

# Competent Scientific Investigations

## *Central Valley*

Matthew D. King, Ph.D.  
Accident Reconstruction and Fire Investigation

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Curriculum Vitae  
Matthew D. King  
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### FORENSIC SPECIALIZATION

Automobile Accident Reconstruction  
Automotive Fire Investigation  
Trip and Fall

Industrial Accident Reconstruction  
Structural Fire Investigation  
Machine Guarding/Product Liability

### EDUCATION

Ph.D. Mechanical Engineering, June 1999  
**University of California**, San Diego, 1996-1999, Full Time  
M.S. Mechanical Engineering, May 1996  
**San Diego State University**, 1995-1996, Full Time  
B.S. Mechanical Engineering, December 1994  
**California State University**, Fresno, 1990-1993, Full Time  
**University of Queensland**, Brisbane, Australia, 1994, Full Time

### EXPERIENCE:

CSI CENTRAL VALLEY - 2003 to Present

Engineering Consultant/Owner – Managing a Forensic 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. Involved in all aspects of Forensic Consulting and reconstruction including the collection and analysis of field data, production of final written report and expert witness testimony.

UNIVERSITY OF PHOENIX - 2004 to present

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

J<sub>2</sub> 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 collection and analysis of field data, production of final written report and expert witness testimony.

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CALIFORNIA STATE UNIVERSITY FRESNO - 2000 to 2003

Lecturer – Part time faculty member responsible for educating students within the Engineering Department regarding topics related to Mechanical Engineering including Thermodynamics, Strength of Materials, and Engineering Mechanics.

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.

### MEMBERSHIPS

MENSA, SAE, .

### PRESENTATIONS

King, M. D., “Forensic Jeopardy,” Regional Meeting of Liberty Mutual Insurance Group, February 2004, Sacramento, California.

King, M. D., Flynn, J., Underwood, H., Harper, S., “A Conservation of Angular Momentum Technique using EDSMAC,” 53<sup>rd</sup> Annual Meeting of the American Academy of Forensic Sciences, February 2001, Seattle, Washington.

King, M. D., “Determination of the Spread Rate for Downward Flame Spread Over Thick Fuels,” 5<sup>th</sup> ASME/JSME Joint Thermal Engineering Conference, March 1999, San Diego, California.

Bhattacharjee, S., King, M., and Cobb, W., Altenkirch, R., Wakai, K., “Approximate Two-Color Emission Pyrometry,” 5<sup>th</sup> ASME/JSME Joint Thermal Engineering Conference, March 1999, San Diego, California.

King, M. D., “A Driver Gas Detection Device for Shock Tunnels,” 4<sup>th</sup> International Symposium on Shock Tube Technology, October 1994, Brisbane, Australia.

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### COURSES/ SEMINARS

17<sup>th</sup> Annual Northern California Fraud Investigators Association Conference, April 2006, Monterey, CA

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

16<sup>th</sup> 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 Investigator 1B", Oct 2003, Fresno, CA.

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

53<sup>rd</sup> 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.

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

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

26<sup>th</sup> International Symposium on Combustion, 1996, San Francisco, California.

4<sup>th</sup> International Symposium on Shock Tube Technology, October 1994, Brisbane, Australia.

### PUBLICATIONS

"The Future of Personal Transportation," King, Matthew , Big Valley Adjusters' Almanac, Pp 28-34, November 2005.

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

"Structure of Downward Spreading Flames: A Comparison of Numerical Simulation, Experimental Results and a Simplified Parabolic Theory", Bhattacharjee, S., King, M., Paolini, C., Combustion Flame and Modeling, 2003.

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

"Approximate Two-Color Emission Pyrometry," Bhattacharjee, S., King, M., and Cobb, W., Altenkirch, R., Wakai, K. Journal of Heat Transfer, Vol. 122, pp 15-20, 2000.

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

"Gravitationally Affected Combustion," King, M. UCSD Doctoral Dissertation, 1999.

"Determination of the Spread Rate for Downward Flame Spread Over Thick Fuels," King, M., Bhattacharjee, S. 5<sup>th</sup> ASME/JSME Joint Thermal Engineering Conference Proceedings, Paper #6134, March 1999.

"Numerical Analyses of Downward Flame Spread over Fuels in a Gravitational Field," King, M; Bhattacharjee, S; West, J. Article in Preparation.

"Application of Hybrid Emission Pyrometry For Flame Spread Experiments in Microgravity," King, M., Bhattacharjee, S., Altenkirch, R., Olson, S., Horowitz, J. Article in preparation, 1999.

"Stretched Laminar Diffusion Flames in von Karman Swirling Flows," King, M., Williams, F., Vedha-Nayagam, M. Article in Preparation 1999.

"Heat Transfer Pathways in Flame Spreading Over Thick Fuels as a Function of the Flame Spread Regime: Microgravity, Thermal, and Kinetic," West, J., King, M., Bhattacharjee, S., and Altenkirch, R. Combustion Science and Technology, Vol. 127, pp. 119-140, 1997.

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

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

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

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