Research Centre for Advanced Materials (CERMA)

Studying at CERMA means

› Being part of a dynamic research centre renowned for its top-notch researchers and training program
› Acquiring advanced training in modern materials
› Having access to a complete range of modern equipment and assistance from qualified personnel
› Working with scientists who boast cutting-edge expertise in a variety of disciplines

CERMA is a materials science and engineering research centre specializing in the design, synthesis, characterization, and use of materials in three major fields

› Synthetic and natural macromolecules
› Nanomaterials
› Biomaterials

The centre draws on the expertise of 14 research professors (13 regular members and one associate member) and counts more than 125 members, including graduate students, postdoctoral fellows, and research professionals.

CERMA’s mission is to develop new materials, with a focus on three areas of critical scientific and technological importance in the 21st century, namely synthetic and natural macromolecules, nanomaterials, and biomaterials.
Mario Leclerc was awarded the 2011 Prix Urgel-Archambault. This prestigious award, presented by ACFAS recognizes scientists for major contributions in physics, mathematics, information technology, and engineering.

In 2011 NSERC appointed Diego Mantovani as Canada Research Chair (Tier 1) in Biomaterials and Bioengineering for the Innovation in Surgery. Gaétan Laroche launched a new training program on regenerative medicine with a grant obtained through NSERC’s highly selective CREATE program. Professors Laroche and Mantovani were also named Fellows of Biomaterials Science and Engineering in 2012.

CERMA’s work touches on an incredible array of technological challenge, as the research interests of CERMA professors show. For example, in the field of synthetic and natural macromolecules, Michèle Auger and Michel Pézolet are researching biological macromolecules such as silk and proteins, using spectroscopy (infrared, Raman, nuclear magnetic resonance, etc.) to characterize these natural macromolecules. Bernard Riedl and Denis Rodrigue are also active in this field. Their work on the use of cellulose in various composite materials is of great interest to the plastics industry, which is constantly on the lookout for greener materials. Mario Leclerc and Josée Brisson continue their work on the synthesis and characterization of new polymer materials and are currently pursuing a joint project to develop new polymers for transistors and solar cells. In a similar research vein, Jesse Greener is working on customized biofilms. In the field of nanomaterials, Anna Ritcey and Marc-André Fortin focus on the synthesis and characterization of hybrid nanoparticles, often luminescent or magnetic, that can be used as markers for biophotonics applications or contrast agents for medical imaging applications. Freddy Kleitz’s work centres on the production of porous nanomaterials to capture greenhouse gases, and Jean-François Morin is developing new semiconductor nanotubes, graphite nanoparticles, and graphene nanoribbons.

On the biomaterials side, Gaétan Laroche and Diego Mantovani are doing work on new biocompatible implants while Mario Leclerc works on developing optical and electrochemical biosensors for rapid detection of DNA and proteins. Jean-François Morin is developing water-soluble, biocompatible dendrimers for use in biomedical imaging and drug delivery applications.

Lastly, Roxane Pouliot is working on the characterization of a different kind of “material”—human skin—and the development of skin substitutes.