

# GRADUATE STUDIES

# ENGINEERING PHYSICS

## THE DEPARTMENT OF ENGINEERING PHYSICS OFFERS YOU:

- A flourishing research environment supported by several Canada Research Chairs (CRC);
- A solid scientific training ensuring a promising future in cutting-edge technological fields and preparing tomorrow's researchers;
- Renowned professors and researchers;
- Industry collaboration and a platform toward entrepreneurship.

## AREAS OF EXPERTISE

Research and development at the Department of Engineering Physics encompasses a diverse range of subjects that combine nanoscience, biomedical, advanced materials, photonics and leading-edge instrumentation. On top of major fundamental advances, these activities can be used in many industries such as electronics, telecommunications, biomedical and aerospace.



### BIOMEDICAL TECHNOLOGIES

Local probe for imaging, microscopy (optic, spectroscopic), microfluidic, biophotonics, biocaptors and chips, etc.



### ADVANCED MATERIALS

Functional and nanostructured coatings, organic nanostructures and assemblies, magnetics, semiconductors and metallics, etc.



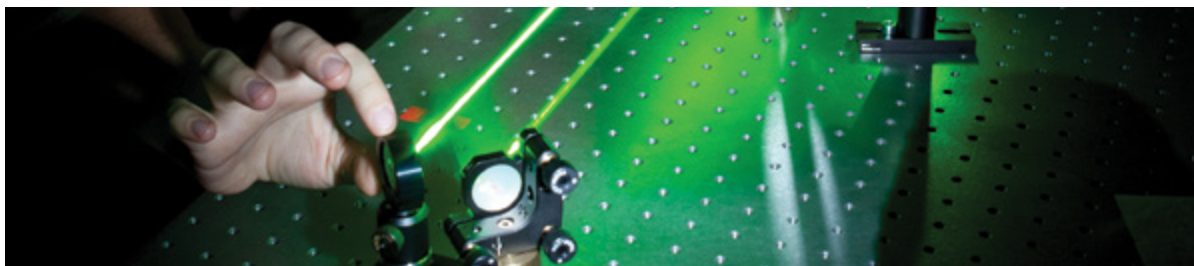
### ENERGY AND NUCLEAR ENGINEERING

Neutron activation, photovoltaic, thermoelectricity, storage, thermohydraulic, energy conversion, etc.



### OPTICS AND PHOTONICS

Quantum and nonlinear optic, optoelectronic, optic fibres, micro-electromechanical systems (MEMS) and magneto-electronics, etc.



## RESEARCH CHAIRS

- NSERC Multisectorial Industrial Research Chair in Coatings and Surface Engineering;
- Tier 1 Canada Research Chair in Future Photonics Systems;
- Tier 2 Canada Research Chair in Hybrid and Molecular Photonics;
- Tier 2 Canada Research Chair in Integrative Nanoscale and Hybrid Materials;
- Tier 2 Canada Research Chair in Ultrafast Quantum Photonics.



## CONSIDER ENTREPRENEURSHIP

We offer you all you need on campus to explore your entrepreneurial spirit. Many of our graduate students have started their own companies like LTRIM Technologies and ITF Technologies optiques, two recent success stories.

## FUTURE PROSPECTS

Studies in Engineering Physics can lead you to many environments such as:

- Telecommunications (EXFO, MPB, Marconi, Bell Canada, Vidéotron, ITF, StockerYale, etc.);
- Aeronautics and aerospace (EMS, Bombardier, CAE, Canadian Space Agency, etc.);
- Microelectronics (Teledyne DALSA, IBM, Excelitas, etc.);
- Advanced materials (Noranda, Paprican, Alcan, IBM, 5N Plus, etc.);
- Biomedical engineering (hospitals, General Electric, Siemens, Philips, Anrad, etc.);
- Major national and university laboratories.

C. Archambault, MASC 2013  
**Project Manager at Univalor**

A. Maillard, PhD 2012  
**Technical Engineer II at MDA**

M. Biron, MASC 2013  
**Engineer in plasma processes at Teledyne Dalsa**

C. Miville-Godin, MASC 2008  
**Technical Officer at NRCC-Boucherville**

E. Adam, PhD 2011  
**Advisor, Technology and Innovation at PRIMA Québec**

JOB EXAMPLES

## NETWORKS AND INFRASTRUCTURES

Throughout your studies, you will have access to large facilities and analysis platforms such as:

- Clean room nano and micro machining (lithography, deep and reactive engraving, focused ion beam, etc.);
- Surface microscopy and spectroscopy (TEM, SEM, AFM, STM, XPS, AES, etc.);
- Ion spectroscopy (dynamic SIMS), Brillouin (BLS), infrared and photoacoustic;
- Epitaxial growth (MBE, MOVPE)
- Magnetometric, magnetotransport, ferromagnetic resonance;
- Linear (absorption, photoluminescence) and non-linear optical characterization (SHG, THG, Raman);
- Femtoseconds optical spectroscopy, near field optical microscopy (SNOM) and optical coherence tomography.

Works carried out as part of the graduate studies fall under the activities of renowned research groups such as the Regroupement québécois sur les matériaux de pointe (RQMP), the Centre d'optique, photonique et laser (COPL) and The Research Group in Biomedical Sciences and Technologies (*GRSTB for Groupe de recherche en sciences et technologies biomédicales.*)

## INFORMATION

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**POLYTECHNIQUE  
MONTRÉAL**

WORLD-CLASS  
ENGINEERING



[polymtl.ca/futur/es/en](http://polymtl.ca/futur/es/en)

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