS)
National Safety Council (Firm membership) (NSC)

PROFESSIONAL ACTIVITIES

2011	Reviewer for United States Military MIL-STD-1472, Department of Defense Design Criteria Standard – Human Engineering
November, 2009	Peer Reviewer for SAE 2010 World Congress, Occupant Protection: Accident Reconstruction
August 2006	Panel Reviewer for National Science Foundation, SBIR Human-computer interaction
March 2006	Competition Judge, University of Illinois at Urbana-Champaign, Engineering Open House
Aug. 2002-Present	SAE Transaction Selection Committee for: Accident Reconstruction, Human Factors, and Braking and Steering Systems
1996 – 2004	Member and Chairperson HFES 300 standards committee

PEER REVIEWER FOR THE FOLLOWING JOURNALS AND ORGANIZATIONS

Assistive Technology Journal
Engineering in Medicine and Biology
Human Factors and Ergonomic Society
The Institute of Electrical and Electronic Engineers, Transactions on Biomedical Engineering
Journal on Tactile Displays
National Science Foundation, Division of Emerging Engineering Technologies, SBIR
U.S. National Science Foundation, Directorate for Education and Human Resources
U.S. National Science Foundation, Directorate for Engineering, Combined Research-Curriculum Development Program
U.S. Department of Education, Rehabilitation Services Administration Spinal Cord Research Foundation
University of Illinois at Urbana-Champaign, Research Board

ADDITIONAL TRAINING AND EDUCATION

2010	Aerial Lift Safety and Inspector, Orlando, FL
2009	Detroit Diesel DDEC Report Training
2008	Design and Operation of Work Zone Traffic Control Seminar, presented by a National Highway Institute certified instructor, Champaign, IL
2008	European Conference for Accident Reconstruction 2008, Adult and Child Pedestrian Impact Testing, Wildhaus, Switzerland
2007	Use of robotic, pulsed laser total station and data recorder for forensic mapping, TOPCON, Champaign, IL

- 2007 SAE World Congress, Detroit, MI
- 2006 OSHA Fall Protection, Champaign, IL
- 2006 Association for the Advancement of Automotive Medicine, Injury Scaling Uses and Techniques, Crystal City, VA
- 2005 Photogrammetry and the use of Photomodeler in accident investigation, Champaign, IL
- 2004 European Conference for Accident Reconstruction 2004, Vehicle Rollover and Occupant Movement Testing, Neumuenster, Germany
- 2003 Certified Vetronix Crash Data Retrieval system operator
- 2003 Illinois Association of Technical Accident Investigators Conference including vehicle crash testing, Mount Vernon, IL
- 2003 Bendix Training on Tractor & Trailer Air Brake System and ABS, Grayslake, IL
- 2002 SAE International Truck and Bus Meeting and Exposition, Detroit, MI
- 2002 11th Congress of the European Association for Research and Analysis of Road Accidents, Portoroz, Slovenia
- 2001 SAE International Truck and Bus Meeting and Exposition, Chicago, IL
- 2001 CDL Defensive Driving Class, Champaign, IL
- 2001 OSHA 10-Hour Construction Safety and Health Course, Champaign, IL
- 2001 Using a pulsed laser total station and data recorder to perform forensic mapping of an accident scene, TOPCON, Champaign, IL
- 2001 OSHA Machinery and Machine Guarding, Dallas, TX
- 2000 American Association of Automotive Medicine Conference, Chicago, IL
- 2000 Human Factors and Ergonomics Society meeting, San Diego, CA
- 2000 Human Factors Approach to Accident Analysis and Prevention, San Diego, CA
- 2000 A Guide to Methodology in Ergonomics, San Diego, CA
- 2000 Biomechanics of Impact, American Association of Automotive Medicine, Indianapolis, IN
- 1999 Heavy Vehicle Reconstruction, Northwestern University Traffic Institute, Evanston, IL
- 1999 Human Factors and Ergonomic Society Conference, Houston, TX
- 1999 43rd Stapp Car Crash Conference, San Diego, CA
- 1999 27th Annual International Workshop on Human Subjects for Biomechanical Research, San Diego, CA.
- 1999 3rd Annual Crash Injury Research and Engineering Network Symposium, San Diego, CA
- 1998 Advanced Truck Air Brake Systems, Haldex/Midland, Kansas City, MO
- 1997 Advanced Ergonomics Application Workshop, Univ. Of Wisconsin-Madison, Madison, WI
- 1996 Human Factors and Ergonomics Society Conference, Philadelphia, PA
- 1996 Truck system operations, Prairie International, Champaign, IL
- 1996 Orthopaedic Research Society meeting, Atlanta, GA
- 1995 Traffic Accident Reconstruction, Northwestern University Traffic Institute, Evanston, IL
- 1995 39th Stapp Car Crash Conference, San Diego, CA
- 1995 Accidental Injury: Biomechanics and Prevention, University of California, San Diego, School of Medicine, San Diego, CA
- 1990 Biomechanics of Human Motion, Massachusetts Institute of Technology, Boston, MA

PARTIAL LISTING OF CONFERENCE PRESENTATIONS

Strauss, Mark G. and James V. Carnahan, "How Well Can the Average Person and Police Estimate Distance Along a Roadway?" Publication 12-01/2010. European Accident Reconstruction Group Conference, Wildhaus, Switzerland, June 25, 2010.

- Strauss, Mark G. and James V. Carnahan, "The Ability of People to Estimate Distances Along a Roadway and How Their Education, Hobbies and Occupation Affect Accuracy." Publication F2010-D-043. FISITA World Automotive Congress Proceedings, Budapest, Hungary, June 1, 2010.
- Strauss, Mark G. and, James V. Carnahan. "Observed Errors in Distance Estimates." SAE Paper 2010-01-0046. SAE World Congress, Detroit, MI. 13 April, 2010.
- Strauss, M.G., "The Experimental Study of the Air Flow Produced by Road Vehicles and its Potential Destabilizing Effect on Nearby Pedestrians." European Accident Reconstruction Conference Group, Wildhaus, Switzerland, July 5, 2008.
- Strauss, M.G., "Multi-Disciplinary Approach to a Commercial Vehicle Crash Investigation: A Case Study." AITLAmerica Conference, St. Louis, MO, May 31, 2008.
- Strauss, M.G., L.V. Inendino and J.V. Carnahan. "The Experimental Study of the Air Flow Produced by Road Vehicles and its Potential Destabilizing Effect on Nearby Pedestrians." SAE 2007 World Congress, Detroit, MI. 17 April 2007.
- Strauss, M.G., and L.V. Inendino. "Deaths Due to Rollover Accidents in The U.S.A., 1994-2002: A Statistical Study." European Conference for Accident Reconstruction 2004, Neumünster, Germany, June 2004.
- Inendino, L.V., M.G. Strauss, and J.V. Medanic. "Developments of a Dynamic Model of an Air-ride Seat for On-highway Trucks." SAE International Truck and Bus Meeting and Exposition, Ft. Worth, TX, 10 November 2003.
- Strauss, M.G., J.V. Carnahan, L.V. Inendino, R. Jayswal, C.A. Senalik, and E.J. Southcombe. "Factors Affecting the Friction Coefficients Between Wooden and Plastic Pallets and the Wooden Floor of a Van-type Semi-trailer." SAE International Truck and Bus Meeting and Exposition, Detroit, MI, November 2002.
- Strauss, M.G. "Biomechanics of a Low Speed Rear-End Collision." 11th Congress of the European Association for Research and Analysis of Road Accidents, Portoroz, Slovenia, 6-7 September 2002.
- Ruhl, Roland L., Dan A. Fittanto, and M.G. Strauss. "Full Scale Testing of Class 8 Tractor/Livestock Trailer." European Conference for Accident Reconstruction, Neumünster, Germany, 31 May – 1 June 2002.
- Strauss, M.G., J.V. Carnahan, and L.V. Inendino. "Factors Affecting the Friction Coefficients Between Wooden Pallets and the Wooden Floor of a Van-type Semi-trailer." SAE International Truck and Bus Meeting and Exposition, Chicago, IL, 13 November 2001.
- Strauss, M.G. "Adapting the Job for the Employee with a Disability." Conference of Clinical Applications for Return to Work, Urbana, Illinois, 6 May 1994.
- Stencil, M. and M.G. Strauss. "Relative Performance of Aluminum and Galvanized Steel Evaporators." 14th Annual Conference of the International Institute of Ammonia Refrigeration, Miami, Florida, 23 March 1992.

- Strauss, M.G. "Measurement of the Dynamic Forces during Manual Wheelchair Propulsion." American Society of Biomechanics, Tempe, AZ, 16 October 1991.
- Strauss, M.G., M.H. Moeinzadeh, M. Schneller, and J. Trimble. "The Development of an Instrumented Wheel to Determine the Handrim Forces during Wheelchair Propulsion." San Francisco, CA, December 1989.
- Strauss, M.G. "Disabilities in the Workplace – An Engineering Solution." Illinois Affirmative Action Officers Association 16th Annual Conference, Normal, Illinois, 1 December 1989.
- Strauss, M.G. "Non-Invasive Assessment of Fracture Healing Using Impact Resonant Frequency Analysis—An in-Vitro FEM Model and in-Vivo Correlations." 15th Annual Bioengineering Conference, Boston, MA, 28 March 1989.
- Strauss, M.G., R.W. Bucholz, A.F. Tencer, and Lawrence, K.L. "Quantifying Fracture Healing in the Human and in the Dog." 8th Annual Engineering in Medicine and Biology Conference, Fort Worth, TX, 8-10 November 1986.
- Strauss, M.G., R.W. Bucholz, A.F. Tencer, and K.L. Lawrence. "Resonance Frequency Evaluation of Patients with Closed Tibia Fractures." 3rd Southern Biomedical Engineering Conference, Birmingham, AL, 15-16 October 1984.
- Strauss, M.G., R.W. Bucholz, A.F. Tencer, and K.L. Lawrence. "Clinical Fracture Healing Assessment by Mechanical Resonance." The 37th Annual Conference on Engineering in Medicine and Biology, Los Angeles, CA, 17-19 September 1984.
- Strauss, M.G., R.W. Bucholz, A.F. Tencer, and K.L. Lawrence. "Identification of Variables in the Measurement of the Resonant Frequencies of Human Tibiae *in Vivo*." 2nd Southern Biomedical Engineering Conference, San Antonio, TX, 1983.
- Strauss, M.G., and J. O'Reagan. "An X-ray Translucent Cervical Orthosis." First Southern Biomedical Engineering Conference, 1982.

PARTIAL LISTING OF INVITED PRESENTATIONS

- Strauss, M.G. "Demonstrative and Illustrative Evidence." Illinois College of Advocacy. Champaign, IL. 18 July 2003.
- Strauss, M.G. "Vehicle Collisions and Reconstruction." Indiana Trial Lawyers' Association. Indianapolis, IN. November 2002.
- Strauss, M.G. "Trucks and Injuries." Great West Casualty. Bloomington, IN. 5 August 1998.
- Strauss, M.G. "The Use of Technology in Accident Investigation and Biomechanics." Litigation in the 21st Century – State Bar of Montana Continuing Legal Education Institute. Butte, MT. 13 March 1998.
- Strauss, M.G. "Biomechanics of Injury." Hartford Midwest Regional Seminar. Chicago, IL. November 1997.

- Strauss, M.G., J. Caldwell, and S. Weaver. "Engineering and Disabilities." American Society of Engineering Educators. Washington, D.C. 25 June 1996.
- Strauss, M.G. "Life After Neurologic Accidents and Disease – Living, Not Just Existing." Neurologic Rehabilitation of Stroke Patients: Continuing Education Course for the American Academy of Neurology. Southern Illinois University School of Medicine. Springfield, Illinois. 14 October 1991.
- Strauss, M.G. "Making Reasonable Accommodation Through Specialized Equipment and Procedural Change." The National Industry Labor Council. St. Louis, Missouri. 4 October 1990.
- Strauss, M.G. "Synthetic Navigation for the Blind Traveler." The International Society for Ecological Psychology XVII. University of Illinois. Champaign, Illinois. 22 May 1990.
- Strauss, M.G. "Using Technology to Assist the Disabled Worker – An Engineer's Perspective." Quad Cities Merit Employment Council. Moline, Illinois. 25 October 1989.
- Strauss, M.G. "How Technology Can Play an Important Role in the Rehabilitation of Stroke Victims." Southern Illinois University School of Medicine. 17 October 1989.
- Strauss, M.G. "Enhancing Abilities Through Technology and Research." National Rehabilitation Association. Rock Island, Illinois. 9 May 1989.
- Strauss, M.G. "Using Non-invasive Methods to Assess the Strength of Healing Fractures." DePuy Orthopedics. Warsaw, Indiana. 23 March 1989.
- Strauss, M.G. "Non-invasive Quantification of Fracture Healing." Southwestern Medical School Orthopedic. Grand Rounds. Dallas, Texas. 1984.

PUBLICATIONS

- Strauss, Mark G. and James V. Carnahan, "The Ability of People to Estimate Distances Along a Roadway and How Their Education, Hobbies and Occupation Affect Accuracy." Publication F2010-D-043. FISITA World Automotive Congress Proceedings, Budapest, Hungary, 2010.
- Strauss, Mark G. and James V. Carnahan, "How Well Can the Average Person and Police Estimate Distance Along a Roadway?" Publication 12-01/2010. Accident Reconstruction Group Conference, Wildhaus, Switzerland, 2010.
- Strauss, Mark G. and, James V. Carnahan. "Observed Errors in Distance Estimates." SAE Paper 2010-01-0046. SAE World Congress, Detroit, MI, 13 April, 2010. Also published in Accident Reconstruction 2010, SAE SP2267.
- Strauss, Mark G. and, James V. Carnahan. "Distance Estimation Error in a Roadway Setting." The Police Journal 82(3):247-264, 2009.
- Strauss, Mark G., Louis V. Inendino and James V. Carnahan. "The Experimental Study of the Air Flow Produced by Road Vehicles and its Potential Destabilizing Effect on Nearby

- Pedestrians.” SAE paper 2007-01-0758. SAE 2007 World Congress, Detroit, MI. 17 April 2007. Also published in Pedestrian Safety, SAE SP-2114.
- Ruhl, Roland L., James V. Carnahan, Mark G. Strauss, and Laura R. Genson. “Analysis of a Common Cause Hypothesis in a Forensic Product Defect Analysis.” IMEC2004-59566. Proceedings of the 2004 International Mechanical Engineering Congress and Exposition, Anaheim, CA , 13-19 November, 2004.
- Strauss, M.G. “Biomechanics of a Low-Speed Rear-End Collision.” IMPACT: The Journal of the Institute of Traffic Accident Investigators 13.3 (2004): 71-75.
- Inendino, L.V., M.G. Strauss, and J.V. Medanic. “Development of a Dynamic Model of an Air-ride Seat for On-Highway Trucks.” SAE Paper 2003-01-3363, Fort Worth, TX, 2003. Rollover Prevention, Crash Avoidance, Crashworthiness, Ergonomics and Human Factors, SP-1813. SAE 2003 Transactions– Journal of Commercial Vehicles.
- Strauss, M.G., J.V. Carnahan, L.V. Inendino, R. Jayswal, C.A. Senalik, and E.J. Southcombe. “Factors Affecting the Friction Coefficients between Wooden and Plastic Pallets and the Wooden Floor of a Van-Type Semi-trailer.” SAE Paper 2002-01-3104, Detroit, MI, 2002. SAE 2002 Transactions – Journal of Commercial Vehicles.
- Ruhl, Roland L., Dan A. Fittanto, and M.G. Strauss. “Full Scale Testing of Class 8 Tractor/Livestock Trailer.” European Conference for Accident Reconstruction, Neumünster, Germany, 31 May – 1 June 2002.
- Strauss, M.G. “Biomechanics of a Low-Speed Rear-End Collision.” Road Vehicle Accident Reconstruction. Ed. Ivan Prebil, Iztok Cigaric, and Littera Picta. Ljubljana, Slovenia, 2002.
- Strauss, M.G., J.V. Carnahan, and L.V. Inendino. “Factors Affecting the Friction Coefficients between Wooden Pallets and the Wooden Floor of a Van-Type Semi Trailer.” SAE Paper 2001-01-2755, Chicago, IL, 2001. SAE 2001 Transactions – Journal of Commercial Vehicles.
- Fittanto, Daniel A., Roland L. Ruhl, and Mark G. Strauss. “Dynamics and Roll Stability of a Loaded Class 8 Tractor and Livestock Semi-Trailer: An EDVDS Application.” WP#2000-4, 2000 HVE Forum, San Diego, CA, 8-12 May 2000.
- Ruhl and Associates - Forensic, Inc. Truck and Trucking Handbook: A Primer. Champaign: Ruhl and Associates - Forensic, Inc., May 2000.
- Clark, B.A., R.L. Ruhl, M.G. Strauss, T. Mahal, and D.A. Fittanto. “Dynamics and Roll Stability of a Loaded Class 8 Tractor-Livestock Semi-Trailer.” SAE Paper 1999-01-3732, 1999 SAE International Truck and Bus Meeting and Exposition, Detroit, MI, 15-17 November 1999. Roll Stability Dynamics, Ride and Handling, SP-1486.
- Alston, R.J., J.L. Hampton, T.J. Bell, and M.G. Strauss. “Matriculation of Persons with Disabilities in Science and Engineering: Perceptions of Rehabilitation Counselors.” Journal of Applied Rehabilitation Counseling 29.3 (1998): 5-8.
- Strauss, M.G., J. Caldwell, and S. Weaver. “Engineering and Disabilities.” American Society of Engineering Educators Annual Conference, Washington, D.C., 1996.

- Strauss, M.G. and D. Brusnighan. "Independent Navigation by People Who Are Blind." Brazilian Journal of Adapted Physical Education Research 1.1 (1994): 169-181.
- Stencil, M. and M.G. Strauss. "Relative Performance of Aluminum and Galvanized Steel Evaporators." 14th Annual Conference of the International Institute of Ammonia Refrigeration, Miami, 1992.
- Strauss, M.G., J. Maloney, F. Ngo, and M. Phillips. "Measurement of the Dynamic Forces during Manual Wheelchair Propulsion." American Society of Biomechanics Proceedings, Tempe, Arizona, 1991. 210-211.
- Strauss, M.G. "Empowering Rehabilitation counselors with Technology: A Course Description". Rehabilitation Education 5.4 (1991): 319-324.
- Moeinzadeh, M.H., M.A. Schneller, M.G. Strauss, and J. Trimble. "Three Dimensional Biomechanical Analysis of the Upper Extremity during Wheelchair Propulsion." First World Congress of Biomechanics Proceedings, San Diego, California, 1990. 26.
- Strauss, M.G., M.H. Moeinzadeh, M. Schneller, and J. Thimble. "The Development of an Instrumented Wheel to Determine the Handrim Forces during Wheelchair Propulsion." ASME Winter Annual Meeting, San Francisco, 1989. Advances in Bioengineering (1989): 53-54.
- Strauss, M.G. and M.H. Moeinzadeh. "Rehabilitation Engineering at the University of Illinois." 1989 American Society of Engineering Educators Annual Conference Proceedings, Lincoln, Nebraska, 1989. 196-198.
- Brusnighan, D.A., M.G. Strauss, J.M. Floyd, and B.C. Wheeler. "Orientation Aid Implementing the Global Positioning System." 15th Annual Bioengineering Conference, Boston, 1989. 33-34.
- Strauss, M.G. "Non-Invasive Assessment of Fracture Healing Using Impact Resonant Frequency Analysis—An in-Vitro FEM Model and in-Vivo Correlations." 15th Annual Bioengineering Conference, Boston, MA, 28 March 1989.
- Jones, R.E., M.G. Strauss, R.W. Bucholz, and K.L. Lawrence. "Non-Invasive Assessment of Fracture Healing." Rehabilitation R & D Progress Reports 25.1 (1987): 286-287.
- Strauss, M.G., R.W. Bucholz, A.F. Tencer, and Lawrence, K.L. "Quantifying Fracture Healing in the Human and in the Dog." 8th Annual Engineering in Medicine and Biology Society Conference, Fort Worth, TX, 8-10 November 1986. 1551-1554.
- Jones, R.E., M.G. Strauss, R.W. Bucholz, and K.L. Lawrence. "Quantifying Fracture Healing by Impulse Transfer Functions." Rehabilitation R & D Progress Reports 24 (1986): 232-233.
- Strauss, M.G. "Non-Invasive Quantification of Fracture Healing." Rehabilitation R & D Progress Reports (1985): 226.
- Strauss, M.G., R.W. Bucholz, A.F. Tencer, and K.L. Lawrence. "Resonance Frequency Evaluation of Patients with Closed Tibiae Fractures." Biomedical Engineering III, Recent Developments (1984): 63-66. Ed. L. Sheppard, Pergamon Press, New York.

Strauss, M.G., R.W. Bucholz, A.F. Tencer, and K.L. Lawrence. "Clinical Fracture Healing Assessment by Mechanical Resonance." The 37th Conference on Engineering in Medicine and Biology, Los Angeles, 1984. 375.

Strauss, M.G., R.W. Bucholz, A.F. Tencer, and K.L. Lawrence. "Quantification of Fracture Healing Via Spectral Frequency Transfer Functions - *in Vivo* and *in Vitro* Assessment." 30th Annual Orthopedic Research Society, Atlanta, 1984.

Jones, R. E., A.F. Tencer, R.W. Bucholz, K.L. Lawrence, K.D. Johnson, V. Mooney, T.W. Carmichael, A.R. Potvin, and M.G. Strauss. "Fracture Fixation and Healing." Rehabilitation R & D Progress Reports (1983): 22-23.

Strauss, M.G., R.W. Bucholz, A.F. Tencer, and K.L. Lawrence. "Identification of Variables in the Measurement of the Resonant Frequencies of Human Tibiae *in Vivo*." Biomedical Engineering II, Recent Developments (1983): 120-123. Ed. C.W. Hall, Pergamon Press, New York.

Strauss, M.G. and J. O'Reagan. "An X-ray Translucent Cervical Orthosis." Biomedical Engineering I, Recent Developments (1982): 93-96. Ed. S. Saha, Pergamon Press, New York.

Strauss, M.G. and J. O'Reagan. "An X-ray Translucent Cervical Orthosis." J. Biomat. Med. Devices and Art. Organs, 9 (1981): 268-270. (Abstract).

BOOK CHAPTERS

Strauss, M.G. and L.V. Inendino. "On-Board Electronics – Engine Control Modules." Truck Accident Litigation, Second Edition. American Bar Association, 2006. 191-197.

Strauss, M.G. "University of Illinois at Urbana-Champaign Engineering Student Projects for the Disabled." National Science Foundation Engineering Senior Design Projects to Aid the Disabled. Ed. John D. Enderle, North Dakota State University Press, 1989-1994.

Strauss, M.G. and J. Gunderson. "Applications in Rehabilitation Engineering." The Biomedical Engineering Handbook. Ed. J. Bronzino, CRC Press, 1995. 2294-2305.

MONOGRAPHS

Strauss, M.G. and J. Gunderson. Illinois Bureau of Rehabilitation Services Self Perceived Evaluation of Assistive Technology. University of Illinois at Urbana - Champaign, Division of Rehabilitation Education Services, 1994.

Strauss, M.G. and J. Gunderson. Illinois Bureau of Blind Services Self Perceived Evaluation of Assistive Technology. University of Illinois at Urbana - Champaign, Division of Rehabilitation Education Services, 1994.

Strauss, M.G. An Investigation into the Use of Impact Resonant Frequency Measurements to Non-Invasively Quantify Fracture Healing. University of Texas at Arlington and The University of Texas Health Sciences Center at Dallas, University Microfilms ADG89-14119, 1988. Biomedical Engineering Doctoral Dissertation.

Strauss, M.G. An X-Ray Translucent Cervical Orthosis. University of Virginia, Charlottesville, 1981. Unpublished master's thesis.

PATENT APPLICATION

X-ray translucent cervical orthosis, 1981

PARTIAL LISTING OF RESEARCH GRANTS AND CONTRACTS

Total external funding: \$2,353,092

Title: Promoting and Retaining in Mathematics, Engineering and Science
Source: National Science Foundation
Period: May 1, 1994 - April 30, 1997
Funded: \$1,649,782 (PI)

Title: Graduate Training of Rehabilitation Engineers
Source: Rehabilitation Services Administration
Period: September 1, 1992 - Aug 31, 1995
Funded: \$382,209 (PI)

Title: Efficiency of Wheelchair Propulsion
Source: UIUC Bioengineering
Period: September 1, 1989 - June 1, 1989
Funded: \$4,280 (Co-PI)

Title: Three Dimensional Kinetic Analysis of Wheelchair Propulsion
Source: Veteran's Administration
Period: October 1, 1989 - September 30, 1992
Requested: \$340,812 (Co-PI)

Title: Research Experiences for Undergraduates in Rehabilitation
Engineering
Source: National Science Foundation
Period: June 30, 1989 - Nov. 30, 1991
Funded: \$10,000 (PI)

Title: Biomechanics of Shoulder Injuries in Wheelchair Propulsion
Source: The Veterans Administration
Period: June 1, 1988 - May 31, 1989
Funded: \$43,250 (Co-PI)

Title: Engineering Student Design Projects for the Disabled
Source: National Science Foundation
Period: June 1, 1988 - May 31, 1995
Funded: \$109,060 (PI)

Title: Non-invasive Quantification of Fracture Healing
Source: Veterans Administration
Period: October 1986 - March 1987
Funded: \$34,867 (PI)

Title: Non-invasive Quantification of Fracture Healing
Source: Veterans Administration
Period: October 1985 - October 1986
Funded: \$37,900 (PI)

INDUSTRIAL DESIGN CONTRACTS

Bunn, Springfield, IL, 2010
Operations and human factors optimization of an assembly line testing process

Whirlpool, Benton Harbor, MI, 2008
Research and design of a water efficient washing machine

Spartan Light Metals, Sparta, IL, 2006
Design of an automated ingot pre-heating system

Design of a portable vehicle crash attenuator, 2005

Transparent Container Corporation, Berkeley, IL, 2001
Ergonomic evaluation and remediation of a packer workstation.

Blaw-Knok, Mattoon, IL, 2000
Product supplier evaluation methodology.

Flex-N-Gate, Urbana, IL, 2000
Design of an impact test system for pickup truck bumpers.

The Heil Company, Chattanooga, TN, 1999
Redesign of refuse transport.

Cummins Engine Company, Inc., Columbus, Indiana, 1999
Redesign of the engine coolant and oil thermostats.

Wilson Trailer, Sioux City, Iowa, 1998
Design of a computer based model of the dynamic characteristics of a semi-trailer.

Squire-Cogswell Company, Gurnee, Illinois, 1998
Instrumentation of a large scale vacuum pump to determine the heat transfer and flow characteristics of the lubricant.

Fellowes, Inc., Chicago, Illinois, 1997
Development of instrumentation to measure the dynamic torque in a paper shredder.

International Skating Union, 1997
An investigation of rink wall padding for ice skating.

Biomechanical evaluation of padding to reduce impact force, acceleration and injuries with the rink wall during ice skating competitions. Research adopted as Standard #1019 by the International Skating Union.

Werner Company, Franklin Park, Illinois, 1995

Modification of Compressed air rivet guns.

Reduction in injuries and improved comfort were obtained through the retrofitting of a pneumatic, hand operated riveter.

Cummins Engine Company, Inc., Columbus, Indiana, 1994

Detection of engine oil degradation in a diesel engine.

Optical and electronics used to evaluate engine oil degradation.

Frigid Coil, Santa Fe Springs, California, 1991

Aluminum and steel evaporator performance.

Heat transfer evaluation of heat exchanges using a wind tunnel, mass and thermal instrumentation.

Cooper Power Systems, Macomb, Illinois, 1990

Design of a high voltage insulator test station for high volume production.

Modernization of arcing test stations to current standards, practice and safety.

Aurora Pump Company, North Aurora, Illinois, 1990

Redesign of turbine pump testing station.

Automation, verification and ergonomic assembly of hydraulic pumps.

AT&T, Rolling Meadows, Illinois, 1989

Power cable stripping tool.

Ergonomic redesign of a manual, hand-held tool to delaminate insulation from conductor.

Brunswick Bowling and Billiards, Muskegon, Michigan, 1988

Calibration standard for the Brunswick lane monitoring system.

Development of optical/mechanical instrumentation to measure the thickness of an oil film.