Our doctoral program (EDMI) covers a wide range of research topics ranging from MEMS to digital circuit design and is at the intersection of micro/nanoelectronics, micro/nanosystems, and bioengineering. Interdisciplinarity and technological innovation constitute core priorities of our doctoral program.
Mario Chavarria Varon,
EPFL – STI – IMT – LMIS1

I am a second year PhD student in the Microsystems Laboratory 1. My work focuses on the development of a system that allows the simultaneous topographical and chemical analysis of samples in the nanometer range. To be part of this project is a very enriching experience. I have the chance to work with and learn from very gifted people. Thanks to EPFL’s recognition and excellent collaboration relations I had the opportunity to visit different laboratories in other countries, such as China and Japan, and to host foreign researchers in our laboratory. This has been very helpful in order to build an active and prolific knowledge exchange network. The working environment is highly passionate and motivating. When I first came here from Colombia, I didn’t know anybody and I was worried about dealing with a more cold and distant social culture than I was used to. However, I was happily surprised by the kindness and friendliness of my colleagues. From day one they have been very supportive and welcoming. Also, the EPFL community is so multicultural that you can easily blend in and stop feeling foreign. During the past year and a half I have realized that doing research at EPFL can be quite demanding but being at the forefront of science is really worth the effort.

Sara Rigante,
EPFL – STI – IEL – NANOLAB

I first came to EPFL during my Master’s in Micro and Nanotechnologies for Integrated Systems, an incredible experience that allowed me to discover the value of sharing science with people from all over the world. Since then, I realized that the EDMI program would provide me a great opportunity to pursue my interest in micro- and nanotechnologies. As a doctoral student at NANOLAB, my research is focused on the development of innovative transistors embedded in a microfluidic platform for sensing applications. After a first year of theoretical investigation, I had the opportunity, through my laboratory, to manufacture the sensors myself in the EPFL-CMi cleanroom. in the CMi, I operated state-of-the-art microfabrication machines for the realization of my project. Working in such an environment has been a very fulfilling experience. Often, my objectives seemed unreachable, but being surrounded daily by a cooperative team of experts full of enthusiasm was one of the key factors which enabled my work – and myself – to progress. It took a few weeks to get familiar with the cleanroom staff and users. In such a friendly environment, I had the chance to exchange opinions on common difficulties and also to learn about many other innovative projects from different fields. Today, after four years of doctoral studies, I am gathering pictures of the devices I fabricated and reviewing the results to finalize my thesis. Not only am I proud of my achievements but I am also confident that future PhD students will continue this development, eventually creating a health care product.

Mario Chavarria Varon,
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Research

Our research in microsystems is mainly based on the development of new, and the use of existing, micro- and nanotechnologies. This know-how is further developed in a large variety of application domains that benefit from precision engineering at the micrometer and nanometer scale. Our activities include the development of devices and micro components and their integration into functional microsystems and machines that can be applied in fields such as health, security and the environment, medical devices, communications, space applications, the watch industry, and many others.

Our research in microelectronics has circuits and devices, power and energy as major technical topics. Integrated circuit technology is present in many industrial products, while telecommunication circuits and systems enable information technology to shape the interactions of people all over the world. Also energy generation and distribution is a key technology to meet our demand for electrical power while respecting the environment limitations.

The large number of successful collaborations with industries active in fields as diverse as biomedical engineering, watch making, spatial exploration, security, or energy production indicates our capacity to bridge the gap between fundamental research and industrial production.

Specificities of the EDMI program:

There is no specific date to start a PhD in the EDMI program. Changes to the application deadlines may apply. For the most recent information, please refer to the program’s webpage.

Both BSc and MSc are eligible. However, the enrollment of BSc candidates, who should demonstrate an outstanding academic record, is exceptional and the final decision will be taken exclusively by the Microsystems and Microelectronics Doctoral Program Commission.

The EDMI application file includes the opinion of three referees on the candidate. A referee is a senior researcher or professor who has affinity with supervision of researchers and/or PhD students.