



UNIVERSITÀ DI PISA
DIPARTIMENTO DI INGEGNERIA DELL'INFORMAZIONE
Dottorato di Ricerca in Ingegneria dell'Informazione

Doctoral Course

“Semiconductor trip: from a simple idea to a complex manufacturing”

Marco Morelli – Davide Appello – Giuseppe Croce – Luisa Fracassini – Sonia Fulgoni –
Giovanni Graziosi – Alberto Mancaleoni – Marco Marchesi – Mauro Merlotti – Paolo Pesenti –
Maria Luisa Polignano – Giulio Ricotti – Alessandra Sciutti

STMicroelectronics - Italy

Short Abstract: The intent of the course is to give a general overview of the complex mechanism that, starting from a simple idea, leads to the manufacturing of a microelectronic device. The environment of a big company as STMicroelectronics will be presented as well as the fundamentals steps of the manufacturing path. During the course, the importance of the research and development and the value of the knowledge will be discussed in the frame of the willingness of a corporate social responsibility.

Course Contents in brief:

- Introduction to the course (*M.Morelli*) 19/06
- ST company overview and its Technical Staff community presentation (*S.Fulgoni*) 19/06

Application overview:

- Ultrasound for Health (*G.Ricotti*) 19/06
- Magnetic Sensors (*M.Marchesi*) 19/06
- Micro Electro Mechanical System (MEMS) for motion (*P.Pesenti*) 20/06

Manufacturing steps overview:

- MEMS Technology (*A.Sciutti*) 20/06
- Package platform and co-design challenges (*G.Graziosi*) 20/06
- Reliability (*A.Mancaleoni*) 21/06
- Testing (*D.Appello*) 21/06
- Process Technology (*M.L.Polignano*) 21/06
- Failure Analysis (*M.Merlotti*) 22/06

ST's culture

- Technology Research and Development (*G.Croce*) 22/06
- Thoughts on Creativity (*M.Morelli*) 22/06
- Social Sustainability (*L.Fracassini*) 23/06
- Conclusions (*M.Morelli*) 23/06

Total # of hours: 27

CV of the Coordinator

Marco Morelli was born in Livorno, Italy, in 1950. He received the 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 field. Nowadays is responsible in the research department for the development of advanced projects achieved with not conventional silicon technologies. He is author or co-author of several industrial patents and scientific papers.

Room and Schedule

Room: *Aula Riunioni del Dipartimento di Ingegneria dell'Informazione, Via G. Caruso 16, Pisa – Ground Floor*

Schedule:

Monday 19/06

- 10:30 – 11:00 Introduction to the course
- 11:00 – 12:00 ST Company overview and its Technical Staff Community presentation
- 13:30 – 15:30 Ultrasound for Health
- 15:30 – 17:30 Magnetic Sensors

Tuesday 20/06

- 10:30 – 12:30 Micro Electro-Mechanical System (MEMS) for motion
- 14:00 – 16:00 MEMS Technology
- 16:00 – 18:00 Package platform and co-design challenges

Wednesday 21/06

- 10:30 – 12:30 Reliability
- 14:00 – 16:00 Testing
- 16:00 – 18:00 Process Technology

Thursday 22/06

- 10:30 – 12:30 Failure Analysis
- 14:00 – 16:00 Technology Research and Development
- 16:00 – 18:00 Thoughts on Creativity

Friday 23/06

10:30 – 12:30 Social Sustainability

14:00 – 16:00 Conclusions