



WINTER 2017

Venue:

Engineering Technology Building (ETB) 535

Tuesday, March 21st from 1:30 - 2:20 PM

ENGINEERING

PHYSICS

SEMINAR SERIES

Department of Engineering Physics in
the Faculty of Engineering at
McMaster University, Canada.

**Jean-Pierre
Landesman**

Professor,
University of Rennes

Investigations on some side effects and defect formation during plasma etching of nanostructures using III-V semiconductors:



TUESDAY MARCH 21 2017

Reactive ion etching, based on the controlled interaction of the semiconductor surface with highly reactive plasmas, is one of the most important building blocks in nanotechnology platforms nowadays. This technique was introduced in the fabrication processes several decades ago, however it relies on a complex interaction between the surface and the plasma phase. There are still some aspects of this interaction which require investigations, especially as the tools become more powerful, for example on the route towards faster etching processes with better control on the critical dimensions. In this presentation, we will focus on the issue of the damage that can be introduced in the etched materials due to the presence of energetic ions in the plasma for example. We will briefly review the basics of plasma / surface interactions that are meaningful to understand the mechanisms of etching. We will also discuss some of the “old” work that was undertaken by pioneering groups to investigate associated defect formation, especially in III-V materials. We will then show some more recent results that build on these ideas, mainly using spectroscopic techniques with high spatial resolution to investigate defect formation in quantum well structures on InP, after exposure to different etching plasmas.

Biography: Jean-Pierre Landesman is a Professor at the University of Rennes-1 (France). He graduated from the “Ecole Centrale de Paris” (School of Engineering) and received his PhD in Materials Science from the University of Strasbourg. He has worked with different companies involved in electronic and opto-electronic semiconductor device research and development. He was first with Philips Research Laboratories, and then with Thomson-CSF Corporate Research (this company is now Thales). In 2000, he moved to the University of Nantes as a Professor, and in 2011 to his present position at the University of Rennes-1.