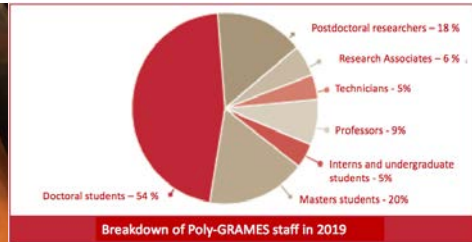


WELCOME TO POLYGRAMES

Founded in 1993 by a group of five professors, initiated by Pr Renato Bosio, the Poly-GRAMES research center, whose acronym means "Advanced research group in microwaves and space electronics", is one of the the most dynamic university radio research centers in the world. Under the direction of Pr Ke Wu, Poly-GRAMES has more than 110 members and trains many students.



Poly-GRAMES, leader in high frequencies

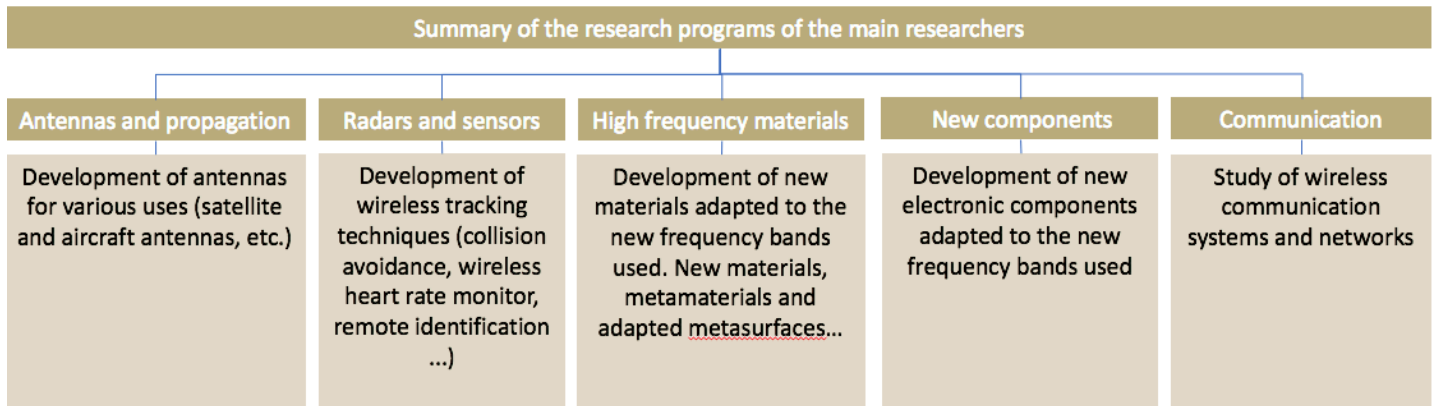
Poly-GRAMES is one of the rare university laboratories in Canada and in the world where we work in frequencies on the order of terahertz (1 THz = 1,000,000,000,000 Hz). These high frequencies hold the promise of an even higher data rate, but the advantage comes with technical difficulties. In fact, the higher the frequency, the more the waves interact with the imperfections of the materials which propagate them. Thus, each of the components must be manufactured with micrometric precision (one tenth of the diameter of a hair), which Poly-GRAMES can provide thanks to its infrastructure and the expertise of its employees.

Equipment for cutting-edge research

Investment in Poly-GRAMES' research infrastructure amounts to more than \$ 50 million. This makes it possible to carry out all the development stages of a product or a prototype within Poly-GRAMES itself, as there is, modeling, design, manufacture and characterization. This infrastructure facilitates student learning. It also allows for the development of complex prototypes that industry, at times, was unable to provide. In fact, some companies contact Poly-GRAMES to measure their products, antennas for example, which could hardly be done anywhere else in Canada.

Broad research

Many areas of expertise are developed thanks to the available equipment, the two Canada research chairs as well as the specializations of professors, students and technicians of Poly-GRAMES:



A laboratory with international... and industrial reach!

Poly-GRAMES is a multicultural laboratory with staff coming from all over the world. Among the most represented countries and continents are Canada, China, Iran, Mexico, Europe, South America and Africa. Members' work gives rise to more than 150 scientific publications per year.

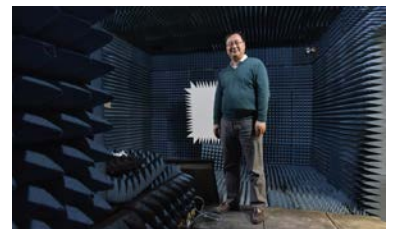
Main places of origin of employees and students →



Some Poly-GRAMES contributions since its creation

The equivalent of an optical fiber, but for radiofrequency waves: Traditionally, radiofrequency waves are transported by waveguides in the form of rectangular or circular tubes. Poly-GRAMES has pioneered a new way of transporting these waves with a technique that is easier to manufacture and also allows the integration of complex active or passive microwave circuits. This technology, called SIW (*Substrate Integrated Waveguide*), is now used by the industry; *development by Pr Ke Wu*.

A radiofrequency selector: In order to control the waves which one wishes to propagate, it is possible to make very selective optical filters called "Bragg gratings on optical fiber". These are used for the grouping (multiplexing) of wavelengths in communication networks; *developed by Pr Raman Kashyap*.



Pr Ke Wu in an anechoic chamber to measure the performance of different antenna prototypes