YVES O. PARENT, Ph.D.
Chemical Engineering Specialist & Consultant

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SPECIALIZATION

- **Mass and energy transfer systems analysis and trouble shooting.**
- **Adsorption and catalysis.**
- **Solid adsorbent and catalyst synthesis, characterization and process scale up.**
- **Abatement and remediation systems.**
- **Technical due diligence.**
- **Silica gels/ Zeolites/ Activated Carbons/ Clays/ Metals-Metal Oxides**

SCOPE of CONSULTING SERVICES

- Chemical and physical process analysis.
- Process scale up planning.
- Chemical reactor design and data analysis.
- Separation systems for recovery or abatement, sorption or filtration.
- New engineering ideas and innovative process perspectives.
- Adsorption science applications and trouble shooting in gas- or liquid-phase for bulk or trace compounds.
- Adsorbent materials synthesis and characterization; gels, co-gels, zeolites, clays.
- Catalyst materials synthesis and characterization; gels, co-gels, zeolites, clays, metals.
- Trouble shooting material and process operations and performance.
- Bench scale and pilot plant design and operations.
- Experiment planning and data interpretation.
- Apple Macintosh® computer software, hardware and networking expertise.

PROFESSIONAL EXPERIENCE

Chemical Engineering Consulting Services LLC, 1996-present
Heat and mass transfer systems design and trouble shooting. Adsorbent design and characterization. Catalyst design and characterization. Experiment planning and data interpretation. Direct contact condenser design and modeling. Biomass conversion and hydrogen production, catalytic steam reforming. Due diligence technical reviews in: adsorptive separations, fuel cell applications, energy conservation, mechanical alloying. Project management.

National Renewable Energy Laboratory, 1991-1996
Engineering expert in photocatalytic oxidation materials and systems, indoor air quality control systems, chemical process analysis and trace contaminant removal. Technical support for desiccant cooling systems design and operations, adsorbent characterization and applications, catalyst characterization and manufacturing, photocatalytic reactor system design and trouble shooting, and geothermal power plant chemical abatement systems. Energy efficiency analysis and solar reactor design for VOC abatement systems.

Davison Chemical Division of W.R.GRACE & Co., 1981-91
Research and development in adsorbent material and adsorptive separations process development and applications. Chemical and physical characterization of adsorbent and catalytic solids. Conception, development and trouble shooting of products and processes related to vegetable oil fining, olefin drying, white wine fining and stabilizing, protein adsorption, air separation and general moisture control applications. Process and plant design and trouble shooting for adsorbents and catalyst bases including silica and aluminum phosphate gels, zeolites, hydrotreating catalyst, Raney Nickel and FCC catalyst. Process and material patents.

PROFESSIONAL STATUS

Education
- Ph.D., Chemical Engineering, Lehigh University
- B.S., M.S., Chemical Engineering, Ecole Polytechnique de Montréal

Professional Affiliations
- American Institute of Chemical Engineers
- American Chemical Society
- International Adsorption Society
- Order of Engineers of Québec

Lecturer
- Continuing Education Short Course, 2 days, AIChE, "Adsorption Theory & Practice", 2 to 4 times per year 1982 to 2003.

Publications
- Adsorbent and catalyst material manufacture and processing applications; list available on request

Languages
- Fluent in French and English

PATENTS

- U.S. Patent No. 4,629,588, Foreign Patent Granted, co-inventor
  "Method for refining glyceride oils using amorphous silica"
  This Patent has also been issued in over 12 other countries. It focuses on the removal of phospholipids and associated metal ion contaminants from vegetable oils. It relates to material composition, manufacturing and use processes. It is the basis for the W.R. Grace & Co. TRISYL® product line.

- U.S. Patent No. 4,684,530, Foreign Patent Granted, co-inventor
  "Adsorption of proteins from fluids"
  This Patent has also been issued in France and Germany and a few other countries. It focuses on the removal of haze forming proteins from wines and juices. It covers material composition, manufacturing and use processes.

- U.S. Patent No. 5,292,701, Foreign Patent Granted, co-inventor
  "High pore volume and pore diameter aluminum phosphate"
  This Patent focuses on the material composition and manufacturing techniques for this family of poly-olefin catalyst bases. It is the basis for a W.R. Grace & Co. product line.

- U.S. Patent No. 5,925,291, Foreign Patent Granted or applied for, co-inventor
  "Method and apparatus for high-efficiency direct contact condensation"
  This patent is focused on the design of highly efficient vapor condensation equipment using direct contact of vapor and liquid. The method allows for physical and chemical interactions of the possible constituents of the liquid and vapor, particularly geothermal steam.

- U.S. Patent No. 6,282,497, Foreign Patent Granted or applied for, co-inventor
  "Method for analyzing the chemical composition of liquid effluent from a direct contact condenser"

- U.S. Patent Pending, co-inventor
  Attrition resistant fluidizable steam reforming catalyst for conversion of tar containing syngas produced from biomass.

- Applications withheld:
  - Manufacturing process for modified zeolitic moisture adsorbent exhibiting reduced affinity for olefins.
  - Instrumentation for the continuous on-line monitoring of haze forming protein in white wines during fining process.