

# **Dr. Raymond Bergstra, B.Sc., Ph.D.**

## **MTN Consulting Associates**

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## **Profile**

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Career successes and accomplishments have been achieved during two career phases – 12 years in the downstream oil industry in lubricant product development, marketing, and sales, followed by 8 years as a consultant to the agriculture, lubricants, biofuels and emerging bioproducts industries. Significant contributions to a wide range of projects were made through efficient use of resources, interactions with academia, industry, and government, and application of technical knowledge with business sense, for project management, new venture marketing and commercialization, and industrial research programs.

Career Highlights include:

- Ph.D. in synthetic organic chemistry (University of Alberta).
- Two years as a sessional instructor of university level chemistry.
- Twelve years of international research, product development, sales, and marketing experience including 3 years as a business manager for western Canada.
- Successful operation of a management consulting practice since 2003 focused on strategies for new technology commercialization; recognized as an industry expert for developing new ventures in agriculture, bioenergy, biofuels, bioproducts, and chemicals.
- Five years as a business development and market intelligence consultant to Alberta Agriculture and Rural Development.
- Key clients have included Alberta Agriculture and Rural Development, Advanced Education and Technology, Alberta Crop Industry Development Fund, Alberta Pulse Growers, Alberta Sustainable Resource Development, Alberta Research Council, University of Alberta, Saskatchewan Research Council, Environment Canada, National Research Council, Sustainable Development Technology Canada, as well as a from the private sector companies from energy and forestry.
- A member of BioAlberta, American Oil Chemists Society, Society of Tribologists and Lubrication Engineers, and the Canadian Association of Management Consultants.

# Career Path

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## 2003 to Present

**Consultant and Sole Proprietor:** Market Research, Technology Commercialization, New Venture Management

**MTN Consulting Associates, Edmonton.**

Develop research, business, marketing strategies / Conduct market and industry research / Provide technology and commercialisation management / Support new opportunities in agriculture, forestry, bio-based fuels, biomaterials, and chemicals.

MTN Consulting Associates' recent projects include:

- **Biobased Lubricant Technology Review, 2012.** A review of commercially available biobased lubricating oil and performance additive technology was completed for a company interested to formulate and market a biobased and environmentally safe multipurpose spray lubricant.
- **Farm Based Biogas/Power Generation: A Business Case 2012.** The business case was developed for a proposed farm and municipal organic waste based biogas/renewable power plant to be located in Southern Alberta. The business case was used to support a \$500,000 funding request, which successfully secured.
- **Synthetic Lubricating Oil Review, 2012.** A comprehensive review was completed of synthetic lubricating oil technology, applications, pricing, manufacturing, supply, demand, and market trends.
- **Rhodiola Rosea Extract Production: An Opportunity Assessment, 2012.** The business case for establishing an Alberta based natural health product (NHP) extraction facility was investigated. This included research into the North American market for natural ingredients used in general health, mood and energy boosting over-the-counter NHP's.
- **Oilseed-based Product Development and Commercialization Management, 2011.** Program and project strategies related to a series of biobased (derived from canola oil) chemical projects were provided at the request of Alberta Crop Industry Development Fund, in order to determine viable pathways to commercialization. The development of business-to-business relationships was a key aspect of this work.
- **Biolubricants Opportunities in Alberta, 2011.** A comprehensive assessment of market opportunities for canola oil based industrial lubricants was conducted. The project was funded by Agriculture and Agri-Food Canada's Growing Forward program, in collaboration with a private company specializing in industrial applications of oilseeds.
- **Forestry Derived Industrial Chemical Production Opportunities, 2011.** A series of emerging biobased industrial chemical technologies was evaluated for a western Canada pulp mill. Each technology was assessed based on its state of development, access to markets, export potential, and projected market growth.
- **Triticale Competitiveness as a Feedstock for Ethanol Production, 2010.** The value and competitiveness of triticale as a source of starch for ethanol fuel production was determined for the Canadian Triticale Biorefinery Initiative. In addition, a triticale market development strategy and value proposition was defined, specific to each ethanol plant in western Canada.

- **Furfural Production: A Business Case, 2010.** The business case for the production of furfural from dissolving pulp processes was determined. Several business-to-business partnership opportunities were defined, which were considered critical to the success of the venture.
- **Agricultural Based Industrial Chemicals Science Cluster Proposal, 2009.** A series of research and development projects were solicited and the business case and impacts on Canadian industry were developed for a submission to Agriculture and Agri-Food Canada in order to gain funding for commercialization of emerging biobased chemical technologies.
- **Processing Opportunities for Pulse Crops in Alberta, 2009.** A technology review, opportunity assessment, and business case analysis was completed in order to determine the viability of implementing pulse crop (pea) fractionation and processing capacity (and export potential) in Alberta for food applications.
- **Octylated Styrenated Diphenyl Amine: Use and Disposition in Lubricants, 2009.** A study of the use, disposition, and potential environmental releases of octylated styrenated diphenyl amine and other diaryl amine antioxidants was completed for Environment Canada.
- **Petroleum Substances Review: Lubricating Oils, 2009.** A study of the use, disposition, and potential environmental releases of lubricating oils via their distribution and applications was conducted for Environment Canada.
- **Business Opportunities for Tall Oils, 2009.** A technology review, opportunity assessment, and business case analysis was completed in order to define higher valued product opportunities for crude tall oil produced at Alberta kraft pulp mills.
- **Market Opportunity Assessment for a Biodiesel-based Fuel Conditioner, 2008.** A thorough review and sector analysis of the diesel fuel conditioner market was completed. Recommendations for a business development and marketing strategy were provided.
- **Industrial Opportunities of Fatty Acid Methyl Esters, 2008.** The chemical solvents industry in Alberta was reviewed and a series of applications was identified as new business opportunities for follow-up by the client.
- **Bio-based Methanol: A Market Study, 2008.** The market study on the volumes and applications of methanol was completed. A key focus for this project was identification of value added opportunities for bio-based methanol vs. conventional methanol derived from crude oil or natural gas along with a strategy for entering the market.
- **Triticale: A Value Proposition as a Bio-Industrial Feedstock, 2008.** A thorough study of the value of triticale as a starch and fibre resource for fuel, chemicals, and materials was completed, along with economic models to present the impact on crop production and biorefining margins.
- **Biorefining Opportunities at Alberta Pulp Mills, 2008.** A thorough review of global advances in biorefining, biofuel and bioenergy technologies, as pertaining to pulp mill operations was completed for Alberta Employment, Immigration and Industry.
- **Recommendations for a National Bioproducts Program for NRC, 2007.** Key areas of focus and a research and development framework to support Canada's growth in biorefining, biomaterials, bioenergy and biochemicals technology was provided for NRC's National Bioproducts Program.

- **Strategic Plan Development for Bioproducts Alberta, 2007.** A five year strategy through to 2012 was developed for Bioproducts Alberta that focused on integrating the objectives of Alberta stakeholders, facilitating commercial partnerships, building a western Canadian bio-economic region, and bioindustrial project management.
- **Environmental Scan of the Global Bioproducts Industry, 2007.** A review was completed of global activity and initiatives underway relating to the development of technology in biorefining, biomaterials, bioenergy and biochemicals that was used to develop recommendations for key areas of focus for Canada's National Bioproducts Program.
- **ABIP Proposal for an Agricultural Feedstock Based Biorefining Initiative 2007.** Using the input from the individual research teams, a full proposal was written on behalf of a Canada-wide biorefining research and development network, which successfully obtained Agricultural Bioproducts Innovation Program (ABIP) funding.
- **Industrial Opportunities for Chemicals Derived from Flax Oil, 2007.** An oleochemical industry review with recommendations and implementation strategies was provided to Alberta Agriculture and Food in order to develop a business case for supporting flax crop development as relating to the Flax 2015 Initiative.
- **Getting Value from Every Fibre, 2007.** Market and technology overviews and strategic business cases were provided to the project team (Forintek, ARC), and were used to recommend key strategies to Alberta Advanced Education and Technology for developing a biobased industry based on utilizing Alberta's fibre resource. (see [www.technology.gov.ab.ca/en/Fibre\\_Roadmap.cfm](http://www.technology.gov.ab.ca/en/Fibre_Roadmap.cfm)).
- **Advancing Biorefining in Alberta: A Proposal for Pilot Scale Bioprocessing, 2006.** An industry sector review was produced that included a business strategy, operating model, and funding requirements for establishing a pilot scale research and development facility that would directly impact the growth of biorefining technology in Alberta. The proposal defined the benefits to several key industries in Alberta, including agriculture, forestry, and rural development
- **Biolubricants Development Centre: an Assessment of an Emerging Opportunities Fund Application, 2006.** A detailed review of the business potential for a biobased (canola oil) derived lubricants research and development centre was provided to Alberta Innovation and Science to determine the value of funding the development of biolubricants technology.
- **Opportunities for Bio-based Chemicals, 2004-2006.** Three detailed technology review and market research projects were completed since 2004 in support of oilseed and agri-fibre utilization initiatives for potential production of bio-based chemicals. The reviews formed the basis for the following reports: "The Markets for 1,3-Propanediol, 1-Nonanol & 1-Hexanol", "Industry Analysis of Pentosan Processing and Pentosan Derivatives", and "The Markets for Alcohol Derivatives".
- **Manufacturing Competitiveness of Triticale, 2006.** An assessment of the value and competitiveness of triticale as a starch crop, as compared to wheat and corn, was provided to the Canadian Triticale Biorefining Initiative. The report included a detailed economic model for a starch to ethanol plant, and highlighted important industry trends related to ethanol production from agricultural feedstocks.
- **Overview and Assessment of Focus Areas for Research for Alberta Life Sciences Institute, 2006.** A market overview for each area of potential focus within various life sciences sectors was provided to Alberta Life Sciences Institute for strategy development discussions. The review

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included full range of sectors – biomaterials, bio-based chemicals and fuels, bioenergy, genomics, proteomics, medical devices, and bioinformatics.

- **Evaluation of Camelina as a Potential Oilseed Crop for Alberta, 2006.** A report on the potential of camelina as a functional food, natural health product, and as an oleochemical feed stock was provided to Alberta Agriculture, Food and Rural Development.
- **Expert Reviews for Sustainable Development Technology Canada, 2006-08.** Funding proposals submitted to SDTC were analyzed and reviewed as part SDTC's approval procedures. Each proposal was related to new biofuel and bioenergy production, and was scored based on its work plan, business plan, management team, and technology.

## Career Path cont.

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2003- 2004

**University Chemistry Instructor** (sessional)

**University of Alberta**, Edmonton.

Instruction of introductory Organic Chemistry.

2000 – 2003

**Lubrication Business Manager:** Commercial and Industrial Lubricant Sales, Alberta.

**ChevronTexaco Global Lubricants**, Edmonton.

Managed sales and marketing of commercial and industrial lubricants / Managed of pricing, distribution and warehousing / Identified and developed new business opportunities and business plans.

Accomplishments:

- Improved sales (volume and revenues) of industrial lubricants in Alberta by 15 per each year;
- Contributed to the development of a national sales strategy to agriculture and transportation sectors;
- Assisted an Alberta distributor to build its lubricants business from start-up to \$1.3 million in 3 years.

1998 - 1999

**Product Manager:** Automotive Lubricants

**Mobil Oil Corporation**, Virginia.

Managed automotive lubricants product lines for North America / Developed technical, marketing, and brand strategies / Identified new product requirements / Developed sales tools and sales force training / Supervised 3 professional engineers.

1996 - 1998

**Research Scientist:** Synthetic Engine Oils

**Mobil Technology Company**, New Jersey.

Developed a new formulation for Mobil's premier flagship product, Mobil 1 / Co-ordinated product introductions to manufacturing and marketing / Provided international marketing and sales support.

1995 - 1996

**Project Leader:** Passenger Vehicle Engine Oils

**Mobil Oil Company Ltd.**, United Kingdom

Led European engine oil research and development / Developed technical marketing materials / Co-ordinated new product introductions to European car builders / Supervised 4 technical staff.

1991 - 1995

**Senior Staff Chemist:** Passenger Vehicle Engine Oils

**Mobil Research and Development Corporation**

Identified, evaluated, and commercialised new synthetic automotive and aviation engine oil technology / Provided technical marketing and sales support.

1990 - 1991

**Chemistry Instructor**

**The King's College**, Edmonton

Taught, supervised, and evaluated students to meet curriculum goals of Introductory College Chemistry and Introductory Organic Chemistry.

# **Education and Professional Training**

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## **Business Administration**

University of Alberta

6 courses completed towards MBA degree

## **Ph.D. in Chemistry, 1991**

University of Alberta, Edmonton

Thesis Title: "Sequential Use of Diels-Alder and Radical Cyclization for the Synthesis of Polycyclic Compounds"

## **Bachelor of Science, 1985**

McMaster University, Hamilton, Ontario

## **High School Honours Diploma, 1981**

West Hill Secondary School, Owen Sound, Ontario

## **Professional Training:**

Effective Report Writing / Effective Presentations / Coaching Skills / Effective Communications / Design of Experiments (DuPont) / Interviewer Training / MacBerr Essentials of Management / Frontline Leadership Training / CMC-Canada Essentials of Management Consulting / CMC-Canada Professional Conduct and Ethics

# **Professional Affiliations**

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- Member of the **Canadian Association of Management Consultants (CMC-Canada)**
- Member of the **Society of Tribologists and Lubrication Engineers**
- Member of **BioAlberta** (volunteer on the Policy Committee for promotion of Life Sciences)
- Member of the **American Oil Chemists Society**

# Recognition and Awards

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## Awards:

Ontario Scholar, 1981.  
RBW Citizenship Award for Engineering, 1981.  
Undergraduate N.S.E.R.C. Award, 1984.

## Publications:

“Emerging Opportunities in Natural Oil Based Chemicals”  
Presented at the Plant Bioindustrial Workshop, Saskatoon, February 27, 2007.

Wind Turbine Lubricants: “Four Strong Winds”  
*Lubes 'n' Greases*, Vol 11, Issue 11, 2005.

Synthetic Hydrocarbon Lubricants: “Keep Track of Your Syns”  
*Lubes 'n' Greases*, Vol 11, Issue 5, 2005.

Bio-based Lubricants: “Green Means Go”  
*Lubes 'n' Greases*, Vol 10, Issue 11, 2004.

Advanced Synthetic Passenger Vehicle Engine Oil Technology for Extended Oil Drain Performance.  
SAE Paper No. 981444 presented at SAE Fuels and Lubes Exposition in Detroit, Michigan 1998.  
(Paper was republished in the 1998 SAE Transactions)

Advanced Low Viscosity Synthetic Passenger Vehicle Engine Oils. *J. Syn. Lub.* Vol 16. Presented at  
1997 Symposium for Testing of Fuels and Lubes, Sweden.

Synthesis of ( $\pm$ -5-(3-Furyl)octahydro-8-methyl-indolizines, Alkaloids Related to a component of  
Castoreum. *J. Org. Chem.*, 1991.

Sequential Use of the Intermolecular Diels-Alder Reaction and Radical Cyclization for the Synthesis of  
Polycyclic Compounds. *J. Org. Chem.*, 1990

## Patents:

Antirust/Dispersant Additive for Lubricants.  
U.S. Patent 5,362,411, issued November 22, 1994.

High Performance Engine Oil  
Cdn Patent CN1346397T, issued 2002  
U.S. Patent 6,713,438, issued March 30, 2004



# **Personal**

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- Born and raised on a dairy farm
- Played varsity basketball at McMaster and University of Alberta
- Currently enjoy running, swimming, biking, and triathlons
- Reside in Edmonton
- Proud supporter of two sons, both attending university