

J.E.I. METALLURGICAL, INC.
CONSULTING METALLURGICAL ENGINEERS

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CURRICULUM VITAE
OF
R. CRAIG JERNER, Ph.D., P.E.



**CURRICULUM VITAE
OF
R. CRAIG JERNER, Ph.D., P.E.**

EDUCATION

Ph.D., Metallurgy, 1965	University of Denver Denver, Colorado
M.S., Metallurgical Engineering, 1962	Washington University St. Louis, Missouri
B.S., Metallurgical Engineering, 1961	Washington University St. Louis, Missouri

CURRENT RESEARCH ACTIVITIES

Failure analysis of metallurgical and mechanical systems based on metallurgical evidence, analysis and synthesis. Failure analysis of polymeric/non-metallic materials. Environmental effects related to material degradation and failure in metallic and non-metallic materials. Transmission and scanning electron microscopy as applied to microfractography, surface chemical analysis, crack life prediction, and material characterization. Materials evaluation, selection, and improvement as applied to industrial processes and consumer products.

PROFESSIONAL EXPERIENCE

J.E.I. Metallurgical, Inc. Dallas, Texas and Norman, Oklahoma President	June 1990 to Present
Jerner Engineering, Inc. Norman, Oklahoma President	Jan. 1988 to Dec. 1995
Engineering and Materials Technology Corporation (EMTEC Corp.) Norman, Oklahoma Senior Professional Staff Member	April 1987 to Dec. 1987

PROFESSIONAL EXPERIENCE (continued)

Engineering and Materials Technology Corporation (EMTEC Corp.) Norman, Oklahoma President and Senior Professional Staff Member	Jan.1979 to March 1987
United States Department of Transportation Transportation Safety Institute Oklahoma City, Oklahoma Associate staff member/model instructor for motor carrier, railroad, hazardous materials, aircraft and marine accident investigation.	1973 to 1978
S.W. Metallurgical Consultants, Inc. Norman, Oklahoma President and Senior Professional Staff Member	1973 to 1979
University of Oklahoma Norman, Oklahoma Assistant Dean of Graduate College	1971 to 1972
University of Oklahoma College of Engineering Norman, Oklahoma Adjunct Professor of Chemical Engineering and Materials Science (1976 to 1978) Associate Professor of Chemical Engineering and Materials Science (1969 to 1976) - Tenured Assistant Professor of Chemical Engineering and Materials Science (1965 to 1969) - Tenured <u>Courses taught at the University of Oklahoma:</u> Structure and Properties of Materials; Physical Metallurgy; Materials Selection and Failure Analysis; Metallurgical Engineering Laboratory; Metallurgical Engineering Thermodynamics; Electronic Processes in Materials; Vacuum Metallurgy; Special Metallurgical Problems Laboratory; Advanced X-Ray Metallography; Seminar in Physical Metallurgy; Introduction to Engineering Thermodynamics	1965 to 1978
University of Denver Research Institute Metallurgy Division Denver, Colorado Research Associate in Metallurgy Division - NASA Fellowship	1962 to 1965
Washington University St. Louis, Missouri Teaching Assistant in Metallurgical Engineering	1961 to 1962

HONORS/HONORARY

Alpha Sigma Mu (Metallurgical)

Listed in "Best Lawyers in America- Directory of Experts"

Listed in "Who's Who in Engineering"

Sigma Xi, The Scientific Research Society

Standard Oil of Indiana Award for Excellence in Undergraduate Instruction (University of Oklahoma-Campus Wide)

PROFESSIONAL SOCIETY MEMBERSHIPS

Professional

American Institute of Mining, Metallurgical & Petroleum Engineers; Chairman OK. 1970, 1975

American Society for Testing and Materials (ASTM); Member since 1978

American Welding Society (AWS); Member since 1985

ASM International; Member since 1960, Chairman of Central Oklahoma Chapter 1970, 1975;

National Association of Corrosion Engineers (NACE); Member since 1987

National Society of Professional Engineers (NSPE); Member since 1977

Oklahoma Society for Professional Engineers(OSPE); Member since 1977

Society of Manufacturing Engineers (SME); Member since 1985

Texas Society for Professional Engineers (TSPE); Member since 1977

Listings

American Men and Women of Science

Who's Who in Science & Engineering

Who's Who in the South and Southwest

Who's Who in Technology Today

Who's Who in The World

Who's Who in Executives and Professionals

Registrations

Registered Professional Engineer, State of Oklahoma, Number 10618

Registered Professional Engineer, State of Texas, Number 74091

PROFESSIONAL ACTIVITIES

Short Course Lecturer, OCCE: "Metallurgy for Engineers", (1966 through 1976)

Invited Speaker, Ctrl OK Chap of ASM: "Growth of Metallurgical Engineering at the University of Oklahoma", (1969)

Short Course Lecturer, Ctrl OK Chap of ASM: "Fundamentals of Welding Metallurgy", (1969 and 1972)

Short Course Lecturer, OCCE: "Corrosion: Fundamentals", (1971 through 1976)

PROFESSIONAL ACTIVITIES (continued)

Invited Speaker, N. TX Chap of ASM (1977); Tulsa Chap of ASM (1978); Ctrl OK Chap of NACE (1978); Ctrl OK Chap AWS (1978); Wichita, KS Chap ASM (1978); Tulsa Chap ASNT (1978); Tulsa Chap ASME (1979); Ctrl OK Chap ASME (1979); Tulsa Chap AWS (1979); "Fast-Draw Failure Analysis"

Invited Paper at 1978 National Symposium of American Academy of Forensic Sciences, St. Louis, Missouri: "Evaluating Metallurgical Evidence in Violent Vehicle Accidents"

Invited Speaker, 12th Annual Offshore Technology Conference: "Investigation of Ranger I Collapse - Metallurgical and Fracture Analysis", (1980)

Invited Speaker, Tulsa Chapter ASQC (1980); Wichita, Kansas Chapter ASQC (1980); Central Oklahoma Chapter ASM (1981): "Investigation of Ranger I Collapse - Metallurgical and Fracture Analysis"

Invited Paper, Scanning Electron Microscopy/1981 Symposium: "Legal Investigations - The Eye of the Beholder"

Seminar Instructor: "Principles of Accident Investigation", sponsored by EMTEC Corp., Norman, Oklahoma, (1982)

Seminar Instructor: "Failure Analysis and Accident Investigation", sponsored by Wichita Chapter of ASM, Wichita, Kansas, (1986)

Seminar Instructor: "Failure Analysis", sponsored by Tulsa Chapter of ASM, Tulsa, Oklahoma, (1987)

Invited Speaker, Central Oklahoma Chapter of AWS, "What do the ASTM Standards really require", (1987)

Invited Speaker, ASM International, Tulsa Chapter, "Expert View of Litigation Process", (1992)

Invited Speaker, ASM International, Tulsa Chapter, "Is it a Question of Ethics?", (1996)

PUBLICATIONS

"Corrosion of Polycrystalline Copper as a Function of Preferred Orientation", M.S. Thesis, Washington University (1962).

"Thermionic Properties of Polycrystalline Zirconium, Beryllium and Selected Zirconium Beryllides", Ph.D. Dissertation, University of Denver (1965).

"The Growth of Gadolinium Single Crystals", M.S. Thesis, Tzay-chen Shen, University of Oklahoma (1969).

"Thermionic Emission Characteristics of Polycrystalline Zirconium", M.S. Thesis, J. W. Raper, University of Oklahoma (1969).

"The Effect of Firing Temperature on the Mechanical Properties of Steatite and Pyrophyllite", M.S. Thesis, Joe B. Kersey, University of Oklahoma (1970).

"Auger Electron Spectroscopy of the Lanthanide Rare Earth Elements", a Ph.D. Dissertation, Kenneth P. Maddox, University of Oklahoma (1972).

REPORTS

"Investigation of the Characteristics of Intermetallic Compounds as Thermionic Emitters", with C. B. Magee, DRI-2137 (1963).

"Investigation of the Microstructure and Mechanical Properties of 2020X Aluminum Alloy", with R. D. Daniels, North American Aviation (1966).

"Correlation of Superconducting Properties with Surface Properties in Both Thin Film and Bulk Superconductors", AFSC/WPAFB, Interim Report I (1973); Interim Report II (1974); Interim Report III (1975), Final Report (1976).

"Metallurgical and Fracture Analysis of Wreckage from Ranger I", with Stan Rolfe, Ph.D., P.E., John A. Harcourt and Charles W. Powell, U.S. Coast Guard (1979).

"Evaluation of Metallurgical Evidence Recovered Near the Site of the Collision of the USCGC 'Blackthorn' and the S.S. 'Capricorn'", (1980).

"Breakup of the S.S. MARINE ELECTRIC off of Chincoteague, VA." with Stan Rolfe, Ph.D., P.E., for National Transportation Safety Board AI-60, (1984).

"Report of Findings of Failure of 12-inch Stainless Steel A312 Pipeline", U.S. Army Corp. of Engineers Contract DACA63-88-M-0216, (1988).

"Extension of Cyclic Hydrostatic Testing For Failure Analysis", U.S. Army Corp. of Engineers Contract #DACA63-85-C-0185, (1988).

PAPERS

"Preserving Evidence with Fast Response Accident Investigation", Risk Management, pp. 45-50, (February 1993).

"Metallurgical and Fracture Analysis of Wreckage from Ranger I," with John A. Harcourt and Charles W. Powell, Proceedings of 12th Annual Offshore Technology Conference, Vol. II, pp. 59-70, (1980).

"Solution of Laue Back Reflection Patterns of Sapphire Crystals Using a Computer Technique," with Cyril Anazia, Chang-OU Lee, James H. Christensen and Jerris H. Peavey, Metallurgical Transactions, Vol. 6A, pp. 1751-1753, (1975).

"Quantitative Surface Profilometry Applied to Sputter Ion Bombarded Sapphire", with C. Pellerin, J. Christensen and J. Peavey, Journal of Vacuum Science Technology, Vol. 12, pp. 135-139, (1975).

"Prediction of Impurity Concentration Distributions in Heat Treated Metals," with K. E. Starling and D. Neskora, Proceedings of Oklahoma Academy of Science, (1975).

"Chemical Profile Analysis of Selected Stainless Steel Alloys by Auger Spectroscopy", with G. J. Barnes and A.W. Aldag, Proceedings of Oklahoma Academy of Science, 53, pp. 78-80, (1973).

"Surface Concentration of Molybdenum in Type 316 and 304 Stainless Steel by Auger Electron Spectroscopy" with G. J. Barnes and A.W. Aldag, Journal of Electrochemical Society, 199, pp. 684-686, (1972).

"Effect of Firing Temperature on Properties of Natural Steatite and Pyrophyllite", with J. B. Kersey, Journal of Material Science, 7, pp. 621-626, (1972).

"On Interesting High School Students in Metallurgical Engineering - A Successful Approach", Proceedings of II Inter-American Conference on Materials Technology, Mexico City, Mexico, pp. 84-87 (August 1970).

"On Interesting Students in Metallurgical Engineering - A Successful Approach", Journal of Metals, 22, No. 8, pp. 54-58 (1970).

"Effect of Surface Oxidation on the Thermionic Work Function of Beryllium" with C. B. Magee, Oxidation of Metals, 2, No. 1, pp. 1-9 (1970).

RESEARCH GRANTS AND CONTRACTS

"Enhanced Low Field Thermionic Emission", National Science Foundation, NSF Grant #GK-859; \$20,000 (1966).

"Investigation of Mechanical Properties of 2020X Aluminum Alloy", North American Aviation, \$7,000 (Summer 1966).

"Scientific Research Equipment - Leak Detector and Monopole Gas Analyzer", National Science Foundation and General Electric Company, \$29,400 (1967).

"Thermionic Studies of Rare Earth Elements", National Aeronautics and Space Administration NASA Grant NGL 003-016, Project 1561-8, \$38,600 (1967-1970).

"Cold Welding Technique for Constructing Semi-Conductor Devices", University of Oklahoma Research Institute and Alumni Development Fund Grants #111-494 & 3-421, \$10,800, (1970-1971).

"Scientific Research Equipment - Auger Electron Spectrometer", National Science Foundation, NSF Grant #GK-29419, \$12,300, (1971-1972).

"Cylindrical Mirror Electron Energy Analyzer", University of Oklahoma Research Institute Grant #1668-20, \$7,900, (1970-1971).

"Undergraduate Research Participation in Materials Science", National Science Foundation, NSF Grant #GY-5929, \$10,400, (Summer 1969).

"Undergraduate Instructional Equipment X-Ray Diffractometer", National Science Foundation and General Electric Company, NSF Grant #GY-6649 and General Electric Company \$37,400, (1969-1971).

RESEARCH GRANTS AND CONTRACTS (continued)

"Undergraduate Research Participation in Materials Science", National Science Foundation, NSF Grant #GY-7458, \$11,680, (Summer 1970).

"Undergraduate Research Participation in Materials Science", National Science Foundation, NSF Grant #GY-8964, \$23,200, (1971-1974).

"Undergraduate Research Participation in Materials Science", National Science Foundation, NSF Grant #GY-9984, \$17,600, (Summer 1973).

"Correlation of Superconducting Properties with Surface Properties in Both Thin Film and Bulk Superconductors", Air Force Systems Command Wright Patterson Air Force Base, Contract F33615-73-C5049, \$83,500, (1973-1975).

"Metallurgical and Fracture Analysis of Wreckage from Ranger I", U.S. Coast Guard Marine Board of Investigation, (1979).

"Evaluation of Metallurgical Evidence Recovered Near the Site of the Collision of the USCGC 'Blackthorn' and the S.S. 'Capricorn'", U.S. Coast Guard Marine Board of Investigation, (1980).

"Breakup of the S.S. MARINE ELECTRIC off of Chincoteague, VA.", National Transportation Safety Board AI-60, (1984). "Report of Findings of Failure of 12-inch Stainless Steel A312 Pipeline", U.S. Army Corp. of Engineers Contract DACA63-88-M-0216, (1988).

INDUSTRIAL/GOVERNMENT CLIENT LIST*

Air Liquide America Corp., TX
Anschutz Corporation, CO
An-Son Corporation, OK
Barton Valve, OK
Baker Torqmaster, OK
Beech Aircraft Corporation, KS
Big Three Industries, TX
Central and Southwest, TX
Cessna Fluid Power, KS
City of Clinton, OK
Crosby Group Laboratories, OK
CMI Corporation, OK
Dallas Hermetic Air Conditioning, TX
Doyon Drilling, AK
Eby Construction Corporation, CO
Exxon Corporation, OK
Farmland Industries, IL
Gates LearJet Corp., KS
General Motors Corporation, OK

General Motors Assembly, OK
Genesis Crude Oil, MS
Gulfstream American Corporation, OK
Gulfstream Aerospace Corporation, OK
Hardees, OK
Helmerich & Payne, OK
Hendershot Tool, OK
Hertz Corporation, OK
Israel Aircraft, OK
John Soules Foods, TX
Kelco, Inc., OK
Kerr McGee Corporation, OK
Kirby Petroleum Exploration, OK
KN Pipeline, CO
Larco Mining & Metal of Larymna, Athens, Greece
Lee Way Motor Freight, OK
Liberty Glass Company, OK
Mapco, OK
Marathon Battery, TX

Meridian Oil, TX
Mistletoe Express, OK
Mitsubishi Aircraft Int'l, TX
N.L. Acme Pipe, ND
Nolan Systems, CO
Otex Chemical, OK
Oklahoma City Water Department, OK
Perot Systems, TX
Petroleum Resources, OK
Pride Oilfield Services, TX
Public Service Co. of Oklahoma, OK
Schlumberger Well Service, OK
Southwestern Bell, OK
State of Idaho, ID
Texaco Oil & Gas, OK
The Benham Group, OK
TOTCO, OK
Trailmobile Company, OK
Towner Petroleum, TX
Universal Resources, TX
U.S. Air Force Tinker Air Force Base, OK
U.S. Army Pine Bluff Arsenal, AR
U.S. Army Corps of Engineers, TX
U.S. Army Corps of Engineers Lab, TX
U.S. Department of Labor, TX
Vanply, LA
Westinghouse Corp., OK
Will Rogers Airport Authority, OK
Williams Brothers Engineering, OK
Xerox Corp., OK

*Complete list of Industrial/Government
Clients available upon request