



UNIVERSITÀ DI PARMA

The Semiconductor Journey: From a simple idea to a complex manufacturing

A Doctoral Course

Faculty

Francesca Casoli (CNR-IMEM Parma)

Marco Morelli, Davide Appello, Giuseppe Croce, Luisa Fracassini, Sonia Fulgoni, Domenico Genova, Giovanni Graziosi, Alberto Mancaleoni, Marco Marchesi, Fabio Marchiò, Simone Dario Mariani, Mauro Merlotti, Paolo Pesenti, Giulio Ricotti, Pier Luigi Rolandi, Alessandra Sciutti (STMicroelectronics)

Abstract: The objective of the course is to offer a general overview of the complex mechanism that, starting from a simple idea, leads to the manufacturing of a microelectronic device. The fundamentals steps of the manufacturing process will be presented as well as the footprint and ecosystem of a global company such as STMicroelectronics. During the course, the importance of the research and development and the value of the knowledge will be discussed in the frame of ST's corporate social responsibility.

Course Content in brief:

- Introduction to the course (*M. Morelli*)
- STMicroelectronics overview and its Technical Staff community presentation (*S. Fulgoni*)
- Marketing ST products: Smart Driving and IoT (*F. Marchiò*)

Application overview:

- Ultrasound for Health (*G. Ricotti*)
- Magnetic Sensors (*M. Marchesi – F. Casoli*)
- Micro-Electro Mechanical System (MEMS) for motion (*P. Pesenti*)

Design and Manufacturing steps overview:

- MEMS Technology (*A. Sciutti*)
- Process Technology (*S.D. Mariani*)
- Analog & Mixed Signal Design Implementation Flows (*D. Genova*)
- Package platform and co-design challenges (*G. Graziosi*)
- Testing (*D. Appello*)
- Reliability (*A. Mancaleoni*)
- Failure Analysis (*M. Merlotti*)

The ST culture

- Technology Research and Development (*G. Croce*)
 - Design Research and Development (*P. Rolandi*)
 - Thoughts on Creativity (*M. Morelli*)
 - Social Sustainability (*L. Fracassini*)
 - Closing Remarks (*M. Morelli*)
-

CV of the Coordinator

Marco Morelli was born in Livorno, Italy, in 1950. He received a degree in electronic engineering from the University of Pisa. Since 1979 in STMicroelectronics he has been for several years responsible for analog and mixed mode ICs dedicated to the automotive sector. Nowadays he is responsible in the research department for the development of advanced projects achieved with non-conventional silicon technologies. He is author or co-author of several industrial patents and scientific papers.

Schedule

Sala conferenze IMEM – CNR

Monday 20/05/2019

- 10:30 – 11:00 Introduction to the course (*Marco Morelli*)
- 11:00 – 12:00 ST Company overview and its Technical Staff Community (*Sonia Fulgoni*)
- 14:00 – 16:00 ST Marketing: IoT and Smart Driving (*Fabio Marchiò*)
- 16:00 – 18:00 Magnetic Sensors (*Marco Marchesi – Francesca Casoli*)

Tuesday 21/05/2019

- 10:30 – 12:30 Micro Electro-Mechanical System (MEMS) for motion (*Paolo Pesenti*)
- 14:00 – 16:00 MEMS Technology (*Alessandra Sciutti*)
- 16:00 – 18:00 Process Technology (*Simone Dario Mariani*)

Wednesday 22/05/2019

- 10:30 – 12:30 Ultrasound for Health (*Giulio Ricotti*)
- 14:00 – 16:00 Analog & Mixed Signal Design Implementation Flows (*Domenico Genova*)
- 16:00 – 18:00 Design Research and Development (*Pierluigi Rolandi*)

Thursday 23/05/2019

- 10:30 – 12:30 Package platform and co-design challenges (*Giovanni Graziosi*)
- 14:00 – 16:00 Testing (*Davide Appello*)
- 16:00 – 18:00 Reliability (*Alberto Mancaleoni*)

Friday 24/05/2019

09:30 – 11:15 Failure Analysis (*Mauro Merlotti*)

11:15 – 13:00 Technology Research and Development (*Giuseppe Croce*)

14:30 – 15:30 ST's Sustainable Excellence (*Luisa Fracassini*)

15:30 – 17:00 Thoughts on Creativity (*Marco Morelli*)

17:00 – 17:30 Closing Remarks (*Marco Morelli*)

Istituto IMEM – CNR, Parco Area delle Scienze 37/A, 43124 Parma.