



CURRICULUM VITAE  
**DAVID E. RAYMOND**

**EDUCATION**

- 2008      PhD      WAYNE STATE UNIVERSITY – Detroit, Michigan  
Biomedical Engineering  
Emphasis: Impact Biomechanics
- 2001      MS      WAYNE STATE UNIVERSITY – Detroit, Michigan  
Biomedical Engineering  
Emphasis: Automotive-Related Trauma
- 1998      BS      MICHIGAN STATE UNIVERSITY – East Lansing, Michigan  
Engineering Mechanics  
Option: Biomechanics

**PROFESSIONAL EXPERIENCE**

- 2008 to Date    VECTOR SCIENTIFIC, INC.  
*Director of Research / Senior Biomechanical Engineer*  
▪    Oversee company research and conduct forensic biomechanical investigations.
- 2002 to 2008    VECTOR SCIENTIFIC, INC.  
*Biomedical Engineer*  
▪    Forensic biomechanics and analysis of injury mechanisms.
- 2007 to 2008    WAYNE STATE UNIVERSITY  
*Student Assistant – Department of Biomedical Engineering*  
▪    Conduct thesis-related blunt ballistic head impact research.
- 1999 to 2002    GENERAL MOTORS CORPORATION  
*Occupant Protection Engineer – Safety and Crashworthiness Department*  
▪    Responsible for development and performance of side airbag systems.
- 1998 - 1999    GENERAL MOTORS CORPORATION  
*Crashworthiness Dev/Val Engineer – Safety and Crashworthiness Department*  
▪    Coordinated crash testing for the 2000 and 2002 Cadillac Seville program.
- 1996 - 1998    GENERAL MOTORS CORPORATION  
*Fastening Engineering Intern*  
▪    Analysis of butyl rubber sealers on the residual torque of seat belt fasteners.

## **PUBLICATIONS**

Jones KO, McBeth Z, Campbell JQ, Zhang H, Wheeler J, Raymond D. Children in Rollover Accidents: Review of the NASS-CDS 1995-2007, *Proceedings of the Association for the Advancement of Automotive Medicine (AAAM)*, Las Vegas, Nevada, 2010 [In Press].

Van Ee C, Raymond D, Plunkett J, Hardy W, Thibault K. Child ATD Reconstruction of a Fatal Pediatric Fall, *ASME International Mechanical Engineering Congress & Exposition*, November 2009.

Van Ee C, Moroski-Browne B, Raymond D, Plunkett J, Hardy W, Thibault K. Evaluation and Refinement of the CRABI-6 Anthropomorphic Test Device Injury Criteria for Skull Fracture, *ASME International Mechanical Engineering Congress & Exposition*, November 2009.

Raymond D, Van Ee C, Crawford G, Bir C. Tolerance of the Temporo-Parietal Skull to Blunt Ballistic Impact, *Journal of Biomechanics*, Vol. 42 (15): 2479-2485, 2009.

Raymond D, Crawford G, Van Ee C, Bir C. Development of Biomechanical Response Corridors of the Head to Blunt Ballistic Temporo-Parietal Head Impact, *Journal of Biomechanical Engineering*, Vol. 131 (9): 094506, 2009.

Raymond DE. Biomechanics of Blunt Ballistic Temporo-Parietal Head Impact, Ph.D. Dissertation, *Wayne State University - Biomedical Engineering Department*, Detroit MI, 2008.

Raymond DE, Crawford GS, Van Ee C, Bir CA. The Effect of Soft Tissue on the Biomechanics of Skull Fracture Due to Blunt Ballistic Impact: Preliminary Analysis and Findings, *Proceedings of the ASME Summer Bioengineering Conference*, Marco Island, Florida, 2008.

Raymond DE, Crawford GS, Van Ee C, Bir CA. Biomechanics of Temporo-Parietal Skull Fracture from Blunt Ballistic Impact, *Proceedings of the ASME Summer Bioengineering Conference*, Marco Island, Florida, 2008.

Crawford GS, Raymond DE, Van Ee C, Bir CA. Biomechanics of Blunt Ballistic Impact to the Forehead and Zygoma, *Proceedings of the 60<sup>th</sup> Annual Meeting of the American Academy of Forensic Sciences*, Washington D.C. February, 2008.

Raymond DE, Crawford GS, Van Ee C, Bir CA. Biomechanics of Blunt Ballistic Impact to the Head and Fracture-Specific Injury Criteria, *Proceedings of the 60<sup>th</sup> Annual Meeting of the American Academy of Forensic Sciences*, Washington D.C. February, 2008.

Raymond DE, Begeman P, Chien HC, Bir CA. Modeling Head Displacement in Frontal Collisions, *Proceedings of the 60<sup>th</sup> Annual Meeting of the American Academy of Forensic Sciences*, Washington D.C. February, 2008.

Raymond DE, Bir CA, Begeman PC, Chien HC. The Effect of Occupant Size on Head Displacement in Frontal Collisions, *SAE Transactions, Journal of Passenger Cars-Mechanical Systems*, 116(6): 1407-1413, Warrendale, PA, 2007

Raymond DE, Bir CA, Begeman PC, Chien HC. The Effect of Occupant Size on Head Displacement in Frontal Collisions, *Society of Automotive Engineers World Congress*, Detroit, MI, *SAE Technical Paper Series 2007-01-1503*, Warrendale, PA, 2007.

Raymond DE, Wheeler JB, Bir CA. Utilizing Physical Evidence to Elucidate Seat Belt Usage in Automotive Collisions Through Biomechanical Simulation, *Proceedings of the 59th Annual Meeting American Academy of Forensic Sciences*, San Antonio, TX, 2007.

Raymond DE, Bir CA, Begeman PC, Chien HC, Wheeler JB. Determination of Seat Belt Usage in Automotive Collisions: Development of a Diagnostic Tool, *Proceedings of the Society of Automotive Engineers World Congress*, Detroit, MI, *SAE Technical Paper No. 2006-01-1128*, Warrendale, PA, 2006.

Raymond DE, Landerville JB, Wheeler JB, Dainty DA. A Parametric MADYMO Analysis for the Determination of Seat Belt Usage in a Severe Frontal Collision, *Proceedings of the XXth Congress of the International Society of Biomechanics*, Cleveland, Ohio, August 1-5, 2005.

Raymond DE, Fatzinger EC, Connors TJ, Wheeler JB. Occupant Kinematic Analysis of an Unbelted Minivan Passenger: A Free Body Approach, *Proceedings of the XXth Congress of the International Society of Biomechanics*, Cleveland, Ohio, August 1-5, 2005.

Raymond DE, Kelley CM, Wheeler JB. Forensic Investigation of Lumbar Disc Injury in an Industrial Setting, *Proceedings of the XIXth Congress of the International Society of Biomechanics*, Dunedin, New Zealand, July 6-12, 2003.

#### **GRANT REPORTS AND UNPUBLISHED THESES**

Raymond DE, Crawford GS, Bir CA. Biomechanics of the Skull and Face to Blunt Ballistic Impact, *Report to the Joint Non-Lethal Weapons Directorate, Quantico, VA*, Grant No. M67854-06-1-5016, July, 2007.

Raymond DE. An In Vitro Biomechanical Analysis of the Effect of Decompression and Stabilization of the Canine Cervical Spine, Undergraduate Thesis, 1998.

#### **INVITED PRESENTATIONS**

Raymond DE, Crawford GS, Van Ee C, Bir CA. The Effect of Soft Tissue on the Biomechanics of Skull Fracture Due to Blunt Ballistic Impact: Preliminary Analysis and Findings, *ASME Summer Bioengineering Conference*, Marco Island, Florida, June 25-29, 2008.

Raymond DE, Crawford GS, Van Ee C, Bir CA. Biomechanics of Temporo-Parietal Skull Fracture from Blunt Ballistic Impact, *ASME Summer Bioengineering Conference*, Marco Island, Florida, June 25-29, 2008.

Raymond DE, Biomechanics of Blunt Ballistic Temporo-Parietal Head Impact, *Wayne State University Biomedical Engineering Department Symposium on Impact Biomechanics*, Detroit, MI, April 18, 2008

Raymond DE. Forensic Biomechanics, *Guest Lecturer, Wayne State University Biomedical Engineering Department – Experimental Methods in Forensic Bioengineering (BME 7995)*, Detroit, MI, April 15, 2008.

Raymond DE, Crawford G, Van Ee C, Bir CA. Biomechanics of Blunt Ballistic Impact to the Head and Fracture-Specific Injury Criteria, *60<sup>th</sup> Annual Meeting of the American Academy of Forensic Sciences*, Washington D.C., February 22, 2008.

Raymond DE, Begeman P, Chien HC, Bir CA. Modeling Head Displacement in Frontal Collisions, *60<sup>th</sup> Annual Meeting of the American Academy of Forensic Sciences*, Washington D.C., February 22, 2008.

Raymond DE. Biomechanics of Skull Fracture with Forensic Applications, *Guest Lecturer, Wayne State University Biomedical Engineering Department – Forensic Bioengineering (BME 7995)*, Detroit, MI, October 25, 2007.

Raymond DE, Bir CA, Begeman PC, Chien HC. The Effect of Occupant Size on Head Displacement in Frontal Collisions, *Society of Automotive Engineers World Congress*, Detroit, MI, April 16-19, 2007

Raymond DE, Bir CA, Wheeler JB. Utilizing Physical Evidence to Elucidate Seat Belt Usage in Automotive Collisions Through Biomechanical Simulation, *59<sup>th</sup> Annual Meeting of the American Academy of Forensic Sciences*, San Antonio, TX, February 19-24, 2007.

Raymond DE, Bir CA, Begeman PC, Chien HC, Wheeler JB. Determination of Seat Belt Usage in Automotive Collisions: Development of a Diagnostic Tool, *Society of Automotive Engineers World Congress*, Detroit, MI, April 6, 2006.

Raymond DE. Biomechanical Assessment of an Unusual Case of Temporo-Parietal Skull Fracture, *Guest Lecturer, Wayne State University Biomedical Engineering Seminar Series (BME 8070)*, Detroit, MI, March 7, 2006.

#### **AWARDS AND HONORS**

Finalist for Young Investigator Award for Poster Presentation – *XIX<sup>th</sup> International Congress on Biomechanics World Congress*, Dunedin, New Zealand, July 6-12, 2003.

### **PROFESSIONAL MEMBERSHIPS AND ACTIVITIES**

Reviewer	ASME Summer Bioengineering Conference 2010
Member	SAE Occupant Protection Committee, 2006-Present
Invited Reviewer	Association for the Advancement of Automotive Medicine (AAAM) 2009
Reviewer	SAE World Congress 2009, Rollover technical session
Co-Chairman Co-Organizer Reviewer	SAE World Congress 2009, 2010 Biomechanics technical sessions
Co-Chairman Co-Organizer Reviewer	SAE World Congress 2007, 2008 Rear Impact, Rollover and Side Impact technical sessions
Reviewer	SAE World Congress 2006, Occupant Protection technical session
Member	American Society of Mechanical Engineers (ASME)
Member	American Society of Biomechanics (ASB)
Member	Society of Automotive Engineers (SAE)

### **CONFERENCES, SEMINARS AND SHORT COURSES**

2010	TASS-MADYMO International Conference – Detroit, MI
2010	Society of Automotive Engineers – World Congress, Safety – Detroit, MI
2009	53 <sup>rd</sup> Stapp Car Crash Conference - Savannah, GA
2009	37 <sup>th</sup> Annual International Workshop on Human Subjects for Biomechanical Research – Savannah, GA
2009	47 <sup>th</sup> Annual SAFE Association Symposium – San Diego, CA
2009	Society of Automotive Engineers – World Congress, Safety – Detroit, MI
2008	52 <sup>nd</sup> Stapp Car Crash Conference – San Antonio, TX
2008	36 <sup>th</sup> Annual International Workshop on Human Subjects for Biomechanical Research – San Antonio, TX
2008	ASME Summer Bioengineering Conference – Marco Island, FL

- 2008 Wayne State University Symposium on Impact Biomechanics – Detroit, MI
- 2008 MADYMO User’s Conference – Detroit, MI
- 2008 Society of Automotive Engineers – World Congress, Safety – Detroit, MI
- 2008 60<sup>th</sup> Annual Meeting of the American Academy of Forensic Sciences – Washington D.C.
- 2008 DTS Fundamentals of Data Acquisition – Seal Beach, CA
- 2007 Society of Automotive Engineers – World Congress, Safety – Detroit, MI
- 2007 59<sup>th</sup> Annual Meeting of the American Academy of Forensic Sciences – San Antonio, TX
- 2006 Society of Automotive Engineers – World Congress, Safety – Detroit, MI
- 2005 XXth Congress of the International Society of Biomechanics and 29<sup>th</sup> Annual Meeting of the American Society of Biomechanics – Cleveland, OH
- 2005 Society of Automotive Engineers – World Congress, Safety – Detroit, MI
- 2003 47<sup>th</sup> Stapp Car Crash Conference – San Diego, CA
- 2003 31<sup>th</sup> Annual International Workshop on Human Subjects for Biomechanical Research - San Diego, CA
- 2003 ARC-CSI Crash Conference 2003 – Las Vegas, NV
- 2003 International Conference on Closed Head Trauma – *Traumatic Brain Injury Mechanisms and Design Criteria for Effective Protection Strategies* – San Juan, Puerto Rico
- 2002 46<sup>th</sup> Stapp Car Crash Conference – Ponte Vedra, FL
- 2002 30<sup>th</sup> Annual International Workshop on Human Subjects for Biomechanical Research, Ponte Vedra Beach, Florida
- 2002 Society of Automotive Engineers – World Congress, Safety – Detroit, MI
- 2001 Society of Automotive Engineers – Safety TOPTEC- *Advances in Side Impact Test Methodologies and Occupant Protection* – Novi, MI
- 2001 Partner’s for Child Passenger Safety – Manufacturer’s Meeting – Auburn Hill, MI

- 2001 Society of Automotive Engineers – World Congress, Safety – Detroit, MI
- 2000 Society of Automotive Engineers – World Congress, Safety – Detroit, MI
- 1999 Society of Automotive Engineers – Professional Development Program  
*Injuries, Anatomy, Biomechanics & Federal Regulation* – Detroit, MI
- 1999 Society of Automotive Engineers – World Congress, Safety – Detroit, MI
- 1999 The Art of Practical and Precise Strain-Based Measurement – Milford, MI
- 1999 43<sup>rd</sup> Stapp Car Crash Conference – San Diego, CA
- 1999 26<sup>th</sup> Annual International Workshop on Human Subjects for Biomechanical  
Research, San Diego, CA
- 1998 MADYMO Training Course, TNO-MADYMO – Livonia, MI

