



nano ontario

Annual Report 2018





nano ontario is a not-for-profit corporation representing the interests of academic, industrial, government, and financial community members in the development of nanotechnologies in Ontario.

nano ontario members work together to raise the profile, increase the research, build the investment and drive economic returns from nanotechnology in the province and across Canada.

VISION

- To be the trusted source of information for nanotechnology activity in Ontario.
- To be the recognized authority to advise government on economic opportunities, policy, standards and regulations that enable Ontario to benefit and capitalize on its research, development, and commercial capacity in nanotechnology.

OBJECTIVES

- Map Ontario's capacity in nanotechnology research development and commercialization.
- Promote and facilitate interaction between nanotechnology groups in universities, industry, and government.
- Coordinate public outreach activities to advocate societal benefits enabled by nanoscience and nanotechnology.



MESSAGE FROM THE CHAIR



In this first year as the NanoOntario Chair, I had the pleasure to witness continued sustainable and tremendous activity in the field of nanoscale science and technologies for the development of a variety of applications. These range from photonic and electronic or micro-electro-mechanical devices to the exponentially growing innovative fields of biomedical sensing, smart cities, and autonomous vehicles, to cite only a few.

Nonetheless, there is a huge margin for progression in developing new connections between our nanofabrication and characterization facilities and the industries in need of these tools to further innovate and create new products.

The Board has evolved with new members from industry. In 2018, Grafoid and NDS Solutions joined our Board, expanding their network through the contacts enabled by NanoOntario on both national and international levels. Mirexus Biotechnologies and CMC Microsystems have just joined

NanoOntario at the time of this report, and we expect more companies to join the NanoOntario consortium in the coming year.

Summarized in this report are the main events organized by NanoOntario, as well those in which NanoOntario members participated and represented our organization.

Our participation in the national meetings and international missions organized by NanoCanada enabled many of the Ontario-based companies to travel to key trade shows to promote their products and expertise. Our financial support for students to attend the NanoCanada national conference was also effective this year. Our own 9th NanoOntario annual meeting, organized at Carleton University, was again a successful event with more than 120 attendees and high-level presentations. This was also the second year wherein NanoOntario delivered Awards for Women in nanosciences and nanotechnologies. Congratulations to all winners for their leadership in this fascinating field.

Dr. François Lagurné-Labarthet (Western University)



NANOONTARIO IN JAPAN (Feb 13-16, 2018)

Going Global and Representing Ontario on an International Stage

For the third consecutive year, NanoOntario represented the interests of its members at the NanoTech Conference and Exhibition at Tokyo Big Sight in Japan.



The Mission was organized by NanoCanada and included a meeting at the Canadian Embassy in Japan. Over a dozen delegates from Canada presented their nanotechnology research, products, and initiatives to Japanese stakeholders. We learned about Embassy services for Canadian organizations and industrial opportunities in Japan. In particular, meetings with the trade commissioners in various sectors (aerospace and defense, agriculture, cleantech, mining, and nuclear energy) were organized around roundtables. A key outcome is that we raised the profile of NanoOntario members as leaders and international partners in science, technology, and innovation.

The Canadian delegation was composed of NanoCanada, NanoOntario, PrimaQuébec, Alberta Innovates, WIN, NRC, NINDT, and 12 other Canadian companies, including several from Ontario (Grafoid, Atomic Works).



Canadian participants travelled to FujiFilm Open Innovation Hub, an event arranged by the Embassy of Canada. We learned in particular about how this global company transitioned successfully from the production of photographic films to cosmetic consumer products due to their extensive expertise in collagen. These fruitful meetings and visits provided a direct line into top Japanese institutes that would not be possible without the credibility of the Canadian Embassy and NanoOntario's participation in the Canadian delegation organized by NanoCanada. The primary activity for NanoOntario was participation in Japan's NanoTech 2018 Conference and Exhibition. Considered one of the largest events in the world, the tradeshow floor sees over 50,000 registrants visiting 100's of booths set up by many companies and countries. The NanoCanada booth was the home to all Canadian delegates to attract business and conduct meetings with partners and industrial participants at the show.



The event cost over \$60,000 and NanoCanada was given support from Alberta Economic Development and Trade, Alberta Innovates, the Canadian Embassy in Japan, the Alberta-Japan office, Ontario-office in Japan, and NRC. NanoOntario set up a corner of the booth to represent and raise the profile of its members.

NanoCanada was invited to participate in the 10th Annual Nanotech Association Conference. Nanotechnology leaders from across the globe gave an overview of their countries' priorities, objectives, and policies regarding nanotechnology. There was much interest in cooperation on educational activities, as these are generally non-competitive and often have limited budgets.

During this mission, NanoOntario interacted with many companies and institutes, including several who expressed interest in becoming members of NanoOntario. NanoCanada indicates that the Canadian companies who participated in this event have made many promising connections and that some positive outcomes were materializing as a result of their meetings in the NanoCanada pavilion.

In conclusion, NanoOntario's participation in this mission and tradeshow is key to raising the profile of its members and representing the interests of Ontario on the national and international scene. It was highly insightful and productive to meet the other key stakeholders in Canada representing and working in the field of nanotechnology. It has allowed for better coordination and planning between provincial and national organizations.

NanoOntario was represented by F.Lagugné-Labarthet and C.Burt (Grafoid)



NANOONTARIO IN Korea (July 9-13, 2018)

Going Global and Representing Ontario on an International Stage

The delegation traveled to the Samsung Innovation Museum in Gyeonggi-do and participated in an official tour. The afternoon was spent at the LG Science Park. The group then met with the Senior Vice President of the Material and Devices Advanced Research Institute, Dr. Jeong-Soo Lee, and members of the LG Electronics Open Innovation team. NanoCanada delegates were given an opportunity to pitch their organization to the Vice-President and his team and discuss how their companies could collaborate with LG Electronics. Thanks to this pitch session, Dr. Lee paired key people from LG's Divisions with Canadian delegates and arranged for introductory visits at the tradeshow in the following days. The Vice-President also gave the group a tour of the science park and presented some of the most recent technologies that are heading to market.

The delegation visited the Canadian Embassy in Seoul and began the day with a briefing session on the commercialization of research outcomes in nanotechnology by the Nano-Convergence Foundation. The next three days were spent at the Nano Korea symposium and tradeshow. The event showcased 350 organizations from 11 different countries and 9,500 visitors from 35 countries participated in the event.

NanoCanada was honoured to receive the International Cooperation award from Nano Korea at an awards ceremony luncheon hosted on the afternoon of July 11th.

NDS Solutions and Grafoid respectively represented by B.Shokouhi and C. Burt were also representing NanoOntario at this event.



"The Trip to LG campus was absolutely amazing, the fact we had a chance to meet with the senior directors and were able to give a brief intro of our tech and companies made the connection more real and opened a window for later follow-ups and initiatives" B. Shokouhi, (Nanodevice Solutions and NanoOntario Board member).



NANOCANADA ANNUAL CONFERENCE (Oct 23-24, 2018)

Nano-Enabled Materials: Fundamentals to Applications

NanoCanada and CMC Microsystems held a national 360 Innovation Conference in Toronto to connect Canada's nanotechnology community with industry and government and highlight how technologies can be used for developing smart communities.



As a founding member of NanoCanada, NanoOntario plays an anchor role in connecting and promoting Ontario research, commerce, and talent across Canada and internationally. In support of our Ontario members, we sponsored **8 Ontario students** to submit posters and represent Ontario research at the conference including award winners Katelyn Dixon, University of Toronto, and Majeda Al-Hariri, McMaster University.

5 discussion panels were organized around 9 keynotes and 20 speakers and panelists, addressing smart vehicles, health, superclusters, connectivity, and energy among other fields where nanoscale science is critical. Many prominent entrepreneurs were involved during the discussion panels. Smart-city expert Jean-François Barsoum (IBM) shared his insights into the future of urban transportation as a keynote speaker.



In addition to its sponsorship, NanoOntario was represented by G. Walker (board director) who gave a plenary talk and Umberto Berardi (York University) who gave a keynote talk.



9th NANOONTARIO ANNUAL CONFERENCE (Nov 22-23, 2018)

Nano-Enabled Materials: Fundamentals to Applications

The 9th NanoOntario Conference was hosted by Dr. Maria DeRosa and Carleton University. The focus of the conference was “Moving your nanotechnology research from the lab to the marketplace”.



The two-day program welcomed over 120 attendees and featured 14 invited talks by Ontario’s top researchers, 13 students talks, and 45 posters and awards.

Keynote Lectures were given by Prof. **Tito Scaiano**, University of Ottawa, “*From Cosmetics to Green Catalysis Inspired by Crop Rotation Practices in Agriculture: the many faces of Titanium Dioxide*” and Prof. **Hanadi Sleiman**, McGill University, “*Supramolecular DNA Structures: From Design to Function*”. Other invited and contributed talks were given by Prof. **Eva Hemmer**, University of Ottawa, Prof. **Stefania Impellizzeri**, Ryerson University, Prof. **Kevin Stamplecoskie**, Queen’s University, Dr. **Li-Lin Tay**, National Research Council, Prof. **Ian Hamilton**, Wilfrid Laurier University, Prof. **Ribal Georges Sabat**, Royal Military College, Dr. **Premkumari Kumarathasan**, Health Canada, Dr. **Azam Tayabali**, Health Canada, Dr. **Shan Zou**, NRC, Prof. **Suresh Gadde**, University of Ottawa, Prof. **Maxim Berezovski**, University of Ottawa and Prof. **Emilio Alarcon**, University of Ottawa Heart Institute, providing an exemplary snapshot of the excellence and diversity of fundamental and applied nanoscale science in Ontario.



NanoOntario Conference: Panel Discussion

Moving your Nanotechnology Research from the Lab to the Marketplace

The panel discussion on "Moving your nanotechnology research from the lab to the marketplace" covered various issues from IP to financing to regulations. L-R: Prof. John Dutcher (Mirexus and Guelph), Estelle Chen (BMO), Prof. F. Lagurné-Labarthe, Prof. Maria DeRosa (Carleton-moderator), John Jackson (NSERC), Djordje Vladisavljevic (Health Canada) and Dr. Mark Vickers (Patent Lawyer at BLG). The moderator was Professor Maria DeRosa.



Information about how to protect discoveries, how to commercialize them and how to finance a startup was provided for the next generation of entrepreneurs. Enthusiastic questions were asked during the meeting, highlighting the interest to move fundamental discoveries from the laboratory to the marketplace.



NanoOntario Conference: Student posters and Exhibitors

Top Talent and Awards

45 students competed for peer reviewed poster awards and talks. The conference was sponsored by the division of Surface Science (CIC), the Microscopy Society of Canada, NanoCanada, CMC, as well as industries Edge Scientific, OKYAY ALD, and MEAgrow.



Student Awards Winners !



Some Student Prize Winners: (L-R) Joseph Cirone (Guelph), Erin McConnell (McMaster), Eman Hassan (INRS), Yin Sun (NRC), Anna Koudrina (Carleton), Danielle McCrae (Western), Goonay Yousefalizadeh (Queens).



Some Student Prize winners with Prof. Maria DeRosa (Carleton, Far Right). L-R Trent Gordon (Western), Ayda Elhage, (Ottawa), Danielle McCrae (Western)



WOMEN IN NANOTECHNOLOGY / DIVERSITY STATEMENT

Recognizing Diversity and Raising the Profile of Excellence in Ontario

Historically led by Board members Dr. Hind Al-Abadleh, Dr. Rina Carlini, and Dr. Maria DeRosa, NanoOntario took steps toward recognizing diversity and raising the profile and accomplishments of Ontario women in nanotechnology.

NanoOntario recognizes that human diversity is central to realizing the vision and objectives of the organization. To this end, NanoOntario is an all-inclusive organization that encourages and supports the participation of all members actively engaged in nanoscience and nanotechnology in the province, including women and members of traditionally under-represented groups in science, technology, engineering, and mathematics.

As an organization committed to serving and celebrating the accomplishments of its diverse members, NanoOntario launched a new initiative called **“Meet Ontario Women in Nanotechnology”**, profiling on a monthly basis the activities of accomplished female scientists, engineers, business leaders, government and private employees from across the province of Ontario.



nanoontario.ca/meet-ontario-women-in-nanoscience

The 2018 recipients of the NanoOntario Awards for Women Scientists and Engineers engaged in nano-related R&D were awarded at the 2018 NanoOntario Conference:

Professor Linda Johnston (NRC) Outstanding Lifetime Achievement

Professor Shirley Tang (Waterloo) Award for Outstanding mid- career Achievement

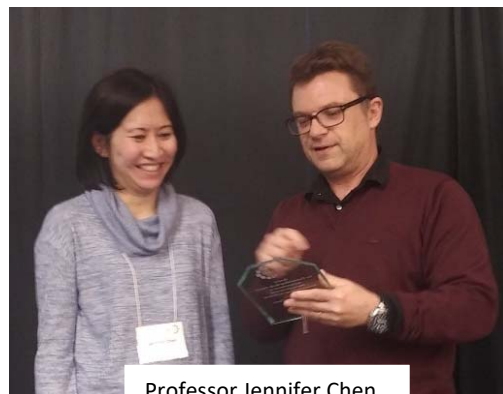
Professor Jennifer Chen (York University) Award for Outstanding Early- career Achievement



Professors Linda Johnston and Maria DeRosa



Professors Shirley Tang, and Francois Lagugne



Professor Jennifer Chen

Awards Committee: Hind Al-Abadleh (Wilfrid Laurier), Maria DeRosa (Carleton), Michael Kolios (Ryerson), François Lagugné-Labarthe (Western), Hamdy Khalil (Woodbridge).



ADVOCACY FOR NANOTECHNOLOGY IN ONTARIO –Fall 2018 meetings and updates

NanoOntario is the recognized voice for nanotechnology in Ontario. We were selected by the Province of Ontario to establish a Nanotechnology Innovation Centre in Suzhou (Soochow), China. In 2015, we opened an office for Ontario companies and researchers interested in accessing the Chinese market and using the facilities and program in China’s “nanocity”, NanoPolis.



www.nanotech-ic.com

In 2018, the Centre’s funding (Ontario-Jiangsu) was used to support a presence at OCE Discovery, and to subsidize an Ontario pavilion at the ChiNano conference and tradeshow in October 2018. 5 nanotech university spinoffs from Ontario participated in ChiNano (Everbond Interface Technologies Inc., Glacier Technologies Inc., ICSPI Inc., Mediphage Bioceutrals Inc., Nanodevices Solutions Inc.)

In order to make a bigger impact in 2019 and following several phone conference calls and in-person meetings with the Suzhou team, NanoOntario members, under the leadership of Sushanta Mitra (Executive director WIN), collectively created a Commercialization Committee. This committee will include technology transfer and industry liaison personnel from the largest Ontario universities (University of Toronto, McMaster University, Western University, and University of Waterloo as a starting point) who work with spin-offs and startups. Sushanta agreed to be the chair of the NanoOntario-Suzhou Steering Committee for 3 years and Oleg Stukalov (WIN) has been nominated as the chair of the Commercialization Committee.

Reciprocally to our office in China financed by the Jiangsu province and thanks to the leadership of Dr.Sushanta Mitra, Waterloo Institute for Nanotechnology has committed to physically host an Ontario office for the Centre for 3 years with the vision that another university will follow the steps to ensure longevity and possible continuation of funding.

NanoOntario’s Suzhou Chinese Office available for all Ontario companies to expand their businesses and facilitation commercialization.



www.nanoontario.ca



PRESENT MEMBERS



BOARD OF DIRECTORS 2018

François Lagurné-Labarthet (Western University) **(2018 Chair)**
Peter Mascher (McMaster) **(2017 Interim Chair / 2018 Vice Chair)**
Hind Al-Abadleh (Wilfrid Laurier University) **(Secretary/ 2018 Secretary and Treasurer)**
Louis Barriault (University of Ottawa)
Robert Crawhall (Innoxec)
Marie De Rosa (Carleton University)
John Dutcher (University of Guelph)
Brian Haydon (Canadian Standards Association)
Hamdy Khalil (Woodbridge Foam Corp.)
Michael Kolios (Ryerson University)
Roman Maev (University of Windsor)
Babak Shokouhi (NDS Solutions)
Sushanta Mitra (Waterloo Institute for Nanotechnology)
Jean Michael Nunzi (Queens University)
Simone Pisana (York University)
Mehdi Sheikhzadeh (Lambton College)
Chester Burt (Graford)
Gilbert Walker (University of Toronto)

Executive Directors 2018:

F.Lagurné-Labarthet, Peter Masher, Burt Chester, Gilbert Walker, John Dutcher, Hind al-abadleh, Hamdy Khalil.

New members as per March 2019:

Phil Whiting (Mirexus Biotechnologies)
Gordon Harling (CMC microsystems)
Stefania Impellizzeri (Ryerson University)





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