



# Canada's National Design Network<sup>®</sup>

## HIGHLIGHTS

2019 🍁 2020



# CMC Microsystems

Let's Connect!



[www.CMC.ca/About-Us](http://www.CMC.ca/About-Us)

## About Us

Established in 1984, CMC Microsystems provides services essential for the research and training required to advance Canada's digital economy, for example, Industry 4.0, autonomous vehicles, big data, Internet of Things (IoT), cyber defence/security, 5G, quantum computing, artificial intelligence (AI) and more.

CMC manages Canada's National Design Network® (CNDN), a national network of 10,000 academic participants and 1,000 companies developing innovations in micro-nanotechnologies.

## What We Do

CMC helps researchers and industry develop innovations in microsystems and nanotechnologies.

We do this by lowering barriers to technology adoption by creating and sharing platform technologies.

CMC and CNDN facilitate access to state-of-the-art design, manufacturing, and testing facilities for microsystems technologies. We give Canada's top researchers and innovators simplified access to the best tools to design, develop, and test their ideas.

We have intensified our focus and efforts on foundational technologies. These technologies are critical to enabling Canada's growing digital economy.



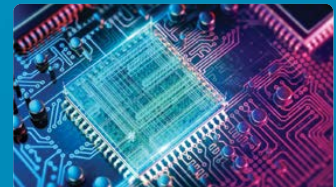
Microelectronics



Photonics



Embedded Systems



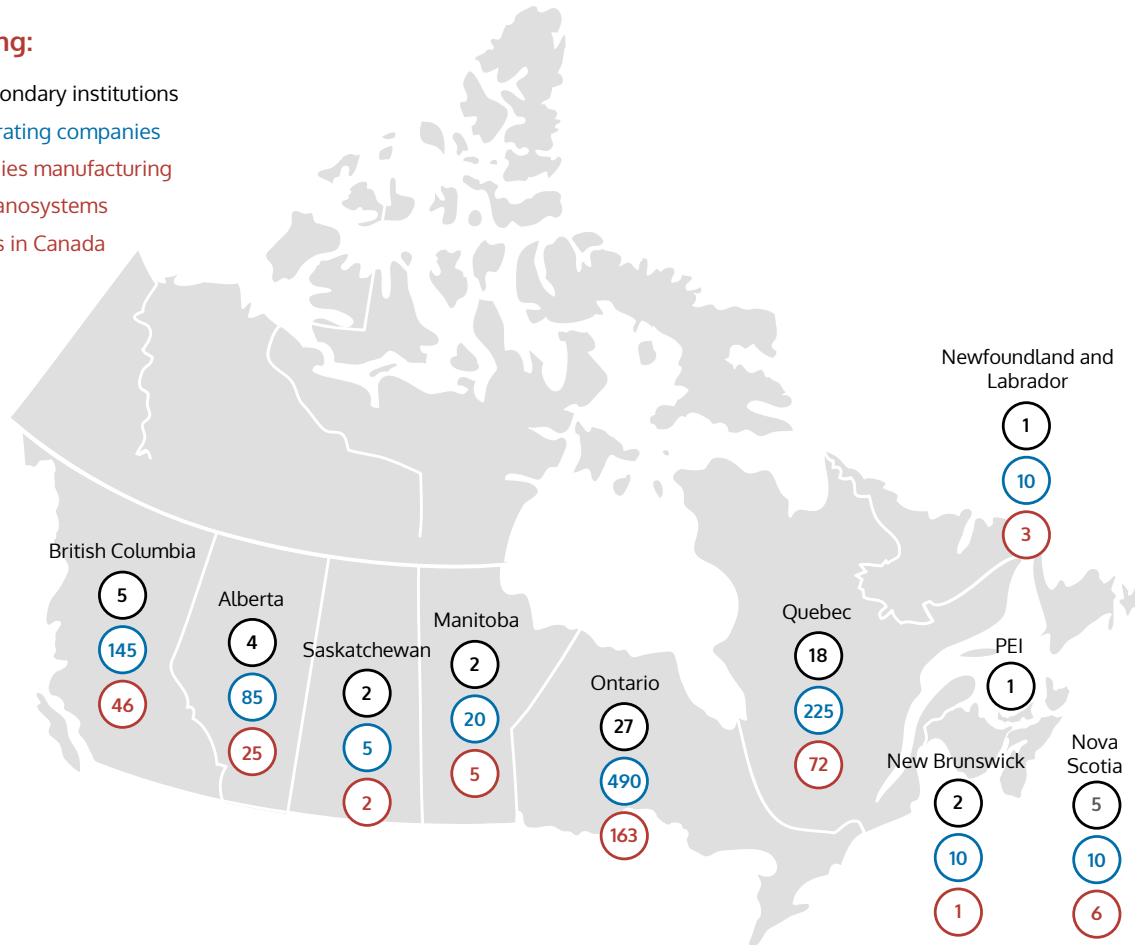
Microelectromechanical  
Systems (MEMS)

# Canada's National Design Network

A national network of 10,000 academic participants and 1,000 companies developing innovations in micro-nanotechnologies. CMC manages CNDN.

## Connecting:

- Post-secondary institutions
- Collaborating companies
- Companies manufacturing micro-nanosystems products in Canada



## By the Numbers

# Industrially Relevant Research

A strong national network delivering globally competitive,  
industrially relevant research and innovation.

### Research Excellence



3,460

Publications



170

National and  
International Awards

### Industrial Impact



35

Licensed  
Technologies



255

Patents  
(applied for/issued)



10

Startups



515

HQP moved to  
Industry in Canada

# We Create and Share Knowledge

Consistent growth in training aspiring research leaders  
and connecting industry with research.

## Trained HQP



395

Graduate Courses



480

Undergraduate Courses

## Collaborative Initiatives



435

Collaborations with  
industry valued at \$29M



460

Inter-university collaborations  
in Canada and abroad



120

Collaborations with government  
and not-for profit organizations

# CAD | FAB | LAB

Capability to keep researchers at the leading edge.

## CAD

High-performance Computer Aided Design tools and environments for successful design from over 25 vendors

- ✓ **560 CAD tools and modules** available via desktop or through CMC Cloud
- ✓ **6,575 users**
- ✓ **420 user guides**, application notes, training materials and courses
- ✓ **20 training courses and events**
- ✓ **5 webinars**

## FAB

Multi-project wafer services, value-added packaging and assembly services and in-house expertise for first time-right prototypes

- ✓ **25 technology runs** through **9 foundries worldwide**
- ✓ **200 designs fabricated**
  - 150 were fabricated through CMC's global network of industry-scale fabrication foundries
  - 50 were developed through Canada's MNT network of 40 university-based labs

## LAB

Device validation to system demonstration

- ✓ **675 programmable development systems**
- ✓ **80 pieces of test equipment for rent**
- ✓ **Online support system with over 2000 cases closed annually**







## Microelectronics

The semiconductor industry is heading toward a collaborative and comprehensive “silicon to services” model. This shift will mean that the industry will cover a more integrated product and service offering that spans from data centers to the mobile edge applications.

## Photonics

Photonics technology is widely used in almost all modern technology infrastructure, where it delivers many essential functions ranging from data transmission to sensing. The photonics industry is ripe for widespread integration between different systems and across applications. With increased integration comes the potential for explosive growth.



## Embedded Systems

We enable critical research in artificial intelligence, machine learning, heterogeneous computing, and 5G applications for researchers and industry across CNDN. These technologies are growing incredibly quickly, with new potential applications emerging regularly. Despite increasing adoption, design, prototyping, and manufacturing costs still present an important barrier to entry. CMC continues to lower the barriers to technology adoption to develop the future of embedded systems.

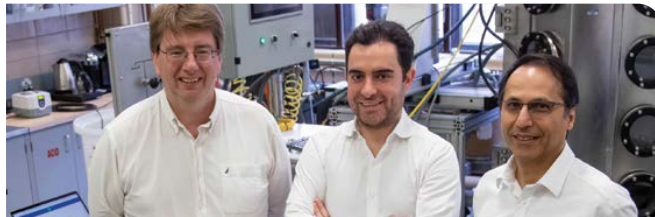
## Microelectromechanical Systems (MEMS)

MEMS growth is fueled by established sectors of the economy such as automotive and consumer goods, and is poised to become critical in advanced manufacturing of medical technologies and diagnostics, machine health, smart buildings, and edge computing.

# Success Stories

“CMC provided us with the right tools to build something smaller and less expensive that would have a direct impact on public health in the world’s most vulnerable communities.”

– DR. ALPHONSUS NG, UNIVERSITY OF TORONTO



“CMC Microsystems has played an important role in commercializing our work. They gave us a lot of the design tools, including access to fluid-modeling software and expertise.”

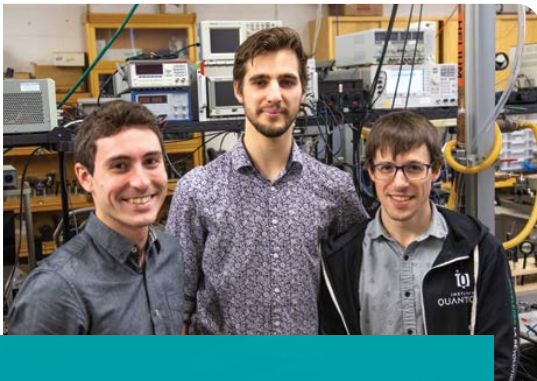
– DR. PIERRE SULLIVAN, UNIVERSITY OF TORONTO



“Without CMC support, Canadian researchers could not compete with the rest of the world.”

– DR. JEAN-FRANÇOIS PRATTE,  
UNIVERSITÉ DE SHERBROOKE



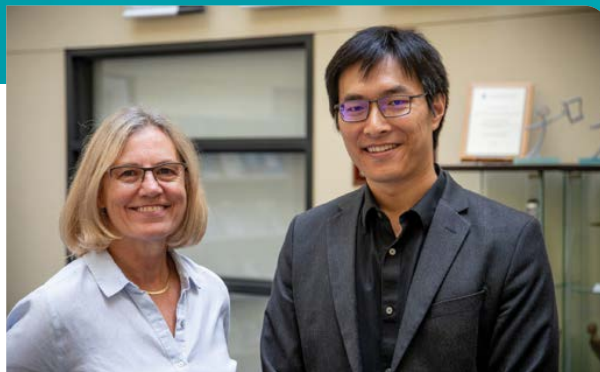


“Without CAD solutions and access to simulation and design licenses provided by CMC, this [quantum sensor project] never would have happened.”

– DR. DAVID ROY-GUAY, UNIVERSITÉ DE SHERBROOKE

“CMC’s tools, services and expertise were critical to our success. None of this would have been possible without them.”

– DR. LESLIE RUSCH, UNIVERSITÉ LAVAL



“There are fewer opportunities for this kind of partnership in Canada, which makes CMC’s role all the more important.”

– The late DR. PEDRAM MOUSAVI, UNIVERSITY OF ALBERTA

# Global Partners

CNDN's worldwide industrial supply chain – supporting research excellence

