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Summary of Dr. Fildes' R&D Experience

ACTIONABLE INSIGHT FOR LITIGATORS, INSURERS, AND CORPORATE COUNSEL

- Dr. Fildes is a doctoral scientist who has organized, written proposals, conducted, and managed $28 million in funded projects.
- He successfully tackles challenging technical problems and often sees key issues and devises approaches, which others have missed, through a combination of vast experience, extensive technical knowledge, skilled use of analytics, creativity, an excellent understanding of testing and analysis, and strong project management.
- His R&D was funded by the Army, Navy, Defense Advanced Research Projects Agency, Great Lakes Composites Consortium, Gas Research Institute, Electric Power Research Institute, First Alert, ABB, Westinghouse, Bell Helicopter, Illinois Technology Development Authority, State of Illinois, others.
- Established and co-directed Northwestern University's federally-funded Advanced Composite Materials Intelligent Processing Center. The Center was a highly successful collaboration involving University staff and professors, Packer Technologies International, McDonnell Douglas (now part of Boeing), Production Products (a St. Louis DoD Manufacturer), the Office of Naval Research, the Naval Air Warfare Center, and the Naval Sea Warfare Center.
- Managed a multiyear, multimillion-dollar collaboration of Northern Illinois University, the Falex Corporation, the U.S. Army's TACOOM (Detroit, Michigan), the Army's Armament Research, Development and Engineering Center (ARDEC, Picatinny Arsenal), the Army's Benet Weapons Laboratory, PM Solider Weapon, other Army program offices, and the small arms industry that led to a thrust to establish an Army Center of Excellence in friction and wear of weapons.

TRIBOLOGY

Dr. Fildes offers clients the ability to see problems in ways other have missed based on experience that spans broad knowledge of materials (metals, plastics, composites, ceramics, coatings), the relationship between materials processing and properties and performance, industrial problem solving and failure analysis, testing, product development and design.

- Served as the principal investigator for a multimillion-dollar, multi-year project funded by the U.S. Army (TACOOM, the Armament Research, Development and Engineering Center - ARDEC, Picatinny Arsenal, the Benet Weapons Laboratory, PM Solider Weapon, and the small arms industry) to analyze the failures of weapons due to abrasive wear and to evaluate coatings and lubricants and develop new friction and wear test methods for improving the functioning of weapons.
- Conducts failure analysis and diagnostics of the underlying basis for materials related performance issues with machinery and weapons systems.
- Led the failure analysis of a bearing failure in a power plant.

- Tests materials and equipment performance relative to friction, wear, and corrosion behavior.
- Developed superior methods and equipment to screen the friction, wear, and corrosion behavior of materials, coatings, lubricants, and fuels.
- Determined the reason adhesive wear testing was producing results contrary to expectations based on materials science and helped a process equipment supplier revise the test protocol and establish performance data to support a product introduction.
- Helped a client understand the reasons for galling of stainless-steel components in a product fabrication machine and identified alternative materials and coatings to prevent the problem.
- Conducted R&D in plasma-assisted CVD and fabrication of diamond-like and organometallic coatings for tribological applications.
- Developed patented cutting tool wear monitors, led the automation and statistical analysis activities for a tribology lab, and conducted tribology evaluations, many technology reviews, product evaluations, and R&D strategy assessments for industrial customers and trade associations.

Composite Materials

Dr. Fildes' offers clients a comprehensive experience of composites, including fundamental properties, the relationship between processing and properties, R&D, structure design and fabrication.

- Developed advanced composite materials and their processing methods and equipment under funding from the U.S. Navy and The Great Lakes Composites Consortium and the Navy.
- Designed and demonstrated complex structures that incorporate advanced materials and model-based design methods under funding from the Special Operations Command.
- Conducted R&D on control systems for composites fabrication that incorporate artificial intelligence technology, transducers, and measurement instrumentation under funding from the Great Lakes Composites Consortium, the Army, and the Navy.
- Conducted R&D in surface science including coatings and modeling methods.
- Established and co-directed Northwestern University's federally-funded Advanced Composite Materials Intelligent Processing Center. The Center was a highly successful collaboration involving University staff and professors, Packer Technologies International, McDonnell Douglas (now part of Boeing), Production Products (a St. Louis DoD Manufacturer), the Office of Naval Research, the Naval Air Warfare Center, and the Naval Sea Warfare Center.
- Led the equipment, sensors and controls, and processing activities of the Great Lakes Composites Consortium's (GLCC) teaching factory, and oversight of GLCC's composites repair training program at the Great Lakes Naval Training Center.
- Demonstrated the use of composites in infrastructure applications under funding from the Defense Advanced Research Projects Agency in the Technology Reinvestment Program, in which only 3% of proposals were funded. Dr. Fildes organized and managed a collaboration involving

Northwestern University, the University of Kentucky, and several companies to design and fabricate a composite pedestrian bridge and lift-bridge composite sidewalk panels.

- Applied inorganic resin composites for structural use under industrial funding.
- Conceived of and developed innovative composite materials approaches to ballistic armor, and as alternatives to high strength concrete.

Semiconductor Materials and Devices, Sensors, and Measurement Technology

Dr. Fildes offers clients a strong knowledge of the physics and chemistry of materials used in sensors and electronic devices, semiconductor device physics and characterization, measurement science, sensor device design, and signal processing including statistics, fuzzy logic, and neural networks.

- Co-invented with Northwestern University's Feinberg Cardiovascular Institute and Medical School of methods and instrumentation to monitor, control, and improve balloon angioplasty under industrial funding.
- Prepared the Gas Research Institute's (GRI) R&D plan for control of combustion and industrial processes, and the plan's recommendations were reflected in GRI's R&D solicitations. As part of this activity, Dr. Fildes organized an industry workshop, identified emerging technology, and established industry issues and priorities.
- Developed innovative semiconductor gas sensors under funding from The Gas Research Institute, the Electric Power Research Institute, and First Alert.

Bio for John Fildes, Ph.D.

Dr. Fildes is a doctoral scientist who has conceived, organized, and conducted $28 million of projects including R&D, litigation expert investigations, and collaborations involving Government labs, large defense companies, and leading universities.

Dr. Fildes was also CEO of an $18 million professional scientific/engineering consulting firm; president of a not-for-profit R&D institute; founder and leader of a $6 million scientific/engineering consulting firm; leader of a $3.5 million startup product design firm; leader of a $10 million contract research lab at Northwestern University; a senior professional in the $4.5 billion Borg-Warner Corporation Research Center.

Product Failures Expertise

Friction; Abrasive Wear, Adhesive Wear, Testing, Friction Measurement, Wear Prevention, Lubricants, Oil Quality Monitoring, Solid Lubricants, Hard Protective Coatings, Decorative Coatings, Paint, Electroplated Coatings, Corrosion, Electrochemical Corrosion Measurement, Ice Prevention; Gas Sensors, Carbon Monoxide Detectors; Product Design Procedures.

Materials & Process Expertise

Composites for Aviation, Buildings and Civil Construction: Thermoset and Thermoplastic Resins and Adhesives, Resin Transfer Molding, Autoclaving, Impedance Spectroscopy; Use of Composite Materials and Spray Foams Made On-Site In Construction; Roadway Chip Sealing, Water Treatment; Intelligent Process Control.

Chemistry & Chem Processes Expertise

Prediction Of Materials Properties, Stability, And Compatibility; Chemical Exposure; Chemical Process Equipment Failures.