

## **JOSEPH M. CORMIER, PH.D., P.E.**

### **CURRICULUM VITAE**

#### **EDUCATION**

Ph.D.	Biomedical Engineering Virginia Tech – Wake Forest School of Biomedical Engineering and Sciences Research focus: Facial Biomechanics	2009
M.S.	Mechanical Engineering with Biomedical Engineering Option Virginia Polytechnic Institute and State University Research focus: Thoracic Biomechanics	2003
B.S.	Mechanical Engineering New Mexico Institute of Mining and Technology	2001

#### **CONTINUING EDUCATION**

Brain Injury Symposium NHTSA Docket # 26249	2007
Current Issues in Using Crash Injury Data SAE Professional Development Program, Detroit MI	2006
Automotive Safety and Injury Biomechanics Blacksburg Virginia	2005
Applied Nonlinear Statistical Methods San Antonio American Statistical Association	2005
Traffic Accident Reconstruction I & II Northwestern University Traffic Institute, Evanston, Illinois	2003

## **PROFESSIONAL EXPERIENCE**

Technical Director 2003-Present  
Biodynamic Research Corporation  
San Antonio, Texas

Graduate Research Assistant 2001-2003  
Impact Biomechanics Laboratory  
Virginia Tech

Research Assistant 2000  
Psychology Department  
New Mexico Institute of Mining and Technology

Research Assistant 1999-2000  
Environmental Engineering Department  
New Mexico Institute of Mining and Technology

## **PROFESSIONAL ACTIVITIES**

Adjunct Assistant Professor, 2010 – Present  
Virginia Tech – Wake Forest  
School of Biomedical Engineering and Sciences

Clinical Faculty 2010 – Present  
United States Air Force School of Aerospace Medicine  
Graduate Medical Education

Licensed Professional Engineer 2009-Present  
Texas No. 104932

Accredited Traffic Accident Reconstructionist (#2170) 2009 – Present  
Accreditation Commission for Traffic Accident Reconstruction

Reviewer 2009-Present  
Annals of Biomedical Engineering

Reviewer 2008-Present  
Society of Automotive Engineers

## **PROFESSIONAL SOCIETIES**

Association for the Advancement of Automotive 2002-Present  
Medicine

Society of Automotive Engineers

2002-Present

## **HONORS AND AWARDS**

Paul E. Torgerson Research Excellence Award: 2003  
Master's Category in Mechanical Engineering  
Virginia Tech

Impact Biomechanics Lab Outstanding Research Award 2002-2003  
Virginia Tech

Center for Biomedical Engineering Symposium: 2001-2002  
Outstanding Researcher Award  
Virginia Tech

New Mexico Institute of Mining and Technology 1998-2001  
Honor Roll & Counselor's Choice Scholarship

## **PUBLICATIONS**

### **Journal Publications:**

Raddin J, Cormier J, Smyth B, Croteau J, Cooper E: Compressive Neck Injury and its Relationship to Head Contact and Torso Motion during Vehicle Rollovers, *SAE Int. J. Passeng. Cars – Mech. Syst.*, 2(1): 914-41; 2009.

Cormier, JM, Duma, SM: Epidemiology of Facial Fractures in Automotive Collisions, *Annals of Advances in Automotive Medicine*, 53, 2009.

Funk, JR, Cormier, JM, Gabler, HC: Effect of Delta-V Errors in NASS of Frontal Crash Risk Calculations, *Annals of Advances in Automotive Medicine*, 52: 155 – 164, 2008.

Cormier JM: The Influence of Body Mass Index on Thoracic Injuries in Frontal Impacts, *Accident Analysis and Prevention*, 40: 610-15; 2008.

Kennedy EA, Hurst WJ, Stitzel JD, Cormier JM, Hanzen GA, Smith EP, Duma SM: Lateral and Posterior Dynamic Bending of the Mid-Shaft Femur: Fracture Risk Curves for the Adult Population, *Proceedings of the Stapp Car Crash Conference*, 2004-22-0002; 2004.

Duma S, Cormier J, Hurst W, Stitzel J, Herring I: The Effects of Seam Design on Airbag Induced Skin Abrasions From High-Rate Shear Loading. *Proceedings of the International Research Conference of the Biomechanics of Impact (IRCOBI)*, Lisbon, Portugal, September 2003.

Stitzel, JD, Cormier, JM, Barretta, JT, Kennedy, EA, Smith, EP, Rath, AL, Duma, SM. "Defining Regional Variation in the Material Properties of Human Rib Cortical Bone and its Effect on Fracture Prediction." *Proceedings of the 47<sup>th</sup> International Stapp Car Crash Conference*, San Diego, California, 2003.

Stitzel JD, Duma SM, Cormier JM, Herring IP: A Nonlinear Finite Element Model of the Eye with Experimental Validation for the Prediction of Globe Rupture. *Proceedings of the 46<sup>th</sup> Stapp Car Crash Conference, Society of Automotive Engineers*, Ponte Vedra Beach, FL: 02S-58; 2002. (Winner, John Paul Stapp Award for best paper of 2002: "Your paper entitled.. ...was voted by the members of the Stapp Advisory Committee as the paper that makes the most significant contribution to the field of impact biomechanics related to the reduction of injuries in automotive transportation.")

### **Conference Publications:**

Raddin J, Cormier J, Smyth B, Croteau J, Cooper E: Compressive Neck Injury and its Relationship to Head Contact and Torso Motion during Vehicle Rollovers SAE 2009-01-0829, *Society of Automotive Engineers Congress*, Detroit, MI; 2009.

Funk J, Cormier J, Bain C, Guzman H, Bonugli E: Validation and Application of a Methodology to Calculate Head Accelerations and Neck Loading in Soccer Ball Impacts SAE 2009-01-0251, *Society of Automotive Engineers (SAE) Congress*, Detroit, MI; 2009.

Funk JR, Cormier JM, Bain CE, Guzman H, Bonugli E: Relationship Between Linear and Rotational Head Acceleration in Various Activities, *Proceedings of the 45<sup>th</sup> Annual Rocky Mountain Bioengineering Symposium*, in *Biomedical Sciences Instrumentation*, 44: 207 – 212, 2008.

Cormier J, Manoogian S, Bisplinghoff J, McNally C, Duma S: The Use of Acoustic Emission in Facial Fracture Detection, *Biomed. Sci. Instrum.*, 44: 147-52; 2008.

Cormier JM: The Increase in Occupant Weight and its Effect on Thoracic Injuries, *Proceedings of the Association for the Advancement of Automotive Medicine*, 2007.

Funk JR, Cormier JM, Bain CE, Guzman H, Bonugli E: An Evaluation of Various Neck Injury Criteria in Vigorous Activities, *Proceedings of the International Research Conference on the Biomechanics of Impact (IRCOBI)*, pp. 233 – 248, 2007.

Cormier JM, Stitzel JD, Hurst WJ, Porta DJ, Jones J, Duma SM: Predicting Zygoma Fractures from Baseball Impact, *Biomed. Sci. Instrum.*, 42:501-6; 2006.

Cormier JM, Stitzel JD, Duma SM, Matsuoka F: Regional Variation in the Structural Response and Geometrical Properties of Human Ribs, *Proceedings of the Association for the Advancement of Automotive Medicine*, 2005.

Funk JR, Cormier JM, Bain CE, "Analytical Model for Investigating Low-Speed Sideswipe Collisions," SAE 2004-01-1185, *Society of Automotive Engineers (SAE) Congress*, Detroit, MI; 2004.

Cormier JM, Hurst WJ, Stitzel JD, Herring IP, Duma SM: Investigation of Skin Abrasion Injuries from High Rate Shear Loading. *Proceedings of the World Congress of Biomechanics*, Calgary, AB; 2002.

Cormier JM, Stitzel J, Hurst WJ, Duma SM: High-Speed and Continuous Pressure Measurements: A Comparison of FlexiForce Sensors and Fuji Film. *Proceedings of the World Congress of Biomechanics*, Calgary, AB; 2002.

Hurst WJ, Cormier JM, Duma SM: Sonomicrometric Measurements for Eye Displacements. *Proceedings of the World Congress of Biomechanics*, Calgary, AB; 2002.

#### **Other Publications:**

Cormier J, Stitzel J, Duma S, Matsuoka F: Microstructural Analysis of Osteon Orientation in Human Rib Cortical Bone, *Proceedings of the 31<sup>st</sup> International Workshop on Human Subjects for Biomedical Research*, NHTSA, San Diego CA; 2003.

Cormier JM, Stitzel JD, Duma SM, Hurst WJ: Predicting and Evaluating Zygoma Fractures from Baseball Impact. *Proceedings of the 30<sup>th</sup> International Workshop on Human Subjects for Biomechanical Research*, NHTSA, Ponte Vedra Beach, FL: 02S-58; 2002.

Cormier JM, Hurst WJ, Stitzel JD, Duma SM: Investigation of Skin Abrasion Injuries from High Rate Shear Loading. *Proceedings of the 1<sup>st</sup> Annual Center for Biomedical Engineering Symposium*, Virginia Tech, Blacksburg VA; 2002.

Hurst WJ, Cormier JM, Duma SM: Sonomicrometric Measurements for Eye Displacements. *Proceedings of the 1<sup>st</sup> Annual Center for Biomedical Engineering Symposium*, Virginia Tech, Blacksburg VA; 2002.

Hurst WJ, Stitzel JD, Cormier JM, Duma SD: A New Methodology for Investigating Airbag Induced Skin Abrasions. *Proceedings of the 30<sup>th</sup> International Workshop on Human Subjects for Biomechanical Research*, NHTSA, Ponte Vedra Beach, FL: 02S-58; 2002.

Stitzel JD, Power E, Cormier JM, Hurst WJ, Herring IP, Duma SM: Computational Modeling and Experimental Validation of Globe Deformation Due to Impact with High Speed Foam Particles. *Proceedings of the 1<sup>st</sup> Annual Center for Biomedical Engineering Symposium*, Virginia Tech, Blacksburg VA; 2002.

Stitzel JD, Cormier JM, Barretta JT, Duma SM: Elderly Thorax Properties for Model Development. *Proceedings of the 2<sup>nd</sup> Annual Center for Biomedical Engineering Symposium*, Virginia Tech, Blacksburg VA; 2003.

#### **Invited Presentations:**

Cormier, JM, Duma, SM, "Epidemiology of Facial Fractures in Automotive Collisions," *Annals of Advances in Automotive Medicine*, 53, 2009.

FOCUS Headform and Facial Fractures, *Injury Biomechanics: With Military and Aerospace Applications*, Arlington VA, 2009.

It All Comes to Physics: An Overview of Impact Biomechanics and Skeletal Trauma Workshop, *Association of Medical Illustrators*, Richmond VA, 2009.

Biomechanics, *Good Samaritan Community Services Summer Employment and Work Readiness*, San Antonio TX; 2009.

Cormier JM: Curtain Airbag Biomechanics, Emerging Issues in Motor Vehicle Product Liability Litigation, *American Bar Association*; 2009.

Cormier JM: The Increase in Occupant Weight and its Affect on Thoracic Injuries, *Proceedings of the Association for the Advancement of Automotive Medicine*, 2007.

Funk JR, Cormier JM, Bain CE, Guzman H, Bonugli E: An Evaluation of Various Neck Injury Criteria in Vigorous Activities, *Proceedings of the IRCOB Conference*, 2007.

Determining the Risk of Facial Fracture from Blunt Loading: A Review of Facial Bone Fracture Patterns and Injury Tolerances, *Automotive Safety and Injury Biomechanics Workshop*, Blacksburg VA; March 24, 2007.

Automotive Safety and Injury Biomechanics Workshop: Thoracic Biomechanics, Blacksburg VA; October 14, 2005.

Cormier JM, Stitzel JD, Duma SM, Matsuoka F: Regional Variation in the Structural Response and Geometrical Properties of Human Ribs, *Proceedings of the Association for the Advancement of Automotive Medicine*, 2005.

Biomechanics of the Cervical Spine – University of Texas at San Antonio  
April 2005.

Cormier JM, Stitzel JD, Duma SM, Matsuoka F: Microstructural Analysis of Osteon Orientation in Human Rib Cortical Bone, *Proceedings of the 31<sup>st</sup> International Workshop on Human Subjects for Biomedical Research*, NHTSA, San Diego CA; 2003.

Cormier JM, Hurst WJ, Stitzel JD, Duma SM, Porta D: Occupant Interaction with a Deploying Pelvic Restraint Cushion. *Proceedings of the 2<sup>nd</sup> Annual Center for Biomedical Engineering Symposium*, Virginia Tech, Blacksburg VA; 2003.

Cormier JM, Hurst WJ, Stitzel JD, Duma SM, Porta D: Predicting and Evaluating Orbital Fractures from Baseball Impact. *Proceedings of the 2<sup>nd</sup> Annual Center for Biomedical Engineering Symposium*, Virginia Tech, Blacksburg VA; 2003.

Cormier JM, Hurst WJ, Stitzel JD, Duma SM: Investigation of Skin Abrasion Injuries from High Rate Shear Loading. *Proceedings of the 1<sup>st</sup> Annual Center for Biomedical Engineering Symposium*, Virginia Tech, Blacksburg VA; 2002.

Cormier JM, Stitzel JD, Duma SM, Hurst WJ: Predicting and Evaluating Zygoma Fractures from Baseball Impact. *Proceedings of the 30<sup>th</sup> International Workshop on Human Subjects for Biomechanical Research*, NHTSA, Ponte Vedra Beach, FL: 02S-58; 2002.