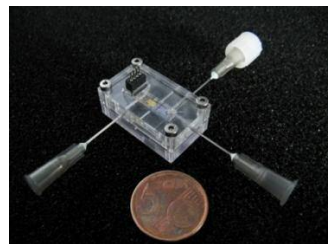
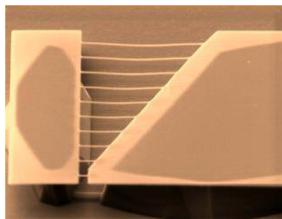
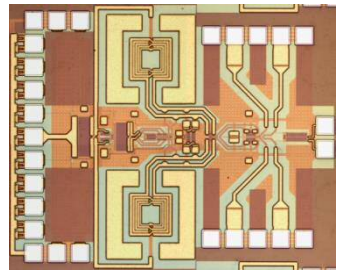
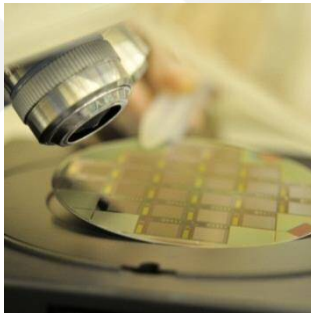


# “Zenon Navarro” Microelectronics Museum Space





Microelectronics has been one of the main drivers of the economic and social development since the mid-twentieth century. This is shown by its everyday applications such as internet and computer science, mobile phones, digital image and sound, safer and more efficient vehicles, or the new medical diagnosis systems.



The Barcelona Microelectronics Institute performs research on micro/nanoelectronics and silicon microsystems, and on their applications. It has a micro and nanofabrication clean room with a surface of 1500 m<sup>2</sup>, which is one of the large-scale research infrastructures at the Spanish level (Instalación Científica y Tecnológica Singular (ICTS), MINECO).

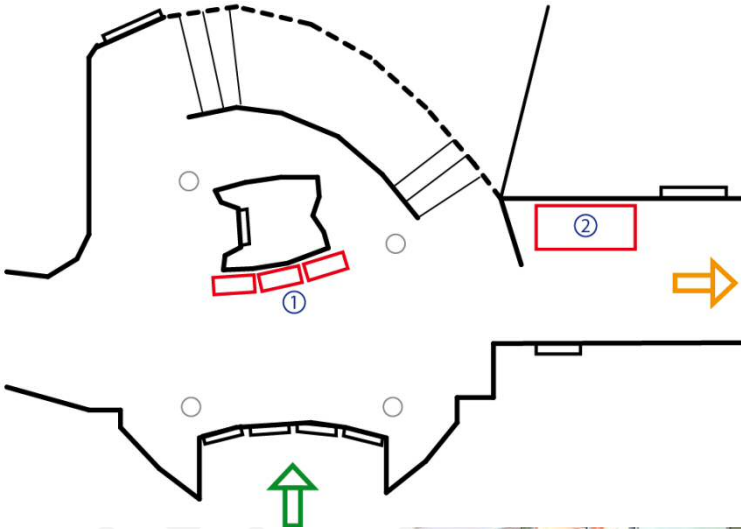
# Contents


The Museum Space shows how the silicon chips are fabricated and some of their applications. It displays fabrication equipment and describes the processes that are used for the design, fabrication and characterization of integrated circuits and microsystems. It specifically includes the following items:

- Real equipment used for fabrication and measurement in microelectronics.
- Interactive videos describing the fabrication processes.
- Videos on the fabrication of chips and on the research done at IMB-CNM.
- Samples of silicon wafers and of devices developed at IMB-CNM.
- Posters on the design and fabrication of integrated circuits.



# Guide

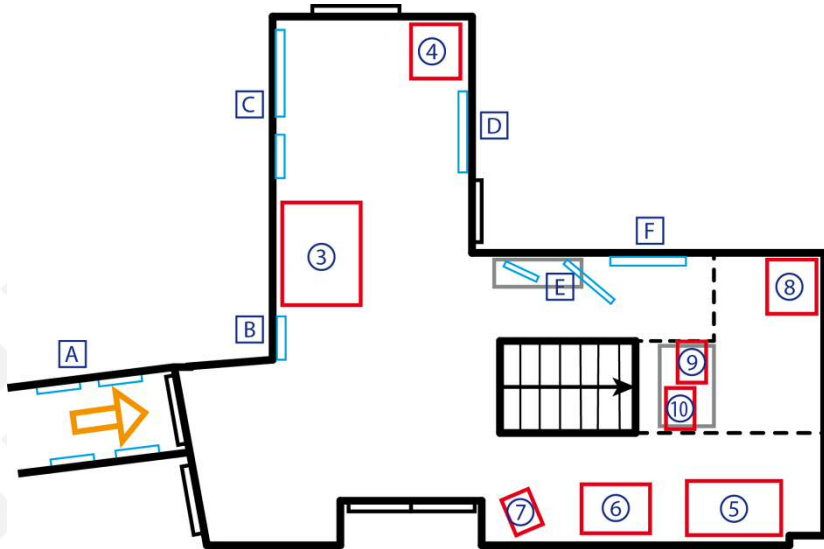


 IMB-CNM entrance



- ① Showcases displaying silicon chips, devices and electronic systems developed at IMB-CNM.
- ② System for the deposition and development of photosensitive resist for photolithography – Manufacturer and model: Silicon Valley Group 8636.

 Itinerary



③ System for materials etching by reactive ion etching – DryTek QUAD 484.

④ APCVD furnace for the deposition of silicon dioxide thin films – Tempress Pyrox 216.

⑤ System for materials etching by reactive ion etching – Applied Materials HEX 8130.

⑥ System for the deposition of metal thin films with electron beam source – Veeco VES 770.

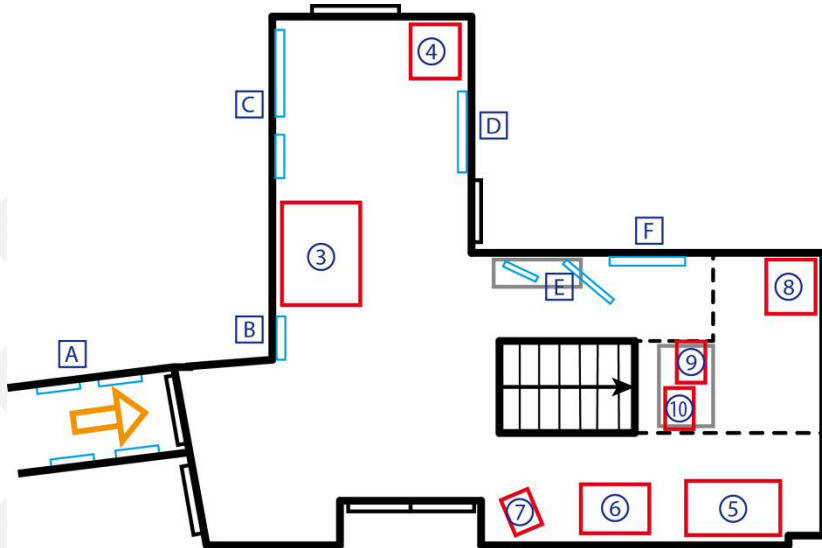
⑦ Curve tracer for the measurement of the  $I(V)$  characteristic curves of electronic devices – Tektronix 576.

⑧ Detector of gas leakages from clean room process gases – MDA System 16.

⑨ Profilometer for surface dimension measurements – Tencor AlphaStep 200.

⑩ Wafer rinser and dryer system – Semitool Spin Rinser Dryer ST-270.





**A** Photographs of the Clean Room and its complementary facilities.

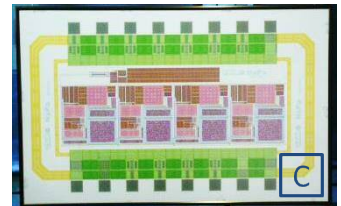
**B** Silicon wafers of various sizes.

**C** Geometric layout of a digital oscillator circuit: examples of manual drawing and of computer-aided drawing at various scales.

**D** Silicon wafers at various intermediate stages of the fabrication process for CMOS circuits.

**E** Interactive screens showing information about the equipment on display, the fabrication processes and microelectronics videos.

**F** Poster with a schematic description of the microelectronics development process, from silicon to an assembled circuit.



## Dedication



The Museum Space is dedicated to Zenon Navarro (1947-2007), physicist, who in the early 1980s built the UAB clean room, which was the seed for the current institute. He later led the design and construction of the clean room of IMB-CNM and managed its operation and some of its technological processes.

## Public Outreach Activities

The guided visits for student groups are the main activity of the museum. Typically the Museum Space is visited by between 200 and 250 high-school students and about 50 university students annually. In addition many students from science and engineering courses at Universitat Autònoma de Barcelona are visiting the IMB-CNM.



During the annual Science Week the museum has open access days.



Barcelona Microelectronics Institute (IMB)  
National Microelectronics Center (CNM)  
Campus UAB  
08193 Bellaterra (Barcelona)

Tel.: 93 594 7700  
[divulgacio@imb-cnm.csic.es](mailto:divulgacio@imb-cnm.csic.es)  
[www.imb-cnm.csic.es](http://www.imb-cnm.csic.es)

