



INSTITUTE OF FORENSIC SCIENCE

Accident Reconstruction - Fire Investigation
Premises and Product Liability

Curriculum Vitae
Matthew King, PhD
Senior Forensic Engineer
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FORENSIC SPECIALIZATION

Automobile Accident Reconstruction
Agricultural Accident Reconstruction
Industrial Accident Reconstruction
Machine Guarding/Industrial Safety
Fire Investigation

Material Integrity/Failure Analysis
3D Simulation
Code Compliance
Slip/Trip and Fall
Airbag Download/Investigation

EDUCATION

Graduate Certificate in Tertiary Learning and Teaching, December 2012
Otago Polytechnic, Dunedin, NZ

PhD in Applied Mechanics and Engineering Sciences, June 1999
University of California, San Diego
Cumulative GPA: 3.91

MS Mechanical Engineering, May 1996
San Diego State University
Cumulative GPA: 3.91

BS Mechanical Engineering, December 1994
California State University, Fresno
University of Queensland, Brisbane, Australia
Cumulative GPA: 3.4

EXPERIENCE

Institute of Forensic Science – 2024 – Present

Senior Forensic Engineer/Professor – Vehicular accident reconstruction, mechanical and structural failure analysis, along with product liability and slip/trip and fall investigations. Involved in many aspects of Forensic Engineering and reconstruction including the collection and analysis of field data, analysis and production of final written reports and expert witness testimony in court.



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CSI CENTRAL VALLEY - 2003 to Present

Engineering Consultant/Owner – Managing an international Forensic Engineering Consulting Firm with emphasis on vehicular accident reconstruction, fire cause and origin, mechanical and structural failure analysis, along with product liability and slip/trip and fall investigations. Duties include the presenting of educational programs related to Forensic Engineering to Insurance Companies and Law Enforcement with individual training for Special Investigation Units. Involved in all aspects of Forensic Consulting including: the design, documentation and completion of experiments; the collection and analysis of field data; surveying roadways; development of 3-Dimensional computer models and simulations; production of publications and final written reports; and expert witness testimony in court.

OTAGO POLYTECHNIC DUNEDIN – 2012 to 2023

Associate Professor/Academic Leader for Mechanical Engineering/Departmental Research Coordinator/Director of the Investigative Sciences Consultancy. Full time lecturer responsible for educating Diploma, Bachelor, Masters and PhD students within the Mechanical, Electrical and Civil Engineering Departments as well as the School of Business, the College of Art Design and the School of Sports Medicine.

Courses taught include: Mechanical Engineering Design, Advanced Fluid Mechanics, Mechanical Engineering Project, Manufacturing Processes, Urban Transport Planning, Technical Literacy, Engineering Fundamentals, Hydraulics, Engineering Computing.

CALIFORNIA STATE UNIVERSITY FRESNO - 2000 to 2003, 2011

Lecturer – Part time Lecturer responsible for educating students within the Mechanical Engineering Department. Courses taught include: Thermodynamics, Strength of Materials, Engineering Mechanics, Fluid Mechanics and Power Systems Laboratory Experiments.

UNIVERSITY OF PHOENIX - 2004 to 2009

Facilitator – Part time facilitator responsible for educating students regarding topics related to various courses within the science and mathematics curriculum.

J₂ ENGINEERING, INC. - 1999 to 2003

Engineering Consultant - Position as an engineer with emphasis on vehicular accident reconstruction, fire cause and origin, mechanical and structural failure analysis, along with product liability and slip/trip and fall investigations. Involved in all aspects of Forensic Consulting including: the design, documentation and completion of experiments; the collection and analysis of field data; surveying roadways; development of computer models and simulations; production of publications and final written reports; and expert witness testimony in court.



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SAN DIEGO STATE UNIVERSITY - 1995 to 1999

Graduate Research Associate - Responsible for all aspects of flame spread combustion research including developing computer simulation programs, experimental apparatus, and theories for flame spread rates and emission pyrometry.

SELF EMPLOYED, San Diego, CA - 1995 to 1998 (Part Time)

Concept and Design Engineering - Responsibilities included the development of novel ideas and inventions including engineering diagrams for prototype construction.

CERTIFICATIONS

Certified Safety Auditor

Certified Fire Investigator A & B

CDR Data Analyst

CDR Tech Level II

Qualified in Kern, Fresno, Madera, Merced County Superior Court

PUBLICATIONS

General Interest

King, M. (2008). Black Box Technology Improves, California Adjusters' Almanac, Pp 24, February 2008

King, M.; and Pierce, A. (2007). Roundabouts: Coming Soon to a City near You. California Adjusters' Almanac, Pp 26-27, February 2007,

King, M. (2005). The Future of Personal Transportation. Big Valley Adjusters' Almanac, Pp 28-34, November 2005

King, M. (2004). What is inside the Black Box?. Big Valley Adjusters' Almanac, Pp 54-55, April 2004,

Academic

Flaherty, C. and King, M. (2021) Energy from the Motion of Seaweed - an investigation of potential. SITJAR Special Edition: Mechanical Engineering (2021)

Osuagwu, U., Tairi, A., Simmons, D., King, M., Zarfar, H., Ogbuehi, K. (2019) Effects of posture changes on Intraocular Pressure measurements in Healthy Eyes - Goldman Applanation, Schoitz Indentation and PT100 Noncontact tonometers. ARVO 2019, April, Vancouver.



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Lin, J., & King, M. (2019) Hierarchical Process Based Failure Analysis and Application to Marine Pipeline Engineering. IOP Conference Series: Earth and Environmental Science (EES)(Online ISSN: 1755-1315, Print ISSN:1755-1307).
<https://iopscience.iop.org/article/10.1088/1755-1315/295/3/032040>

Osuagwu, U., Tairi, A., Simmons, D., King, M., Zafar, H., Ogbuehi, K. (2019) Effects of posture changes on Intraocular Pressure measurements in Healthy Eyes - Goldman Applanation, Schoitz Indentation and PT100 Noncontact tonometers. Investigative Ophthalmology & Visual Science July 2019, Vol.60, 3198.

King, Matthew D.; Nayagam, Vedha; Williams, Forman A. (2007). Measurements of Polymethyl Methacrylate Diffusion Flames in Von Karman Swirling Flows. Combustion Science and Technology, Volume 160, Issue 1, pages 151-163, 2000, DOI: 10.1080/00102200008935800. Published online: 19 April 2007,

Bhattacharjee, S.; King, M. D.; Paolini, C. (2006). Structure of downward spreading flames: a comparison of numerical simulation, experimental results and a simplified parabolic theory. Combustion Theory and Modelling, Volume 8, Issue 1, 2004, pages 23-39, DOI:10.1088/1364-7830/8/1/002. Published online: 16 August 2006,

King, M.D., Flynn, J., Underwood, H., Harper, S. (2001). A Conservation of Angular Momentum Technique using EDSMAC. 53rd Annual Meeting of the American Academy of Forensic Sciences Conference Proceeding, Paper #C2, February 2001,

Bhattacharjee, S., King, M., Takahashi, S., Nagumo, T., and Wakai, K., A. (2000). Downward Flame Spread Over PMMA. Proceedings of the Combustion Institute, Vol. 28, pp. 2891-2897, (2000),

West, J., King, M., Bhattacharjee, S., and Altenkirch, R.A. (2000). Forward Heat Transfer in Flame Spread Over Thermally Thick Solid Fuels in an Opposing Flow. W.S.S., Technical Meeting, Stanford University, Mountain View, CA, Oct. 29-31, (1995)

Bhattacharjee, S., King, M., Cobb, B., Altenkirch, R.A., and Wakai, K. (2000). Approximate Two-Color Pyrometry. Journal of Heat Transfer, Vol. 122, pp. 15- 20, (2000), ISSN:0022-1481, DOI: 10.1115/1.521431, Flame Spread Calculator, Bhattacharjee, S, West, J., King, M..., <http://eng.sdsu.edu/flame/>, December 2003.

King, M, Bhattacharjee, S. (2000). Determination of Spread Rate in Downward Flame Spread over Thick Fuels. ASME/JSME Thermal Engineering Proceedings San Diego, California, March 15-19, 1999

King, M. (1999) Gravitationally Affected Combustion, UCSD Doctoral Dissertation.

West, J., King, M., Bhattacharjee, S., and Altenkirch, R.A. (1997). Heat Transfer Pathways in Flame Spreading Over Thick Fuels as a Function of the Flame Spread Regime: Microgravity, Thermal and Kinetic. Combustion Science and Technology, Vol. 127, pp 119-140, 1997. ISSN:0010-2202, Date:08/1997, DOI:10.1080/00102209708935690

Bhattacharjee, S., West, J., Hamilton, M., King, M. and Altenkirch, R.(1996). A Criterion for Transition between Thermally Thin and Thick Regimes for Opposed-Flow Flame Spread, Central States Section of the Combustion Institute Meeting, St. Louis MO, 5-7 May.



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King, M. (1996). A Simplified Theory for Downward Flame Spread, SDSU Master's Thesis.

West, J., King, M., Bhattacharjee, S., and Altenkirch, R.A. Comprehensive Determination of Forward Heat Transfer in Flame Spread Over Thermally Thick Solid Fuels in an Opposing Flow, Twenty-Sixth Symposium (International) on Combustion.

Paull, A., King, M. (1995). A Driver Gas Detection Device for Shock Tunnels, Shock Wave, Vol. 4, pp. 289-291

PRESENTATIONS

King, M. (2021, July). Interviewed on NZTV1 regarding reconstruction of collision in Outram. The news clip aired on 7/12/21 and can be viewed at <https://youtu.be/74OyzllIEI>, Dunedin, NZ

King, M. (2020, March). Tyre Mark Striations. Presented at Otago Polytechnic Engineering Technologies, Dunedin, NZ

King, M. (2019, November). Physical Design Parameters for Dynamometers. Presented at SIT/OP Symposium, Dunedin, NZ

King, M. (2019, September). Forensic Opportunities in Guam, Presented at IFPI Symposium, Royal New Zealand Yacht Squadron, Auckland, NZ

King, M. (2019, September). Physiological Design Parameters for Dynamometer, Medical Conference in Wellington, NZ

Osuagwu,U., Tairi,A., Simmons,D., King,M., Zarfar,H., Ogbueh. (2019, April), "Effects of posture changes on Intraocular Pressure measurement", ARVO 2019, Vancouver, CA

King, M. (2016, September). Preparation for a Court Presentation, Presented at IFPI Symposium, Royal New Zealand Yacht Squadron, Auckland, NZ

King, M. (2015, August). Innocent Until Proven Guilty, Presented at IFPI Symposium, Royal New Zealand Yacht Squadron, Auckland, NZ

King, M. (2014, August). The Pro's and Con's of Multi-modal Scientific Presentations, Presented at IFPI Symposium, University of Auckland, NZ.

King, M. (2012, May). Successfully Competing in a Global Market, Presented at Gore, NZ.



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King, M. (2012, May). Forensics for Life: Standing Between Freedom and the Death Penalty, Presented at Gore, NZ.

King, M. (2012, May). Conformity: Choosing the best Materials, Presented at Gore, NZ.

King, M. (2012, November). Renewable Energy – Sustainable Wind Generator, Dunedin, NZ.

King, M. (2011, May). Engineering Integrity, Presented at Fresno, CA.

King, M. (2010, October). Forensic Engineering and Rocket Science, Presented at Kingsburg, CA.

King, M. (2008, May). State of the Art in Accident Reconstruction, Presented at Fresno, CA.

King, M. (2007, December). Forensic Jeopardy, Presented at Sacramento, CA.

King, M. (2007, November). Traffic Signals, Presented at Fresno, CA.

King, M. (2007, August). Fire Investigation, Presented at Visalia, CA.

King, M. (2007, August). Truth or Fraud: A Forensic Examination of the Work Place Injury, Presented at Fresno, CA.

King, M. (2004, February). Forensic Jeopardy, Presented at Sacramento, CA.

King, M., Flynn, J., Underwood, H., Harper, S., (2001, February). A Conservation of Angular Momentum Technique using EDSMAC, Presented at 53rd Annual Meeting of the American Academy of Forensic Sciences, Seattle, WA.

King, M. (1999, March). Determination of the Spread Rate for Downward Flame Spread Over Thick Fuels, Presented at 5th ASME/JSME Joint Thermal Engineering Conference, San Diego, CA

Bhattacharjee, S., King, M., and Cobb, W., Altenkirch, R., Wakai, K. (1999, March). Approximate Two-Color Emission Pyrometry, Presented at 5th ASME/JSME Joint Thermal Engineering Conference, San Diego, CA.

King, M. D., (1999, October). A Driver Gas Detection Device for Shock Tubes, Presented at 4th International Symposium on Shock Tube Technology, Brisbane, Australia.

MEMBERSHIPS

Independent Forensic Practitioners' Institute (IFPI) NZ (Executive Committee) 2012-2023



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COURSES/SEMINARS

Graduate Certificate in Tertiary Learning and Teaching, Otago Polytechnic, Dunedin, 2012

Central Valley Arson Investigators, "Advanced Explosive Recognition," May 2009, Tulare, CA.

Institute of Transportation Studies, "Fundamentals of Traffic Engineering", February 2009, San Diego, CA.

Crash Data Retrieval Specialist, "CDR Technician Course and CDR Data Analyst Course", July 2008, Glendale, AZ.

California Fire Academy – State Fire Training, "Fire Investigation 2B", May 2007, Monterey, CA

National Association of Safety Professionals, "Certified Safety Auditor", February 2007, Selma, CA

Central Valley Arson Investigators, "Explosives Recognition for the First Responders," December 2006, Tulare, CA.

17th Annual Northern California Fraud Investigators Association Conference, April 2006, Monterey, CA

Fresno City Fire Academy, "Fire Investigation 2A", May 2005, Fresno, CA

16th Annual Northern California Fraud Investigators Association Conference, March 2005, Monterey, CA

MacInnis Engineering, PC Crash Training Seminar, January 2004, Las Vegas, NV.

Fresno City Fire Academy, "Fire Investigation 1B", Oct 2003, Fresno, CA.

Central Valley Arson Investigators, "Vehicular Fire Investigation," September 2003, Hanford, CA.

53rd Annual Meeting of the American Academy of Forensic Sciences, February 2001, Seattle, Washington.

Society of Automotive Engineers Topical Technical Conference, "Accident Reconstruction: State-of-the-Art," December 1999, Costa Mesa, California.

Engineering Dynamics Corporation, "2000 HVE Forum," May 2000, San Diego, California.

1st Annual California Association of Accident Reconstruction Specialists Training Conference, October 1999, Concord, California.

5th ASME/JSME Joint Thermal Engineering Conference, March 1999, San Diego, California.

26th International Symposium on Combustion, 1996, San Francisco, California.

4th International Symposium on Shock Tube Technology, October 1994, Brisbane, Australia.