DEEP TECH CANADA MISSION TO SOUTH KOREA
FEBRUARY 06 – 07, 2023

ASSOCIATIONS

COMPANIES

Deep Tech Canada (formerly Nano Canada) (AB)

Website	https://deeptechcanada.ca
Location	250 Karl Clarke Road NW, Edmonton AB T6N 1E4
Delegate	Ms. Janice WARKENTIN, Executive Director janice.warkentin@nanocanada.com +1-780-498-6518
Introduction	Deep Tech Canada uses our dedication to community building to weave a network of industry, government, and academic members together. We provide essential value to members through networking events, training, workshops, international missions, and national conferences. We also provide opportunities to promote, market, and access Canadian deep tech businesses, products, or pre-commercial innovations. Our vision is to support our members by creating meaningful collisions of sectors and technologies that will impact health, climate action, communication, agri-tech, and transportation. We look forward to expanding our global reach through building long lasting international relationships and creating partnerships that lead to growth and prosperity. Our growing community includes more than 350 members from industry, academia, and government who are solving the world's toughest challenges by working together. If your organization or agency wishes to partner with us, we are happy to discuss it further.

Edmonton Global (AB)

Website	https://edmontonglobal.ca
Location	10020 100 Street NW, Edmonton, Alberta, Canada, T5J 0N3
Delegate	Mr. Brent JENSEN, Senior Director, Business Development bjensen@edmontonglobal.ca +1-825-993-1413
Introduction	Edmonton Global acts as a local representative and a one stop shop for build out of partnerships, manufacturing facilities, site selection and in bridging gaps with governments and other local stakeholders. Edmonton Global also works to promote Edmonton Based organizations in foreign markets for export development and expansion opportunities. Our work promotes the region globally and we're focused on attracting and retaining business investment and trade right here. Home to 2 federally funded nanotechnologies, #3 ranked AI and ML institute and a high-quality nanotechnology program. Looking for near shoring opportunities in semiconductor manufacturing, nanofabrication, AI & Tech opportunities for within Canada. For example, Edmonton Global works closely with post-secondary institutions within the Edmonton Region, namely the University of Alberta to create partnerships and research and development opportunities. The University of Alberta holds strength in Nano Technology research and development. Our organization also works to promote the capacity and capabilities that exist within Artificial Intelligence through the University of Alberta and the Alberta Machine Intelligence Institute (amii). If your organization or agency wishes to partner with us, we are happy to discuss it further.

Applied Quantum Materials Inc. (AB)

Website	www.aqmaterials.com
Location	B211, 2011 - 94 St. Edmonton, Alberta, T6N 1H1
Delegates	1. Dr. David Antoniuk, CEO, dantoniuk@aqmaterials.com +1-587-635-2060 2. Ms. Melissa Bouvier, Nanomaterial Chemist mbouvier@aqmaterials.com
Company Introduction	Applied Quantum Materials (AQM) is a global leader with over 175 customers in the design, synthesis, and manufacturing of silicon nanomaterials. We are the first company globally to commercialize bio-compatible silicon quantum dots for sensing, display materials, security, nanocomposite polymers, solar films, and biomedical applications. AQM's new class of silicon quantum dots were developed as an alternative safe and environmentally friendly nanomaterial to address the issues of toxicity and heavy metals from other quantum dot technologies. We also sell high performance photo resists for semiconductor applications (electron beam, ion beam, nano-imprint, EUV lithography and conformal coatings) to customers around the world. Our H-SiOx photo resist provides patterning feature sizes from sub 7 nm to over 2 microns.
Business Objectives	To build awareness of AQM's advanced material products, technologies, and capabilities. We are interested in expanding and developing new business partnerships with end users and OEM customers for the integration of innovative technologies, co-development, distribution of products and direct sales of nanomaterials. We have international sales in 23 countries but none in Korea. We are looking for product distributors and strategic partners for our electronic, magnetic and hydrogen producing materials.
Applications	Our target markets are companies and research institutes involved in semiconductor products requiring electronic materials, nanolithography, quantum dot sensors, nanocomposite polymers for optical films, battery materials, solar cell, and array manufacturers. We also provide silicon quantum dots for medical imaging, and magnetic nanoparticles for medical diagnostics – nucleic acid selection, extraction, and manipulation. We have developed a nano catalyst that is capable of directly producing hydrogen from any type of water at low temperatures without the need for electricity or light.
Key highlights	Applied Quantum Materials (AQM) is a global leader with over 175 customers in the design, synthesis, and manufacturing of silicon nanomaterials. Our customers include major universities, national labs in the U.S., Japan, Spain, France, Italy, Australia and the U.K., start-up quantum computing and multinational companies. We are the first company globally to commercialize bio-compatible silicon quantum dots for sensing, display materials, security, nanocomposite polymers, solar films, and biomedical applications. AQM's new class of silicon quantum dots were developed as an

	alternative safe and environmentally friendly nanomaterial to address the issues of toxicity and heavy metals from other quantum dot technologies. Japanese companies are responsible for more than 90% of the supplies of semiconductor photoresists in South Korea. This extreme dependence has been clearly exposed ever since Japanese government imposed its trade restriction on EUV photoresist in July of 2019. AQM provides an alternative supply source and sells high performance photo resists for semiconductor applications (electron beam, ion beam, nanoimprint, EUV lithography and conformal coatings) to customers around the world. Our H-SiOx photo resist provides patterning feature sizes from <7 nm to over 2 µm. AQM and its partner has discovered an unprecedented family of earth-abundant metal catalysts capable of producing hydrogen from any type of water or methane under exceptionally mild conditions. “Dark hydrogen" represents a new paradigm in catalytic water gasification and an economically viable pathway to methane carbonization. The market opportunity is the production of on-demand hydrogen and potable water in any location. The innovation can produce off-grid energy and pure water, on-demand, anywhere. This innovation eliminates the need for expensive polymer electrolyte membrane (*PEM*) *electrolysis, and reduces the need for* H_2 storage and transportation. Initial market applications include H_2 generators using wastewater, grey water, and produced water in remote sites. Mid-term opportunities lie in home H_2 generators, automobiles, and long-term projects for thermal, co-gen and desalinization plants.
Technologies the company wishes to advance through an R&D collaboration	• Applications for silicon quantum dots and magnetic nanoparticles for medical imaging and diagnostics. • Co-development of nanocomposite polymer and films with enhanced mechanical, optical and electrical properties. • Companies interested in simple direct, on-demand hydrogen production applications – auto and fuel cell manufacturers.

Intlvac Thin Film (ON)

Website	www.intlvacthinfilm.ca
Location	247 Armstrong Avenue, Unit 11, Halton Hills, Ontario, Canada L7G 4X6
Delegate	Mr. Nicholas Deligiannis, Strategic Marketing Specialist nick@intlvac.com +1-905-873-0166
Company Introduction	Intlvac Thin Film is an advanced manufacturing company specializing in systems for High Vacuum Thin Film Deposition & Ion Beam Etching, Thin Film Coatings, and Ion Sources for surface modification. We deliver high performance products globally to the scientific, industrial, and research communities.
Business Objectives	We would like to expose our product line of Ion Beam Milling and Deposition systems and showcase our equipment for precious metal Nanocoatings that can be used in Proton Exchange Membranes and Fuel Cell Electrolyzers. Our objective for this mission is to expand our global contacts so that we can continue developing and delivering leading edge technology globally to the science, industry, and educational communities.
Applications	PRECISION OPTICS: The optics industry is continuously evolving and the need for ongoing innovation is critical to success. Intlvac provides technology solutions that meet and exceed the needs of the precision optics market. ELECTRONICS: Electronics for telecommunications, components, and consumer electronics are among the industries we serve. One of the larger sectors is the semiconductor industry that continues to grow as a result of increasing demand for electronics and emerging technologies. AEROSPACE: Components used in any of the diverse commercial or military aerospace applications are subjected to harsh climatic conditions where they must withstand extremes in temperature and vacuum pressure. Intlvac's Thermal Vacuum System (TVAC) enables you to simulate the environment that these components will be exposed to for thorough testing of hardware destined for space. FIBER METALIZATION: Intlvac offers a number of metalized coating options for optical fiber ends and mid spans, cylindrical rods or tubes. The coating technique we use ensures a uniform distribution of different metal and multi-layer coatings with thickness controlled to nanometers. Intlvac can create high-quality single or multi-layer films of nearly any metallic element or alloy using a variety of deposition techniques including evaporation and sputtering. MEMS AND NEMS: Micro-Electro-Mechanical Systems, or MEMS, and Nano-Electro-Mechanical Systems, or NEMS have become increasingly important for a number of industries as the quest for reduced size and weight and improved speed and precision are critical. ON BEAM ETCH & MILLING: This physical etching technique is accomplished with Intlvac's Nanoquest Suite of systems that are designed to serve the needs of industry and research.

Nanalysis Corp. (AB)

Website	https://www.nanalysis.com/
Location	Bay 1, 4600 5 Street NE, Calgary, AB T2E 7C3
Delegate	Ms. Susanne Riegel Director of Marketing and NMR Product Manager susie.riegel@nanalysis.com +1-403-769-9499
Company Introduction	Nanalysis is a world-leading manufacturer of magnetic resonance technology. We develop and manufacture a wide-range of nuclear magnetic resonance (NMR) and magnetic resonance imaging (MRI) instrumentation, including our market leading compact, portable, benchtop NMR spectrometers. Our revolutionary all-in-one, benchtop NMR spectrometers - the 100 and 60 MHz - allow chemists, researchers, engineers, and students to generate data with the click of a button wherever they need. With wide-ranging applications in materials characterization, chemical synthesis, pharmaceuticals, biotechnology, forensics, reaction monitoring/process analytical technology and more, the benchtop NMR allows the reliable and accurate quality control of NMR but offers it in an accessible, affordable, and automatable package.
Business Objectives	Northeast Asia is an extremely important market for Nanalysis. We have long standing relationships with local distributors in key markets including Japan and South Korea, we look to help them increase the visibility of this new class of instrumentation and find potential customers who are interested in developing and validating new applications using benchtop NMR spectroscopy.
Applications	Our product is for testing and measurement in several spaces – chemical production, reaction monitoring/process analytical technology, pharmaceuticals, biotechnology, materials, polymers, agrochemicals, oil and gas, forensics/illicit drug analysis etc. Depending on the sector our instrument gives qualitative information as to the composition of a sample to help identify unknowns or assure purity and quantitative information to help assess composition, formulation, optimize reactions etc. For more information of our applications can be found at: https://www.nanalysis.com/applications-overview-benchtopnmr
Key highlights	Nanalysis is a pioneer of compact, highly homogenous permanent magnet technology with the first 60MHz instrument on the environment, and the market-leading 100MHz. With verticalized manufacturing and an eye on innovation, Nanalysis is helping drive the adoption of method validation of benchtop NMR in industry.
Technologies the company wishes to advance through an R&D collaboration	Nanalysis is looking for people in industry looking to develop an NMR based analyzer for quantitative analysis. We have worked with many pharmaceutical companies to develop an self-optimized online analyzer to increase the safety of chemical production, and would be interested in parties looking to further optimize their chemical production.

NanoIntegris Technologies Inc. (QC)

Website	www.nanointegris.com
Location	3765 La Verendrye, Boisbriand, Quebec, J7H 1R8
Delegate	Mr. Jefford Humes Director of Business Development JHumes@nanointegris.com +1-224-688-9065
Company Introduction	NanoIntegris Technologies Inc. is the daughter company of Raymor Industries Inc. Raymor utilizes Inductively Coupled Plasma Reactors to generated single-walled nanotubes and few-layer Graphene. Although NanoIntegris supplies Raymor's raw material to its clientele, its main focus is to provide high-purity, electronically separated (semiconducting or metallic) nanomaterials such as single-walled carbon nanotubes, graphene, transparent conductive inks, and boron nitride nanotubes for research and commercial applications within the fields of electronics, biotechnology, and chemical sensing.
Business Objectives	To connect with network of distributors within the region, discuss the developing research and business opportunities with current contacts, and create new potential collaborative partnerships with academic or commercial institutions.
Applications	We target and have found our SWCNT-based material best used within the Electronics applications sector within electrodes (anode and cathode) of EV batteries, Thin Film Transistors and Field Effect Transistors that are flexible and/or transparent, as well as back planes of touch screens, and as components to increase the efficiency of computing chips. Similarly, on the Biomedical applications sector, it can be utilized to create thin film transistors, field effect transistors, and pH, temperature, and bio/chemical sensors that are flexible, transparent, and highly sensitive. Regarding Graphene, it has found application within anodes of EV batteries, pH meters, biodegradable materials.
Key highlights	NanoIntegris Technologies Inc. provides a liquid SWCNT-based, ultra high purity semi-conductive, or conductive material that can be used in the development of novel printable, flexible, and/or high-performance applications. Additionally, we supply other nanomaterials, such as Graphene, Multi-walled nanotubes, or Boron Nitride nanotubes that can be utilized in other applications as well.
Technologies the company wishes to advance through an R&D collaboration	We seek to find commercial or academic partners to advance the technological goals stated within the above applications area.

Performance BioFilaments Inc. (BC)

Website	www.performancebiofilaments.com
Location	Suite 1120 700 West Pender Street Vancouver, British Columbia, Canada, V6C 1G8
Delegate	Mr. Gurminder Minhas, Managing Director gminhas@performancebiofilaments.com +1-604-786-9586
Company Introduction	Performance BioFilaments Inc. (PBI) is focused on the commercialization of Nanofibrillated Cellulose (NFC), which is a new, sustainable, biomaterial produced from Canadian forest feedstocks. PBI is focused on business development initiatives in key target markets, such as concrete & mortars, industrial fluids, nonwovens, and polymers, where significant benefits have been demonstrated. As of January 2023, the company will be producing and supplying commercial quantities of NFC from its Canadian facility.
Business Objectives	The key objective for this mission is to meet new prospective customers in existing applications and more importantly meet new partners for new application areas that we have yet to explore.
Applications	Currently our existing area of applications includes: • **Concrete and Mortars** - when added to concrete, NFC improves the internal curing as the concrete dries. This increases the strength of the concrete, and more importantly virtually eliminates cracking that can take place as the concrete dries. • In **nonwoven** glass fiber mats, such as those used in the construction industry, we can significantly improve both tear and tensile strength. • In **industrial fluids**, NFC improves the rheology of paints and coatings. This allows for the coating to be applied while minimizing sag. Once dry the dimensional stability and strength of the coating are improved. • In **polymeric materials (plastics)** we can offer opportunities to reduce weight while maintaining strength. Some new areas that we are exploring include: • Specialty packaging with increase performance combined with biodegradability • Treatment of industrial effluents and wastewater. • Cosmetics and personal care.
Key highlights	Performance BioFilaments Inc. (PBI) is focused on the commercialization of Nanofibrillated Cellulose (NFC), which is a new, sustainable, biomaterial produced from Canadian forest feedstocks. PBI is focused on business development initiatives in key target markets, such as concrete & mortars, industrial fluids, nonwovens, and polymers, where significant benefits have been demonstrated. As of January 2023, the company will be producing and supplying commercial quantities of NFC from its Canadian facility.
Technologies the company wishes to advance through an R&D collaboration	We are looking to expand the use of our sustainable nanofibrillated cellulose in the application areas mentioned in the application section. Furthermore we are looking to partner with Korean companies to develop new uses for nanofibrillated cellulose.