

## CURRICULUM VITAE

Roxaré Thompson, PhD

### EDUCATION

- 1988-1989 McGill University, Montreal, Canada  
M.Eng. in Chemical Engineering, Pulp and Paper specialization
- 1974-1977 UMIST, Manchester, England  
Ph.D. in Corrosion Science and Engineering  
Thesis: The High Temperature Scaling of Nickel-base Alloys in Halogen-Polluted Atmospheres.
- 1973-1974 UMIST, Manchester, England  
M.Sc. in Corrosion Science and Engineering  
Dissertation: The Mass Transfer Simulation of Corrosion in a Rotating System.
- 1969-1973 Tehran University, Engineering Faculty, Tehran, Iran  
B.Eng. in Chemical Engineering

### PROFESSIONAL MEMBERSHIPS:

1. The Association of Professional Engineers and Geoscientists of British Columbia (APEGBC)
- 2- Canadian Pulp and Paper Association (PAPTAC)

### WORK EXPERIENCE:

2001-2005: Pulp and Paper Research Institute of Canada (PAPRICAN)  
Chemical Recovery

The focus of this work was on black liquor characterization in order to improve recovery boiler and evaporators operations. The work included the development of viscosity-temperature, viscosity-solids and viscosity-REA profiles. Methods for reducing viscosity and two on-line commercial viscometers were evaluated.

1991-2001: PAPRICAN  
Chemical Separation and Regeneration Technologies

The work included the evaluation of chemical separation and regeneration technologies for the pulp & paper industry and, in particular, for systems closure. These include the separation of salt from acid in ClO<sub>2</sub> generator spent acid, separation of non-process elements (Cl and K) from ESP catch and pulping liquors, and separation of hydrosulphide from hydroxide in pulping liquors. The methods used involved ion exchange resins (ion retardation) and ion-exchange membranes (electrodialysis). Also worked on the splitting of saltcake from kraft mills using bipolar membrane electrodialysis. Extensive steady-state and dynamic modelling were carried out to study system closure and the effect of including separation technologies on a mill's operating conditions.

1989-1991: PAPRICAN  
Corrosion and Materials Engineering

The work focused on the corrosion of kraft recovery boilers in two areas: the water wall and the generating bank. The work involved the design and supervision of high temperature gas and solid phase experiments, specimen analyses by optical and scanning electron microscopy, as well as thermodynamic and kinetic analyses of the various experimental systems.

1988: PAPRICAN, Pointe Claire  
Sensor Section.

Data analysis and design of a test rig for the drainage and characterization of pulp.

1979-1980: Strathclyde University, Scotland  
Post-doctoral work in the Metallurgical Engineering Dept.

The research focused on the improvement of the mechanical properties of steel by precipitation hardening.

#### PUBLICATIONS:

Authored or co-authored the following publications:

#### JOURNAL PUBLICATIONS:

1. Removal of sodium thiosulphate from partially oxidized white liquor and use of the thiosulphate-lean solution in bleaching, Pulp Pap. Can, 104 (12): 63-67, 2003.
2. Sodium chloride removal from oxidized white liquor using a fixed-resin bed system, Pulp Pap. Can., 103 (3): 28-31, 2002.
3. Non-process elements in the kraft recovery cycle, Part II: control and removal options, Pulp Pap. Can., 101 (2): 41-46, 2000.
4. Toward improving the pulping process: a new method for producing split sulphidity liquors, Pulp Pap. Can., 101 (1): 63-68, 2000.
5. Non-process elements in the kraft cycle, Part I: Sources, levels and process effects, Pulp Pap. Can., 100 (9): 47-51, 1999.
6. Ion-exchange technologies for the minimum effluent kraft mill, Pulp Pap. Can., 100 (8): 31-36, 1999.
7. Chloride removal from kraft recovery boiler ESP dust using the precipitator dust purification (PDP) system, Pulp Pap. Can., 100 (7), 46-53: 1999.
8. The Generator Acid Purification (GAP) system reduces caustic make-up requirements at kraft mills, Pulp Pap. Can., 100 (2): 34-39, 1999.
9. Electrodialysis separates a sulphide-rich liquor from mill white liquor, Tappi J., 81 (10): 159-164, 1998.
10. Sodium recovery with potassium and chloride removal from electrostatic precipitator catch at coastal and/or closed cycle mills using bipolar membrane electrodialysis, Tappi J. 8 (6): 154, June 1997.
11. Separation of sulphide from hydroxide in pulping liquors by electrodialysis, JPPS, 23 (4): J182, April 1997.
12. Enhancement of the current efficiency for sodium hydroxide production from sodium sulphate in a two-comp. bipolar membrane electrodialysis system, Separation & Purification Technology, 11: 159-171, 1997.
13. Bipolar membrane electrodialysis for sodium hydroxide production from sodium chlorate: comparison of the two-and three-compartment configurations, JPPS, 22 (1): J1-J7, Jan 1996.
14. Caustic-soda and sulphuric acid production from sodium sulphate by-product of chlorine dioxide generation by bipolar membrane electrodialysis - Economics, Tappi J., 78(6): 127-134, 1995.

CONFERENCE PRESENTATIONS (excluding those in journal publications):

1. The first mill trial of aldehyde-enhanced bleaching, 2005 Int. Pulp Bleaching Conf., Session on New Developments, Stockholm, June 14-16, 2005.
2. Splitting of kraft mill green liquor using a snake-cage polyelectrolyte resin, IEX 2004 Conference, Cambridge, U.K., June 2004.
3. Caustic soda production from green liquor using Green Liquor Splitter System, International Chemical Recovery Conference, Charleston, S. Carolina, June 2004.
4. Progressive system closure at Tembec's Skookumchuck kraft pulp mill. Part 1. Project description and analysis, PAPTAC Meeting, Montreal, January 2004 and PACWEST conference, May 2004 (Best Technical Paper Award).
5. Fixed-resin bed technologies for chemical pulp mill system closure, German Pulp and Paper Annual meeting, July 2002.
6. Chemical separation and regeneration technologies for kraft mill system closure, Canadian Society of Chemical Engineering Conference, Montreal, Oct. 16-18, 2000.
7. Chloride and potassium removal from the kraft recovery cycle using the Precipitator Dust Purification (PDP) system: A coastal mill case study, Canadian Society of Chemical Engineers Conference, Montreal, October 16-18, 2000.
8. Chloride removal from the kraft recovery cycle, Atlantic Branch Meeting, PAPTAC, October 13-15, 1999.
9. Chloride removal from kraft liquors using ion exchange technology, Tappi Pulping Conference, Montreal, pp. 1125-1136, October 25-29, 1998, also TAPPI Environmental Conf., Vancouver, April 5-8, 1998.
10. Novel ion-exchange kidneys for mill closure, International Emerging Technologies Conference, Orlando, Florida, March 7-13, 1997.
11. Optimization of a two-compartment bipolar membrane electro dialysis system for the production of sodium hydroxide and sulphuric acid from sodium sulphate generated at kraft mills using ECF and TCF bleaching sequences 1996 TAPPI Minimum Effluent Mills Symposium, Atlanta, GA., January, 1996, also AIChE Annual Meeting, Miami, Fl., November 1995.
12. Fireside Corrosion of Kraft Recovery Boilers by Hydrogen Sulphide and Methyl Mercaptan, the NACE Technical Program, Nashville, USA, April 1992.
13. The sulphidation of carbon steel, The ASM International Materials Week '92 in Chicago, USA, November 1992.
14. Development of a laboratory test method for fire side corrosion in kraft recovery boilers, Tappi Eng. Conf., Nashville, USA, September 1991 (Best Paper Award).
15. A superheated steam dryer for tissue paper, The Helsinki symposium on alternative methods for pulp and paper drying, June 1991.

#### PUBLICATIONS IN MONOGRAPHS:

1. Recent developments in mill implementations of water reduction strategies, in "Water Use Reduction in the Pulp and Paper Industry", 2<sup>nd</sup> edition, PAPRICAN, December 2001.
2. Ion-exchange technologies for the minimum effluent kraft mill, in "System closure in pulp and paper mills", pp. 75-81, Paris, J. and LeRoy, C., Eds., Pulp and Paper Technical Association of Canada, Montreal, October 1998.
3. High Temperature Corrosion in Halogenation, Oxy-Halogenation, and Oxidizing Environments. Published in "High Temperature Corrosion in Energy Systems". Michael F. Rothman, Ed., 1985.

#### PATENTS ISSUED:

1. Method and apparatus for removing sodium chloride from pulping chemicals using an amphoteric resin bed, U.S. Patent No. 5,922,171, July 13, 1999.
2. A process for the separation of sulphides from pulping liquors using amphoteric resins, U.S. Patent No. 5,942,084, August 24, 1999.
3. Fixed-resin bed technologies for the treatment of chlorine dioxide generator feed and effluent streams, U.S. Patent No. 5,792,441 August 11, 1998.
4. Electromembrane processes for the treatment of kraft mill electrostatic precipitator catch, U.S. Patent No. 5,567,293, Oct. 22, 1996.
5. Separation of sulphides from pulping liquors by electro dialysis, U.S. Patent No. 5,536,384, July 16, 1996.

#### TECHNICAL REPORTS (other than those presented in conferences or published in journals)

1. Black Liquor Characterisation, Initial Studies, PAPRICAN Report 1729, August 2004.
2. Removal of excess sodium hydroxide from white and polysulphide liquors using electro dialysis, PAPRICAN Report 1707, April, 2004.
3. A survey of water reduction practices at Paprican member company mills, PAPRICAN Special Report 462, April 2002.
4. Process and non-process element balances for a kraft mill, Part I: Base-line Operation, PAPRICAN Report 1405, January 1999.

#### AWARDS

##### Co-winner in the following categories:

- 2004 Best Technical Paper Award (Progressive system closure at Tembec's Skookumchuck kraft pulp mill. Part1. Project description and analysis). PAPTAC Meeting, Montreal, January 2004 and PACWEST conference, May 2004
- 1996 PAPRICAN Presidential Excellence award for work on the GAP system
- 1992 PAPRICAN Presidential Citation for work on the accelerated generating bank corrosion
- 1991 Best Paper Award (Development of a laboratory test method for fire side corrosion in kraft recovery boilers), TAPPI Engineering Division's Corrosion and Materials Engineering Committee
- 1991 The ASM International Metallographic contest in Scanning Electron Microscopy Class