FOWLER INC.

METALLURGICAL ANALYSIS
FAILURE ANALYSIS &
EXPERIMENTAL TESTING

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CURRICULUM VITAE

DAVID JOHN COATES, PH.D., P.E.
METALLURGICAL ENGINEER

Dr. Coates is a professional Metallurgical Engineer with over thirty years experience in failure analysis and problem solving. His formal education was received at the University of Newcastle upon Tyne, England where he obtained B.Sc. and Ph.D. degrees in Metallurgy. His doctoral and post-doctoral research interests were in the areas of high temperature gas-solid reactions including oxidation and corrosion. As a result of his research efforts he was awarded the 1978 Galloway Medal by the Institution of Corrosion Science and Technology in England. He is a licensed Professional Engineer in the State of California (Metallurgical Engineering).

Dr. Coates' experience and training in metallurgical and corrosion engineering has been the foundation of his career as a consultant to the legal and industrial communities. Early in his career he obtained work experience in the steel making and processing industries at various British Steel Corporation facilities in England. He was Director of Laboratory Operations at Mettek Laboratories in Santa Ana, California, where he supervised laboratory and office staff in all aspects of the failure analysis and research activities of the company. He is also a former Principal Engineer with General Electric (Nuclear Energy Division), where he was involved in numerous projects concerned with materials in nuclear power plants in the U.S. and with joint technology programs with Japanese and European companies.

In the course of his consulting activities, Dr. Coates has been involved in hundreds of investigations involving materials and components in many applications, including aircraft components, automobiles and other vehicles, tools, pipelines and plumbing, medical implants, chairs, industrial plants, bicycles, etc. He has extensive testimony experience in both depositions and trials.

AREAS OF EXPERTISE

Metallurgy; failure analysis of metals and materials; metallography; microstructural evaluation; materials processing; corrosion analysis including environmentally induced cracking; high temperature oxidation; fatigue analysis; fracture toughness evaluation; scanning electron microscopy; microanalysis.

EDUCATION

Post-doctoral Research Fellow (Metallurgy),
University of California, Berkeley, November 1980-July 1982
Ph.D. Metallurgy,
University of Newcastle upon Tyne, England, 1980
Thesis title: "The Oxidation Resistance of Nitrided Iron Alloys"
B.S. Metallurgy, University of Newcastle upon Tyne, England, 1977

PROFESSIONAL REGISTRATIONS

Licensed Professional Engineer, Metallurgy, California License No. MT001825

WORK EXPERIENCE

Metallurgical Consultant:
Coates Engineering Services, 1988-Present
Principal Engineer:
General Electric-Nuclear Energy, 1987-1988
Associate Consulting Engineer:
L. Raymond and Associates, 1985-1987
Director of Laboratory Operations:
Mettek Laboratories, 1982-1985
Post-doctoral Research Fellow:
University of California, Berkeley, 1980-1982

PROFESSIONAL MEMBERSHIP

Member - The Metallurgical Society of AIME
Member - The American Society of Materials (ASM International)
- Executive Committee, Santa Clara Chapter 1987-1988
- Executive Committee, South Bay Chapter 1989-1994
Member - National Association of Corrosion Engineers (NACE)
Member - National Forensic Society
Member - National Society of Professional Engineers
Member - California Society of Professional Engineers
Member - Independent Metallurgical Engineers of California (IMECA) - Vice Chairman 1996-1998

AWARDS AND CITATIONS

1978 Galloway Medal, Institution of Corrosion Science and Technology, England
1988 General Electric Award to Inventors
Who's Who in the West (1989)
Who's Who of Emerging Leaders in America (3rd Edition)

PATENTS

Austenitic Stainless Steel Alloy - US Patent No. 4,863,682 (1989)

TEACHING EXPERIENCE

University of California, Berkeley, Winter Quarter 1980 -
Undergraduate course on Extraction Metallurgy
California State Polytechnic University, Pomona, Spring Quarter 1985
Undergraduate course on Materials Science
ASM Course - Metallurgy for Non-Metallurgists, Los Angeles 1989, 1990

PUBLICATIONS AND PRESENTATIONS

The Influence of Nitrogen on the Oxidation Resistance of Low Alloy Steels (with A. Hendry) Metal Science,13,315 (1979).

The Oxidation and Corrosion Resistance of Nitrided Iron Alloys (with B. Mortimer and A. Hendry) Corrosion Science, 22,951 (1982).

The Effect of Dispersed Nitrides on the Oxidation of Ferritic Alloys (with A. Hendry) Corrosion Science, 22,973 (1982).

Identification of the Origin of TiO Deposits on a Hydrodesulfurisation Catalyst (with J.W. Evans and S.S. Pollack) LBL Report No. 13244; Fuel, 61,1245 (1982).

Defects in Antiferromagnetic Nickel Oxide (with J.W. Evans and K.H. Westmacott) LBL Report No. 13704; Journal of Materials Science, 17,3281 (1982).

An Electron Microscopy Study of the Low Temperature Catalyzed Steam Gasification of Graphite (with J.W. Evans, A.L. Cabrera, G.A. Somorjai and H. Heinemann); Journal of Catalysis, 80,218 (1983).

The Effect of Microstructure on the Reduction of Nickel Oxide (with K.H. Westmacott and J.W. Evans) - paper presented at the 111th Annual Meeting of the American Institute of Metallurgical Engineers, Dallas, Texas, February 1982.

In Situ Observations of the Gasification of Carbon Catalyzed by Calcium Oxide (with J.W. Evans and H. Heinemann) Applied Catalysis, 7, 233 (1983).

Failure Analysis of Corroded Electronic Components - paper presented at Orcal 1983, Anaheim California, September 1983.

Hydrogen Embrittlement Testing - Other Societies Test Methods - paper presented at ASTM Symposium on Test Method for Hydrogen Embrittlement, Los Angeles, May 1985.

Improvement of the Oxidation Resistance of Alumina Forming Alloys by Nitriding, DOE Report No. DOE/ER/80654-1, February 1989