



15<sup>TH</sup> ANNUAL  
WORLD MICROMACHINE SUMMIT

EDMONTON, ALBERTA, CANADA MAY 5 - 8, 2009



Participating Delegations

2009  
Program

Calgary  
Tour

Australia

Benelux

Canada

China

EU Commission

France

Germany

Iberia

India

Italy

Japan

South Korea

Nordic

Romania

Switzerland

Taiwan

UK

USA

About  
CMC

About  
ACAMP



## From Daejeon to Edmonton to Dortmund

For 2009, the World Micromachine Summit moved to Edmonton, Alberta, Canada with a focal theme about energy and the environment. This followed a very successful event hosted in Daejeon, Korea in 2008. The delegation from Germany will organize the 2010 Summit in Dortmund, Germany with focal theme: ambient assisted living and applications of micro and nano technologies in health care and life sciences.

As with all Micromachine Summits, interaction and learning from delegations from around the world continues as the principal opportunity for all participants. The Edmonton event was a good example of this as documented here with copies of available reports and presentations. Country and region reports set the global stage: 18 delegations presented descriptions of conditions or progress concerning MNT applications, markets, research and development. Several of these global reports included reference to the energy and environment theme and 3 sessions were dedicated to it. The remaining presentations dealt with MNT topics in economic development, market opportunities and examples of technology advancement or commercialization. Several participants also took advantage of the location to visit MNT business and research establishments. One set of tours took place in Edmonton, going to Micralyne, ACAMP (Alberta Centre for Advanced MNT Products), the Nanofab at the University of Alberta and NINT (National Institute for Nanotechnology). The second set of tours was held in Calgary, going to Hyperion and several laboratories at the University of Calgary.

There are great benefits to be achieved by putting MNT to work. Our discussions, particularly about the focal theme, indicated an interest if not a need to act as partners to make this happen. We now look forward to the Summit in 2010 to learn about progress, opportunities and maybe even partnerships.

Dan Gale

General Chair of the 2009 Micromachine Summit

Vice-President and Chief Technology Officer, CMC Microsystems

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## The World Micromachine Summit

The Micromachine Summit was first organized in 1995 by Micromachine Center of Japan which continues today as the permanent secretariat of this annual global event.

## Micro and Nano Technologies

- Micro-scale technologies are often electrical or mechanical devices that are constructed at the micrometer-scale or having elements smaller than  $1/1,000,000^{\text{th}}$  of a metre.
- Nanotechnology – the science and engineering of manipulating matter at a molecular or nano scale. One nanometre (nm) is one-billionth of a metre— a few size examples with approximate dimensions are: an ant which is 5,000,000 nm long, a human hair which is 50,000 nm thick, a red blood cell which is 2500 nm in diameter and DNA which is 2.5 nm long.



15<sup>TH</sup> ANNUAL  
WORLD MICROMACHINE SUMMIT

SUMMIT PROGRAM

REFINING THE  
**ENERGY**  
EQUATION  
WMMS 2009 / ALBERTA

MAY 5-8, 2009 | EDMONTON, ALBERTA CANADA





# MAY 5

TUESDAY

TIME	TECHNICAL TOURS - EDMONTON
08:30	GATHER FOR TOUR AT WESTIN HOTEL TRAVEL FROM WESTIN HOTEL TO ALBERTA RESEARCH PARK
09:30	TOUR OF MICRALYNE <a href="http://www.micralyne.com">www.micralyne.com</a>
	TOUR OF ACAMP (ALBERTA CENTRE FOR ADVANCED MNT PRODUCTS) <a href="http://www.acamp.ca">www.acamp.ca</a>
11:30	TRAVEL TO UNIVERSITY OF ALBERTA <a href="http://www.ualberta.ca">www.ualberta.ca</a>
	LUNCH AT THE FACULTY CLUB
13:30	TOUR OF NANOFAB <a href="http://www.nanofab.ualberta.ca">www.nanofab.ualberta.ca</a>
	TOUR OF NINT <a href="http://www.nint-innt.nrc-cnrc.gc.ca">www.nint-innt.nrc-cnrc.gc.ca</a>
15:30	TOUR ENDS - TRAVEL BACK TO WESTIN HOTEL
TIME	WORLD MICROMACHINE SUMMIT
18:00	OPENING RECEPTION AT THE FAIRMONT HOTEL MACDONALD

# MAY 6

WEDNESDAY

TIME	DAY 1 - WORLD MICROMACHINE SUMMIT													
07:00	REGISTRATION AND HOT BREAKFAST													
08:00	WELCOME FROM DAN GALE, CHIEF DELEGATE - CANADIAN DELEGATION GENERAL CHAIR OF THE 2009 MICROMACHINE SUMMIT, OPENING REMARKS FROM THE HONOURABLE DOUG HORNER MINISTER OF ALBERTA ADVANCED EDUCATION AND TECHNOLOGY													
08:30	SESSION 1: COUNTRY AND REGION REVIEWS SESSION CHAIR: YOUNG-HO CHO													
	<table border="1"><thead><tr><th>COUNTRY/REGION</th><th>SPEAKER</th></tr></thead><tbody><tr><td>AUSTRALIA</td><td>JASON CHAFFEY</td></tr><tr><td>BENELUX</td><td>ALBERT VAN DEN BERG</td></tr><tr><td>CANADA</td><td>DAN GALE</td></tr><tr><td>CHINA</td><td>ZHAOYING ZHOU</td></tr><tr><td>EUROPEAN COMMISSION</td><td>AUGUSTO DE ALBUQUERQUE</td></tr><tr><td>FRANCE</td><td>CHANTAL KHAN MALEK</td></tr></tbody></table>	COUNTRY/REGION	SPEAKER	AUSTRALIA	JASON CHAFFEY	BENELUX	ALBERT VAN DEN BERG	CANADA	DAN GALE	CHINA	ZHAOYING ZHOU	EUROPEAN COMMISSION	AUGUSTO DE ALBUQUERQUE	FRANCE
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EUROPEAN COMMISSION	AUGUSTO DE ALBUQUERQUE													
FRANCE	CHANTAL KHAN MALEK													
10:00	BREAK													
10:30	SESSION 2: COUNTRY AND REGION REVIEWS SESSION CHAIR: JASON CHAFFEY													
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12:15	LUNCH													



# MAY 6

WEDNESDAY

SESSION 3: COUNTRY AND REGION REVIEWS SESSION CHAIR: ROLAND ZENGERLE			
	COUNTRY/REGION	SPEAKER	
13:45	NORDIC	PER OHLCKERS	
	ROMANIA/EASTERN EUROPE	RALUCA MÜLLER	
	SWITZERLAND	NICO DE ROOJI	
	TAIWAN	WEILEUN FANG	
	UNITED KINGDOM	RON LAWES	
	UNITED STATES	MICHAEL GAITAN	
	14:00	BREAK AND GROUP PHOTO	
SESSION 4: ENERGY AND THE ENVIRONMENT THEME PRESENTATIONS SESSION CHAIR: RON LAWES			
	PRESENTATION TITLE	COUNTRY/REGION	SPEAKER
15:30	Cool Silicon - A Consequent Step into an Energy Efficient Future	GERMANY	TORSTEN THIEME
	Energy Autonomous Systems	BENELUX	CHRIS VAN HOOF
	Smart Systems Integration Initiatives for Energy Efficiency	EUROPEAN COMMISSION	AUGUSTO DE ALBUQUERQUE
	Mitsubishi Electric Business Strategies for Global Warming Countermeasures	JAPAN	KAZUO KYUMA
17:00	CLOSING REMARKS - DAY 1 SESSIONS		
18:00	BANQUET AND CULTURAL ENTERTAINMENT - WINSPEAR CENTRE		



# MAY 7

THURSDAY

TIME	DAY 2 - WORLD MICROMACHINE SUMMIT
07:00	REGISTRATION AND HOT BREAKFAST
08:15	WELCOME BACK, THEME PRESENTATIONS CONTINUE

SESSION 5: ENERGY AND THE ENVIRONMENT THEME PRESENTATIONS SESSION CHAIR: CHANTAL KHAN MALEK			
	PRESENTATION TITLE	COUNTRY/REGION	SPEAKER
08:25	MEMS for Energy and the Environment: Market Status and Potential Development	FRANCE	JEFF PERKINS
	MEMS for Energy Efficiency	GERMANY	BERNHARD WYBRANSKI
	Energy Harvest	TAIWAN	TAI-KANG SHING
	Through Silicon Via (TSV)-Based Smart Sensing Module with Vibration-Powered Generator	JAPAN	KOICHI IMANAKA
	Silicon-Based Micro Fuel Cells	IBERIA	CARLES CANÉ

09:40 BREAK

SESSION 6: ENERGY AND THE ENVIRONMENT THEME PRESENTATIONS SESSION CHAIR: CARLES CANÉ			
	PRESENTATION TITLE	COUNTRY/REGION	SPEAKER
10:10	Prometheus Unchained - Micro Energy Technologies for Energy- Autonomous Micro-Embedded Systems	GERMANY	PETER WOIAS
	Micro Surface Modification for an Efficient Conversion of Renewable Energy	GERMANY	CHRISTOPHER HEBLING
	Reducing the Cost of Solar Energy	AUSTRALIA	IAN BATES
	Micro/Nanotechnologies for New Energy Applications	FRANCE	BERTRAND FILLON
	Energy and the Environment - Observations and Conclusions from the 15th Micromachine Summit	CANADA	KEN BRIZEL

11:25 LUNCH & MEETING OF THE CHIEF DELEGATES



# MAY 7

THURSDAY

SESSION 7: RECENT ADVANCES AND FORECASTS SESSION CHAIR: AUGUSTO DE ALBUQUERQUE			
	PRESENTATION TITLE	COUNTRY/REGION	SPEAKER
13:25	Commercializing Microtechnology - A Case Study	AUSTRALIA	IAN BATES
	Cardiacs – a Startup Company for Commercialisation of a 3D Microaccelerometer System for Postoperative Heart Monitoring	NORDIC	PER OHLCKERS
	Micromachining and Heterogeneous Integration at tMt	TAIWAN	HUNG-YI LIN
	Silicon Saxony - A Successful Regional Network of High Technology	GERMANY	TORSTEN THIEME
	High Technology Germany Torsten Thieme Microfluidics in Benelux	BENELUX	HENNE VAN HEEREN
	Integrating Small Companies and East European Organizations into the European Research Area	EUROPEAN COMMISSION	PATRIC SALOMON
	14:25	BREAK	
SESSION 8: RECENT ADVANCES AND FORECASTS SESSION CHAIR: DAN GALE			
	PRESENTATION TITLE	COUNTRY/REGION	SPEAKER
14:55	Recent Progress in MEMS Technology in OLYMPUS	JAPAN	KOICHI KARAKA
	Micalyne working with Federal and Provincial Government to build a leading micro/nano cluster in Alberta	CANADA	DAVID BUCKLEY
	Qinetiq Microsystems – A UK Success	UNITED KINGDOM	CHRIS REEVES
	Markets, Challenges and Opportunities for MEMS Companies in the Year 2009 World Economic Crisis - The 2009 Economic Survey of the IVAM Microtechnology Network	GERMANY	UWE KLEINKES
16:10	2010 SUMMIT PREPARATIONS AND CLOSING REMARKS		
16:35	SUMMIT PROCEEDINGS END - DELEGATE NETWORKING		
18:00	DINNER - WESTIN HOTEL		





# MAY 8

FRIDAY

TIME	TECHNICAL TOURS – CALGARY
08:00	GATHER FOR TOUR AT HOTEL
08:30	TRAVEL FROM EDMONTON TO CALGARY
11:15	TOUR OF HYPERION TECHNOLOGIES
12:15	LUNCH
<b>13:30</b>	<b>TECHNICAL TOURS BEGIN</b>
	TOUR OF ATIPS - ADVANCED TECHNOLOGY INFORMATION PROCESSING SYSTEMS LABORATORIES <a href="http://www.atips.ca">www.atips.ca</a>
	TOUR OF AMIF - ADVANCED MICRO/NANOSYSTEMS INTEGRATION FACILITY <a href="http://www.amif.ca">www.amif.ca</a>
	TOUR OF ACAMP - ALBERTA CENTRE FOR ADVANCED MNT PRODUCTS – CALGARY FACILITY <a href="http://www.acamp.ca">www.acamp.ca</a>
	TOUR OF AICISE – ALBERTA INGENUITY CENTRE FOR IN-SITU ENERGY <a href="http://www.aicise.ca">www.aicise.ca</a>
	TOUR OF NANOSCALE TECHNOLOGY AND ENGINEERING LABORATORY <a href="http://www.nanotech.ucalgary.ca">www.nanotech.ucalgary.ca</a>
16:00	*TOUR ENDS
16:00	RETURN TO EDMONTON
<b>17:40</b>	<b>ARRIVE IN EDMONTON</b>

\*Delegates that choose to remain in Calgary must make their own arrangements for transportation from the University of Calgary.



## Summit Program Adjustments

Dear Summit Attendee, please note the following amendments to the summit program schedule.

Wednesday May 6<sup>th</sup>

### SESSION 1: Country and Region Reviews

- Presentation by China titled "*MNT in China Mainland*" was made by Dr. Tian Tang

### SESSION 4: Energy and the Environment Theme Presentations

- Presentation by France titled "*Micro/Nanotechnologies for New Energy Applications*" was made by Dr. Chantal Khan-Malek
- Presentation by Benelux titled "*Energy Harvesting – The Autonomous Electronics Age Has Begun*" was made by Dr. Raffaella Borzi
- WEB CONFERENCE: A web conference with the Japanese Delegation will be held at the end of SESSION 4 at **4:00 PM**.