GREGORY S. PATIENCE

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CONSULTING SERVICES/CONTRACTS

Haldor-Topsoe (Denmark) 1996–2013
Arkema/ATOFINA (France) 2002–present
Total American Services, Inc. 2005–2013
Commission de Santé Sécurité (Québec) 2010
Pyrotech (2009)
GLG Consulting (2007–present)
IRPhotonics (Montréal) (2006)
ME Resource (2013-2014)

POLYTECHNIQUE MONTRÉAL, 2004-PRESENT

Professor – Department of Chemical Engineering

- Established research laboratory centered on heterogeneous catalysis and fluidization
- Awarded $6 million with Clariant (Johnson-Mathey) to scale-up C-LiFePO4 battery cathodes (2013)
- Co-Chair of the International Conference on Anti-malaria and Sustainable Development, Bujumbura, Burundi, October, 2010, 2011 and 2012
- Industrial Chair for the World Congress of Chemical Engineering (2005- 2009)
- Executive member of the Canadian Society of Catalysis (2008-2012)
- New equipment installation/modification – >$5 million investment
    - 7 mmID, 43 mmID fluidized bed (65 bar, 1100°C)
    - TPR/TPO/TPD Fixed/fluidized bed reactors with on-line MS
    - Particle characterization: Particle Size Analysis, Pore size distribution, Hg porosimetry
    - Analytical Equipment: FTIR, Mass Spec, O_2 paramagnetic analyzer, GC, HPLC, GS-MS

DUPONT TEXTILES & INTERIORS/ INVISTA (INTERNATIONAL) S.A.R.L. 2000-2004

Manager – Fibers Technology Laboratory Meyrin, Switzerland (2003-2004)

Administrative responsibility for End-Use Research of novel fibers, textiles, non-wovens, leather, footwear, cosmetics, and physical testing with a staff of 45 – Ph.D.s, engineers, technicians and temporaries and a budget of $7.5 million/year.

- Global Footwear Technology Lead - developed programs related to new concepts in Footwear and Leather with LYCRA® certification, identifying potential intellectual property opportunities, product evaluation, physical property characterization, and fabric developments.
- Technology lead for Films & Coatings – developed new breathable, waterproof elastic films (membranes) for applications in footwear, apparel, automotive and upholstery. Compared product performance versus existing market offerings and proposed alternative strategies to commercialize. Overall strategy was to drive towards a sustainable differentiated product offer.
- Consultant for ATOFINA in catalysis.
- Directed a Ph.D. thesis in collaboration with Haldor-Topsoe (DK)
- Responsible for developing processes to improve lab performance from strategic development through execution. Implemented ISO 9000: 2001.

Major Accomplishments:

- Developed three major research programs with top research institutes in India.
- Filed four notices of invention.
- Created woven fabric constructions from bi-elastic fibers for upholstery applications.

- Generated frame-work to evaluate physiological comfort for Footwear/Apparel/Automotive segments: developed hydrolysis test methods, introduced environmental cycling and heat ageing tests, refined existing tensile property measurements and devised a theoretical framework to evaluate breathability.

SUPERVISOR END-USE RESEARCH - READY-TO-WEAR - GENEVA, SWITZERLAND 2000-2002

Led a team of 3 engineers and 10 technicians responsible for introducing new product developments around elastic fibers and fabrics. Led European prove-out strategies and managed technical programs with major European African and Mid-East textile mills. Hosted technical seminars and developed a three day general textile course attended by over 200 customers.

Major Accomplishments:

- Generated several notice of inventions around fabric construction related to physiological well being – heat/moisture transport, elasticity and comfort.
- Developed marketing packages/samples that were distributed globally.
- Introduced thermodynamic modeling as a tool to compare quantitatively elastane fiber performance under commercial operating conditions.

DUPONT IBÉRICA, S.A. – ASTURIAS, SPAIN 1996-2000

Visiting Scientist – University of Oviedo

Supervised doctoral theses, post-docs and undergraduate students on programs related to catalyst life (degradation), fluidization, chemical kinetics and catalyst regeneration. Managed collaborations with seven European universities and research institutes for membrane reactor technology.

Major Accomplishments:

- Generated basic data to support modifications of a commercial reactor.
- Patented technology based on membrane reactors.
- Built a demonstration scale membrane reactor and an experimental fluid bed reactor for kinetic studies
- Developed a kinetic model characterizing the partial oxidation of n-butane to maleic anhydride.

PLANT TECHNICAL – ASTURIAS, SPAIN 1996-2000

Responsible for plant initiatives related to mass balance, on-line sampling of gases and solids, radioactive tracers, and adsorbed organic species. Participated in safety programs and led collaborations at institutes in Europe and North America directed at improving plant performance.

Major Accomplishments:

- Successfully introduced a major design modification (Project cost of $10 million)
- On-line sampling program clearly identified deficiencies in plant operation.
- Radioactive tracer program highlighted necessary improvements

E.I. DU PONT DE NEMOURS & CO. – WILMINGTON, DELAWARE 1990-1996

Lab Supervisor – Experimental Station

Led a team of engineers responsible for identifying reaction engineering issues related to new process technology. Managed a lab with five different reactor types responsible for quality and testing new catalyst formulations. Provided operational and data reduction support for a $40 million pilot plant.

Major Accomplishments:

- Patented process technology for calcining and activating commercial catalyst and successfully implemented in a new plant.
- Led a program that identified a major design deficiency in the plant
- Published an article on scale-up factors for chemical processes in the Encyclopedia of Chemical Processing and Design.