

# Taking Technology Products to Market

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# Executive Summary

Incorporated in 2007, ACAMP has been open for business since 2008. Today, the company is a leader in enabling our clients to create manufacturable MNT hardware solutions for the global market. ACAMP helps clients focus on innovations that are thoughtfully designed, based on the real world needs of the global market.

In 2013, ACAMP worked on over 70 projects with 26 employees, delivered three seminars and four technology workshops, in addition ACAMP hosted the Wave 2013 conference. ACAMP grew its client base to 157 local, domestic and international clients.

ACAMP is the only MNT technology services provider in Western Canada to offer complete solutions from prototype to production. ACAMP's client-driven approach to product development using state-of-the art equipment and business services is the key to our success and our clients' success.

## Client Highlights

 **SmileSonica** Technology that heals and prevents tooth loss p5

SmileSonica's ultrasonic dental technology is a powerful treatment platform that will be used in clinical applications requiring in-vivo regeneration of dental tissue.

 **Nanalysis** Benchtop Nuclear Magnetic Resonance Technology p7

Nanalysis develops and manufactures portable Nuclear Magnetic Resonance (NMR) spectrometers for the laboratory instrumentation market.



Duane Macauley



Ken Brizel

2013 marks six years in business for the Alberta Centre for Advanced Micro Nano Technology Products, ACAMP. We continue to service the investable technology community helping innovative clients to make manufacturable prototypes and production a reality. Over the past few years we have grown our client base from only a few industry players to 157 by the end of fiscal year 2013.

Our business has grown to support a wide variety of customers across all market areas. Helping clients move their products to production is our goal. By providing critical support in product and business development with manufacturing as the end goal, ACAMP has a unique service. Our talented team of professional engineers and businessmen have the experience and know-how required to take products to market in volume.

Micro Nano technologies are used in most state of the art new products. Sensors, electronics, optics and materials in systems enable smarter products, provide cost reductions to industry, create safer working environments, monitor 24/7, improving our health care, watch over our security and make the world a better place to live in.

Alberta is home to the National Institute of Nanotechnology, NanoFab, the Advanced Micro/nanosystems Integration Facility (AMIF) and many commercialization centres throughout Alberta, all

# Letter

to our clients, funders,  
suppliers, associates  
and friends

these centres fill specific needs and gaps within the value chain from technology product concept to commercial market delivery, and ACAMP uniquely enables companies to deliver hardware prototypes to production. This complex technology based development area utilizes the expertise and equipment already invested in Alberta, enabling new products to be delivered to the global market.

ACAMP is the result of a collaborative effort between industry and government, providing a path to commercialization for established firms of all sizes and across all markets. Our team is an international group of businessmen and product developers with up to 30 years' experience in taking products to market. Our services encompass key areas identified as critical for the commercialization of technology based products:

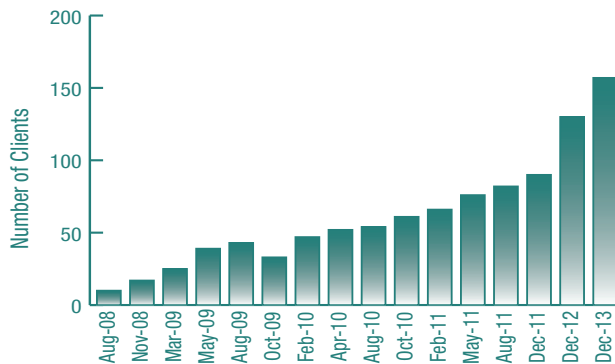
- ◆ Marketing and Business Development – business case implementation, market analysis, presentation support, channel to market development
- ◆ Product Development – design for manufacturability, from simulation through assembly
- ◆ Packaging and assembly - extensive manufacturing capabilities
- ◆ Testing and characterization – both destructive and non-destructive testing

## Financial Results

ACAMP was never envisioned to be self-sustaining; we subsidize Alberta SME client projects using our operating funds provided by the Province of Alberta and other client revenues. Our revenue generated through fees for service, makes up only a small portion of our total operating cost of \$3.2M per year.

## Expanding Client Relationships

We are clear about our goals – that is, to continually focus on developing best-in-class technologies, processes, channel support and performance tailored to the unique requirements of each client. This in turn helps to grow the technology industry and its global reach for their new products.



**Our client base continues to grow, by the end of FY2013, ACAMP had 157 MNT clients**

ACAMP reaches out globally with Seminars and the Wave Conference, to enable entrepreneurs, multi-national corporations, investors, suppliers and distributors to come together to expand their market reach and showcase their hardware product technologies.

## Looking Forward

This has been a challenging year for ACAMP. We continue to be funded yearly by the Province of Alberta, but, need our clients to speak out about the support we provided. We are committed to focusing on our customers, delivering superior quality, improving all of our operations and getting our various MNT technology processes working at optimal efficiency. We realize customer satisfaction drives our business and we are unyielding in our promise to meet their expectations in quality, delivery and performance. With this in mind and growth of the technology community we anticipate continued government support for future operations.

At the same time, we continue to look for ways to improve upon our world-class infrastructure, low-cost manufacturing presence, unique capabilities and tools. The goal of these efforts is the continued support of the growing SME investable technology community and for them to be globally competitive. With a team of passionate, talented and dedicated employees, who are committed to flawless service and corporate integrity, we believe we have the momentum for continued success.

Analysts expect the MNT industry to continue to expand globally. We believe we are well positioned to support clients to exceed industry growth. And while we have reached many significant milestones, we welcome the opportunity to meet new challenges.

We look forward to addressing you again next year.

Duane Macauley  
Chairman

Ken Brizel  
Chief Executive Officer

# Product Development

*Products incorporating state-of-the-art micro and nano technologies are investable and valued in the billions*

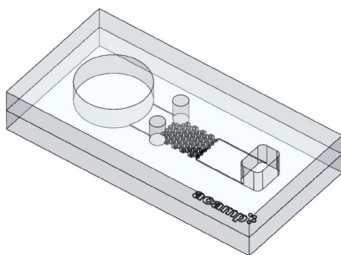
ACAMP is uniquely positioned in Western Canada to support hardware product development. We offer complete solutions to companies within all industries. From prototype to production, our services enable a wide variety of complex applications such as:

- Autonomous sensors to monitor physical or environmental conditions
- Applications in health and medical for determining diseases and encapsulating new targeted drugs
- Energy applications for seismic, data logging, pipeline pigging, control and communications

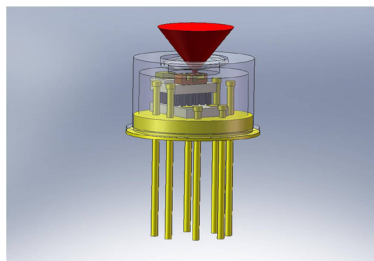
Our client-driven approach to product development using state-of-the-art equipment and business services is the key to our success and our clients' success. Our engineering development services use world-class infrastructure, low-cost manufacturing equipment, and unique capabilities and tools.

## Demo Products

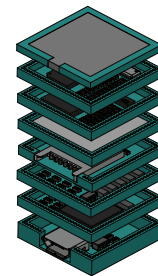
A selection of demonstrator products developed for our clients that showcase ACAMP's capabilities is shown below:



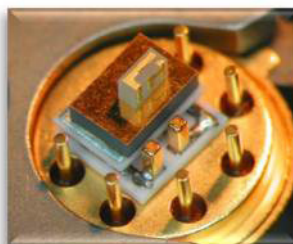
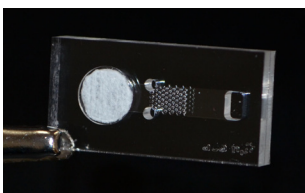
Microfluidic analyte detector



Free Space Laser Assembly



10-Axis Inertial Assembly  
SmartCube™







*“From the perspective of building a technology commercialization attitude in Alberta, ACAMP has inspired young technology companies to think big, to take on world challenges and to raise the bar in the advancement of innovation in our province.”*

**Cristian Scurtescu**  
**Founder and CEO**

# Client: SmileSonica

## Technology that heals and prevents tooth loss

SmileSonica's ultrasonic dental technology is a powerful treatment platform that will be used in clinical applications requiring in-vivo regeneration of dental tissue. The technology has the capability to heal both the natural tooth root and the surrounding tissue. The treatment procedure is noninvasive, creating no pain or discomfort for the patient, leading to a more pleasant experience. SmileSonica's effective and easy to use dental products will also generate new revenue opportunities for dentists.

## Expert Partnership

SmileSonica's relationship with ACAMP began in 2009 to produce a commercially viable state-of-the-art product. ACAMP worked closely with SmileSonica on all aspects of the intra-oral device design, development and manufacturing.



SmileSonica Image

# Business Development

*In 2013, ACAMP helped clients turn prototypes into commercial products.*

A business case provides justification to develop a proposed product and outlines the required amount of capital and resources to make it happen. Writing a business case is very hard work—implementing the business case is even harder. Our business team is a group of business professionals, each with up to 30 years' experience in taking products to market. Each business development manager is responsible for business case review, program review, connection to funding opportunities, channel development, marketing and applications material support. As the liaison between ACAMP's engineering team and the client, the business team helps to keep projects on track and on target.

## Project Management

Product hardware development requires interdisciplinary expertise and is often constrained by time, funding and deliverables. Through proper planning, organizing, motivating, and controlling resources to achieve specific goals, we are experienced in helping to manage the client's project. In 2013, ACAMP supported more than 70 projects across all market areas.

## Funding Opportunities

Connecting to funding is critical for the client's project, enabling them to stay on track for development and bring products to market. Our business team is well-versed in local, regional and Canadian funding opportunities. We offer support in writing proposals and interfacing with funders and financing agencies.

*Our business teams provide support to the client such as help to develop effective presentation skills. On international trade missions and business trips, our business professionals provide support as if they were a member of the client's team. In 2013, ACAMP supported 15 clients in engaging with*

**6** *their domestic and international customers.*



*“It was ACAMP’s invitations to join the AB delegation to Japan that allowed us to create a relationship with Tokyo Instruments, our distributor in that country. Without that kind of support from ACAMP, we would not have sought representation in that country for two more years, let alone three years ago, and our company is better off for it.”*

**Sean Krakiwsky**  
President & CEO

*“Hands-on NMR is a big step forward for our undergraduate labs”*

**Dr Kenneth Metz**  
Department of Chemistry  
Boston College

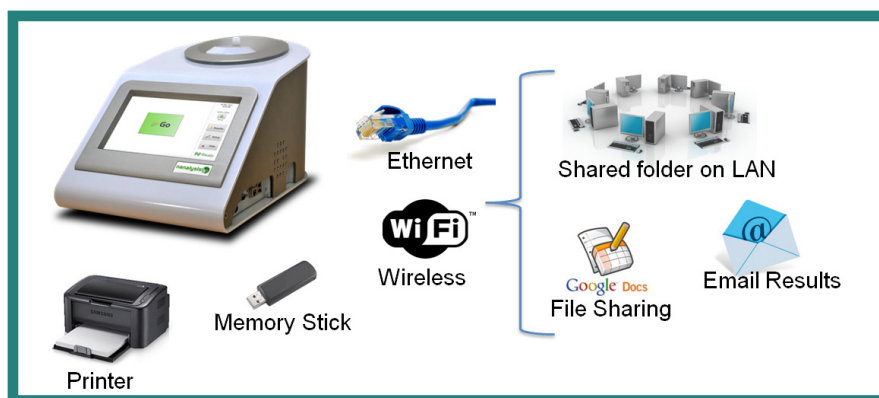
## Client: Nanalysis

### Benchtop Nuclear Magnetic Resonance Technology

Nanalysis develops and manufactures portable Nuclear Magnetic Resonance (NMR) spectrometers for the laboratory instrumentation market. Their first product, NMReady™, is the first fully featured portable NMR spectrometer in a single compact enclosure that requires no liquid helium nor any other cryogenics. The NMReady is used by chemical professionals in all types of industries (oil & gas, chemical, pharma, biotech, food processing) as well as government and university labs.

### Expert Partnership

Nanalysis’ relationship with ACAMP began in 2009 with support for both company creation and simulation of product design. In the following two years ACAMP supported Nanalysis in finding members for its Board of Directors as well as technical business staff. To present, ACAMP introduced Nanalysis to an international audience for global sales.



Nanalysis Image

# Channel Development

*ACAMP helped its clients follow up on leads generated at the 2013 Wave conference*

In 2013 ACAMP organized and hosted the Wave trade show and conference for the second time.

Key benefits of this premier event include not only the opportunity for SMEs to present, launch and promote their emerging technology products and solutions to an international and invested audience, but also, to meet, be mentored by and interact with 12 multi-national executive keynotes. Additionally, the three-day conference hosted a series of workshops, panel discussions, presentations and networking events. The WAVE conference provides a valuable opportunity for the technology community to establish new relationships and pursue new business ventures.

ACAMP's Wave conference is unique by design as the focus is on channel development, mentoring and coaching for SMEs engaging with large multi-nationals. Many of the multi-nationals it attracts have not previously been to Alberta and were not aware of the untapped technology advancements offered by Alberta SMEs. Evidence indicates that one of the significant outcomes of the Wave conferences shows that since it's inauguration in 2011 and follow-up in 2013, these multi-nationals are now coming back to Alberta to develop relationships with SMEs and government.

- 300 attendees both international and domestic
- 85 trade show booths by exhibiting SMEs
- 3 days of presentations at the trade show
- 250 SME one-on-one meetings with multi-national executives
- 12 well known industry keynote executive speakers





University of Calgary Solar Car Team  
with Honourable Thomas A Lukaszuk

*“The keynote presentations were totally relevant. Partly describing what we have just been through and partly what we are going through now”*

**Dennis Needham**  
**Spinduction Weld**

*“Great effort by ACAMP. Strength in variety and diversity of participants; many unexpected connections.”*

**Martin Bloom**  
**Renesola**



Keynote speakers

# Wave Conference

ACAMP initiated the biannual Wave conference in 2011 to bring together domestic and international business leaders from across all industries. The intent is to connect and develop product channels and introduce attendees to other business leaders in adjacent markets. The conference has proven to be very successful in creating opportunities for small- to medium-sized companies (SMEs) and multinational enterprises (MNEs).

## Keynote speakers

- ◆ Dr Chris Hartshorn, Lux Research
- ◆ Dr Sergio Kapusta, Shell
- ◆ Alexei A Andreev, Harris & Harris
- ◆ Travis Earles, Lockheed Martin
- ◆ Stephen Graham, Maple Leaf Foods
- ◆ Dr Claus Schmidt, Robert Bosch
- ◆ Dr Darrel Untereker, Medtronic
- ◆ Dr Waguish Ishak, Corning
- ◆ Martin Bloom, Renesola
- ◆ Dr John Parmentola, General Atomics
- ◆ Dr Shuichiro Ogawa, Asahi Kasei
- ◆ Dr Helen Greiner, CyPhy Works
- ◆ Dr Steven Griffiths, Masdar Institute



John Webb, Director of Emerging Science at Maple Leaf Foods  
Roundtable Discussion: Technology in Agriculture

# Channel Development

*The popular ACAMP Seminars are a series of quarterly business and technology networking events that bring our clients together with Alberta's innovation community.*

## ACAMP Seminar Series

Each ACAMP business development manager works to connect clients to global market opportunities. ACAMP sets the stage for productive opportunities by coordinating seminars for entrepreneurs, innovators, suppliers, customers, funders and investors. These events enable knowledge exchange, business and technology networking.

### **Cleantech Seminar - Advanced Materials and Alternative Energy Solutions**

Focus: Advanced materials and alternative energy solutions including new materials for weight reduction and insulation, solar & wind power, fuel cells and energy storage.

### **Conventional Energy Seminar - Sensors, Monitoring and Remediation Technologies**

Focus: Sensors, water and remediation technologies for Energy applications including water and wastewater treatment, hydrofracturing and environmental sensor systems.

### **Health & Medical Seminar - Diagnostic and Therapeutic Devices**

Focus: Solutions in micro and nano technology enable disruptive medical products that open new market opportunities for the Health & Medical sector. Novel applications are developed for medical devices, point-of-care diagnostics, gene sequencing, drug delivery, and reconstructive medicine, among others.

*We acknowledge the generous support of our seminar sponsors:*

## Solar Cells

- SunPower C60 K-Bin solar cells
  - Mono-crystalline silicon cells
  - >22% efficient
- Encapsulated under heat and vacuum
  - TPU and ETFE laminated
- Cutting solar cells
  - ACAMP



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# Seminars

**300+ Attendees**

**190+ Unique  
companies and  
institutions**

**65 Exceptional  
presenters**

**8 Multinational  
enterprises**

## In 2013, ACAMP coordinated three seminars on:

- Clean Technology  
Featuring: University of Calgary's Solar Car
- Conventional Energy  
Featuring an Industry Panel Discussion on Environmental Stewardship with Husky, Suncor, Russel NDE, zEroCor and Lockheed Martin
- Health and Medical  
Featuring Dr Darrel Untereker – VP Research at Medtronic

## Value to attendees:

- “As a presenter, the contacts were very impressive”
- “The seminar was very good especially the panel discussion. A valuable aspect of the seminar was to hear the variety of speakers, from very small start ups to larger companies like Suncor”
- “Good points; covering wide areas: academic research, start-up, business advice for the way to success, introduction of governmental supports.”
- “I wanted to see if the technology we are developing is relevant and not redundant to work that others are doing. I was happy to see that no other group presenting had our same approach. We were also happy to see what funding opportunities are available and this will help us build a time line of product development.”
- “Made about 5 good contacts”
- “Really useful re. what's coming down the research & commercialization pipe”
- “Get a better understanding of how people are succeeding in medical devices. This was great for that. Thank you.”



# Channel Development

*Workshops focus on ACAMP's capabilities and expertise for product development and demonstrate how we work with our clients to help them deliver real results*

## ACAMP Workshops

### **Simulation of Systems, Fluids and Complex Structures**

Simulation has revolutionized product development over the past decades by minimizing costly physical testing and accelerating time to market in every industry around the world. ACAMP can capture designs, model and simulate complex solutions to real world problems, reducing the cost of development and speeding complex products to market.

### **LTCC - Low Temperature Co-fired Ceramic**

LTCC assemblies produce complex multilayer hybrid circuits that can be used in applications requiring high temperatures up to 300°C or low temperatures down to -175°C, while maintaining electrical and mechanical performance and stability.

### **Hot Embossing for Microfluidic Lab-on-a-chip**

Microfluidic lab-on-a-chip devices are used in health and medical applications requiring precise manipulation of fluids that are geometrically constrained to a small scale. The devices integrate one or more functions into a single chip.

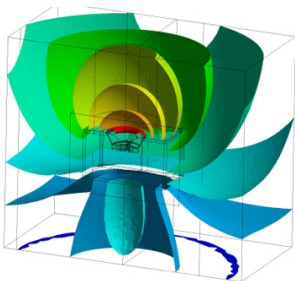
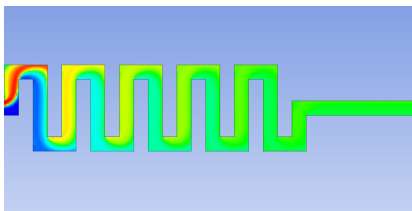
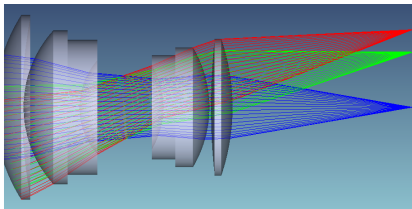
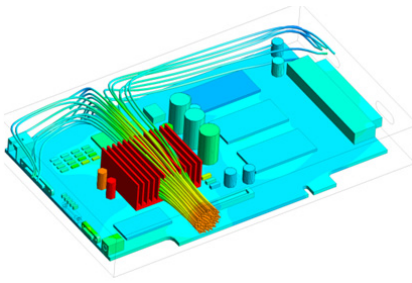
### **Fibre Coupled and Free Space Optoelectronic Systems**

Optoelectronic systems incorporate electrical-to-optical or optical-to-electrical transducers into instruments such as lasers, LEDs, photo detectors and complex optical assemblies with electronics. ACAMP has the unique ability to develop simulation, packaging and assembly, testing and characterization for complex optoelectronic components and systems.

### **Inertial Product Assembly and Characterization**

Inertial components and systems incorporate motion sensors (accelerometers), rotation sensors (gyroscopes) and magnetometers along with complex digital signal processors and data communication interfaces. In energy, applications include pipeline pigging, directional drilling and seismic detection.





# Workshops

**In 2013, ACAMP coordinated six technical workshops on:**

- Simulation
- Low Temperature Co-fired Ceramic
- Microfluidics
- Optoelectronics
- Inertial Measurement

**Value to participants:**

- “The workshop focused on an introduction and walkthrough, which was useful. They also gave the case studies to understand how it works”
- “Not only do I know which simulation software is available, I have a greater understanding of the technical capabilities of the ACAMP engineers with simulation”
- “The methodology of testing and the capabilities of your rate table were of special interest” “Thank you for the opportunity to see your capabilities in the IMU area”
- “There is a possibility that we could integrate your SmartCube™ into our system”

# Financial Statements

## *Audited Statement of Operations*

# Income Statement

### Alberta Centre For Advanced MNT Products

### Statement of Operations

For the year ended December 31, 2013

	2013	2012
	\$	\$
<b>Revenue</b>		
Alberta government grant	874,640	4,000,000
Enterprise and Advanced Education Funding grant (Note 11)	333,391	-
Conference - WAVE 2013	157,731	255,376
Contributed assets	-	8,500
Customer service fees	864,262	861,989
Federal contribution	50,503	-
Interest income	9,121	22,984
Seminar fees and resources	32,643	34,307
Revenue deferred from prior period	2,195,107	-
Revenue deferred to subsequent period	(1,144,046)	(2,195,107)
	<b>3,373,352</b>	<b>2,988,049</b>
<b>Expenditures</b>		
Advertising and promotion	13,996	7,477
Amortization	1,230,194	1,399,432
Bad debt expense	8,411	-
Bank charges and interest	3,987	3,828
Board activities	7,017	3,578
Conference - WAVE 2013	309,539	60,269
Consultants	265,201	222,001
Freight	17,600	16,773
Insurance	30,892	29,392
Marketing	98,144	55,040
Moving	2,465	2,312
Office	54,773	76,206
Professional fees	23,601	20,961
Rent	128,933	130,054
Repair and maintenance	63,975	29,022
Software license subscription and renewal	84,785	78,602
Supplies	82,520	101,728
Telecommunications	18,302	17,765
Travel	50,444	42,041
Wages and employee benefits	2,231,237	2,180,745
	<b>4,726,016</b>	<b>4,477,226</b>
<b>Deficiency of Revenue over Expenditures Before Other Expenses</b>	<b>(1,352,664)</b>	<b>(1,489,177)</b>
<b>Other Expenses</b>		
Gain (Loss) on disposition of capital assets	(2,120)	-
Gain (Loss) on disposition of securities	1,925	(13,677)
Unrealized investment gain (loss) (Note 3)	4,480	(614)
	<b>4,285</b>	<b>(14,291)</b>
<b>Deficiency of Revenue over Expenditures</b>	<b>(1,348,379)</b>	<b>(1,503,468)</b>

# Financial Statements

## *Audited Statement of Financial Position*

# Balance Sheet

Alberta Centre For Advanced MNT Products

Statement of Financial Position

As at December 31, 2013

	2013	2012
	\$	\$
<b>Assets</b>		
<b>Current Assets</b>		
Cash	519,083	397,084
Investments (Note 3)	686,739	2,071,214
Accounts receivable (Note 4)	174,867	180,507
GST receivable	130	-
Prepaid expenses (Note 5)	93,485	114,545
	<b>1,474,304</b>	2,763,350
<b>Capital Assets (Note 6)</b>	<b>4,852,875</b>	5,944,822
	<b>6,327,179</b>	8,708,172
<b>Liabilities and Net Assets</b>		
<b>Current Liabilities</b>		
Accounts payable	132,496	114,049
Deferred revenue (Note 7)	1,144,046	2,195,107
	<b>1,276,542</b>	2,309,156
<b>Net Assets</b>		
Unrestricted net assets (Note 9)	197,762	454,195
Equity in capital assets (Note 9)	4,852,875	5,944,821
	<b>5,050,637</b>	6,399,016
	<b>6,327,179</b>	8,708,172

# Corporate Information

*A selection of clients that we helped in their challenge to bring products to market in 2013*



*“ ACAMP’s engineering services enabled our industrial client to quickly conclude that their sensor technology needed a significant design improvement. The modelling capability provided by ACAMP saved our client considerable time and money while advancing their technology closer to manufacturing readiness. ACAMP proved to be a valuable partner to CMC in helping our client overcome technology hurdles on the road to market. ”*

# Management & Partners

## Senior Management

Ken Brizel	Chief Executive Officer
Kevin Yallup	Chief Technology Officer
Rosy Amlani	Chief Financial Officer and Vice President Business Development
Jeff Shakespeare	Vice President Manufacturing

## Board Members

Duane Macauley	CEO, Dynamic Source Manufacturing
Alan Fair	Director, Tailings Canada's Oil Sands Innovation Alliance (COSIA)
Kip Fyfe	CEO, 4iiii Technologies
Chris Lumb	CEO, TEC Edmonton
Warren Sheydwasser	President, Soltare Inc
Kevin Keough	Executive Director, Alberta Prion Research Institute
Ken Brizel	CEO, ACAMP

## Funding Partners

Alberta Innovates – Technology Futures  
Alberta Innovation and Advanced Education  
Western Economic Diversification Canada  
NRC - Industrial Research Assistance Program

## Partners

Innovate Calgary  
nanoAlberta  
nanoBridge  
NanoFab  
National Institute for Nanotechnology  
TEC Edmonton  
TRTech  
University of Alberta  
University of Calgary  
University of Lethbridge  
University of British Columbia  
Advanced Micro/nanosystems Integration Facility  
Northern Alberta Institute for Technology





### **ACAMP in Edmonton**

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Edmonton, AB T6N 1E6 Canada  
Phone: +1.780.468.2443



### **ACAMP in Calgary**

Bay 3, 1480 – 28 St NE  
Calgary, AB T2A 7W6 Canada  
Phone: +1.403.291.8946

ACAMP (Alberta Centre for Advanced MNT Products) is a not-for-profit organization that provides specialized business services to MNT clients including Marketing & Business Development, Product Development, and Packaging and Assembly.