

RESUMÉ: RICHARD JOHN SMYTHE, Ph.D.

EDUCATION:

Brock University, St. Catharines, Ont., B.Sc. (Hon.) Chemistry (1969)

University of Waterloo, Waterloo, Ont., M.Sc.Chem.(Analytical), Ph.D.Chem.(Analytical) (1973)

State University of New York at Buffalo, Post Doctoral Fellowship Chem. (Electro-analytical) (1974)

Adjunct Research Supervisor, M.Sc. thesis (Anal.Chem.) M.F. Hishon, Brock University 1983-5

PUBLICATIONS:

ACADEMIC THESES:

Honours B.Sc.

The Kinetics of the Reduction of t-Butyl Hydroperoxide by Triphenyl Phosphine
Brock University, St. Catharines, Ont., 1969

Master of Science

Multiple Column Gas Chromatography
University of Waterloo 1970

Doctor of Philosophy

The Application of High Resolution Gas Chromatography and Mass Spectrometry to the Analysis of Engine Exhaust Emissions
University of Waterloo 1973

Research Supervision

Determination of the Helium Discharge Detector Response to Fixed Gases
M.F. Hishon, M.Sc.
Brock University, St. Catharines, Ont., 1984

JOURNAL PUBLICATIONS:

- 1) The Reaction of Hydroperoxide with Triphenylphosphine, R.Hiatt, R.J.Smythe and Christine McColeman, Canadian Journal of Chemistry, 49 (10) 1707 (1971)
- 2) Trapping System and Technique for Indirect Gas Chromatographic Mass Spectrometry Interfacing, F.W.Karasek and R.J.Smythe, A.C. 43, p.2008 (1971)

- 3) Preparation of High Capacity High Resolution Open Tubular Columns, F.W.Karasek, R.J.Smythe and R.J. Laub, Journal of Chromatography, 97, (2) p.151-4 (1974)
- 4) A Gas Chromatographic-Mass Spectrographic Study of Organic Compounds Absorbed on Particulate Matter From Diesel Exhaust, F.W. Karasek, R.J.Smythe and R.J. Laub, Journal of Chromatography, 101, (1), 125-136 (1974)
- 5) The Analysis of Diesel Engine Exhausts for Low Molecular Weight Carbonyl Compounds, R.J.Smythe and F.W. Karasek, Journal of Chromatography, 86, (1), 228-231 (1973)

TEACHING EXPERIENCE:

- 1) Lecturer in Industrial Chemistry, Brock University St. Catharines Ont. 1980-81
- 2) Lecturer in Environmental Chemistry and Occupational Health and Safety/Toxicology, CERTI, Niagara Falls, Ont. 1996/7

MAJOR AREAS OF KNOWLEDGE:

- 1) Chemical analysis involving: instrumental techniques and chemical instrumentation, chromatographic separations, solvent extractions, qualitative, quantitative and structural spectroscopy, classical wet analysis, microscopy and electrochemical techniques. Design, experimental development and implementation of chemical analysis procedures and programs. SPC for chemical analysis and laboratory operations.
- 2) Computer programming, digital data acquisition, digital electronics and D/A interfacing. Currently holding several manufacturer's software certifications.
- 3) Industrial chemistry and industrial chemical processes; industrial experience began in the late sixties and has included problem solving of the following nature for the laboratories servicing the following types of manufacturing operations:
 - 1) abrasives - artificial and naturally occurring,
 - 2) automotive - materials of construction, metals, finishing
 - 3) chemical manufacture - feedstock variation, process and product variation, trace analysis
 - 4) explosives - composition and purity determinations
 - 5) foodstuffs - filth and foreign materials , composition and trace quantity analysis problems
 - 6) metals and minerals - ferrous and non-ferrous, refining, forming and corrosion
 - 7) paints and coatings - formulations, applications and coating failures
 - 8) petrochemicals - process monitoring, structural problems and purity concerns
 - 9) pharmaceuticals - chemical analysis, quantitative and structural, OTC and prescription preparations, process scale up, toxicology and interactions of prescription drugs
 - 10) pulp and paper - process chemistry variation, fundamental R/D, customer complaints
 - 11) rubber, plastics and polymers - production chemistry, application and failure problems
 - 12) soaps, detergents and cleaners - composition, formulations, environmental degradation

- 4) Environmental Chemistry, Occupational and Industrial Toxicology
- 5) Forensic Science: qualified as an expert witness in chemistry, physics, mathematics and toxicology at various levels of court in the mid seventies see R. vs Irwin.

MEMBERSHIPS:

American Chemical Society (1969 to date)

Past chairman, executive committee member and member of the Niagara Section of the Chemical Institute of Canada (1975 to date)

Chairman Chemical Advisory Board, Niagara College of Applied Arts and Technology (1978-88)

Society for Applied Spectroscopy

American Society for Materials

Canadian Association of Fire Investigators

EXPERIENCE:

Private Practice o/a Peninsula Chemical Analysis Ltd.; a commercial chemical analysis laboratory and consulting service. 1973 – to date.

- development of routine and unique analytical methods, problem solving for clients, 85% of which were government, industrial and private commercial laboratories
- forensic science eg R. vs Irwin
- technical and administrative management of laboratory- evaluation, hiring and training of analytical chemists
- selection, purchase, installation and maintenance of large and small chemical analysis equipment, instrumentation and facilities
- devised, developed, built and validated unique and novel testing apparatus with experimental programs for wide range of applied industrial and commercial research and development programs many of which were audited and granted SRD tax credits by Revenue Canada
- investigations conducted into accidents involving explosions, fires, chemical spills and exposure to chemical hazards.

Founding Member and Technical Director, Hevmet Recovery Ltd., Port Colborne, Ont. 1983-89

- development of processes for recovery of metal values in waste hydroxide based filter press cakes from metal finishing industry.

Senior Scientist, Walker Laboratories and Walker Industries R/D; 1989 - March 1996

Projects implemented as Laboratory Senior Scientist:

- development, implementation and initial start-up of chemical analysis QA/QC program for laboratory division
- ISO 9000 and other certification programs for laboratory
- evaluation of and recommendations of LIMS
- development of analytical methodologies for non-routine samples submitted to laboratory division

Projects undertaken as R/D Senior Scientist:

- anaerobic bioprocess developed to reduce sulphate content of leachate from landfill
- designed, built, calibrated and tested a unique product development apparatus and process for emulsion chemicals division
- developed a three phase heterogeneous chemical reactor and process to recover valuable organic materials from waste lubricating oils.
- solvent extraction process developed to recover metal values from metal finishing wastes and process taken to 1/8 tonne per day pilot plant scale
- separation process developed to recover asphalt and other material from roofing shingle waste
- provision of problem solving and technical consulting services for the technical support and R/D laboratories of other divisions
- detailed consulting reports and feasibility studies were conducted on:
 - i) survey and critical evaluation of commercially available OES systems
 - ii) bio-remediation of paraffinic fuel spills
 - iii) High energy particle beam waste destruction
 - iv) novel chemical disinfectant systems
 - v) reverse osmosis with corrosive systems
 - vi) thermometric and enthalpimetric titration systems

Forensic Scientist with Walters Forensic Engineering, 1999 to date. Qualified as an expert witness in chemistry, toxicology, physics, mathematics, computer science, electronics and forensic science in all levels of court in Ontario, New York and Pennsylvania.