

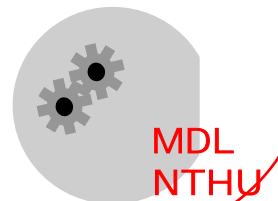
1.1 Terminology and General Informations

- **Micromachining**

The IC fabrication processes which were applied to make very small mechanical components is defined as the term "Micromachining" at 1982

- **Microelectromechanical System (MEMS)**

A tiny device including electrical and mechanical components fabricated through IC fabrication processes



- Comparative scale of micromachined devices

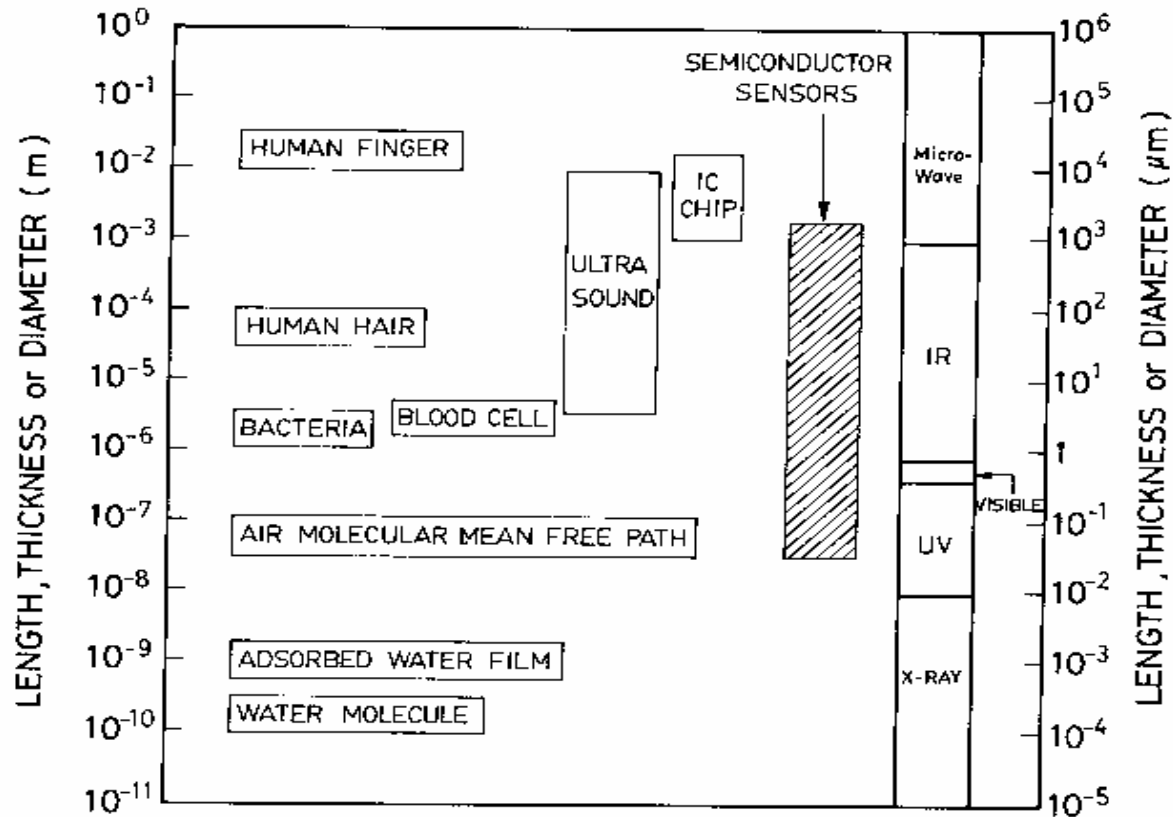
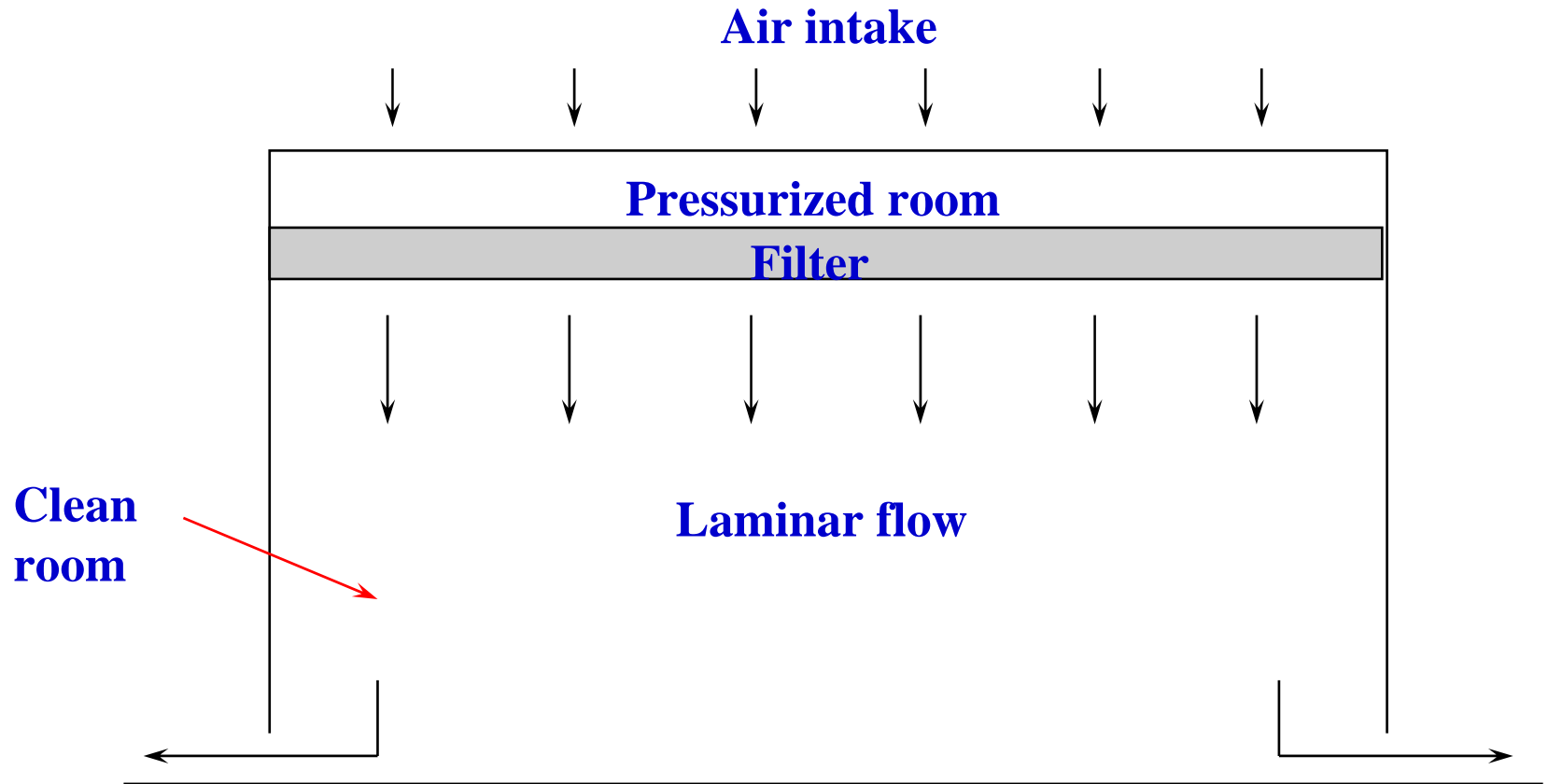
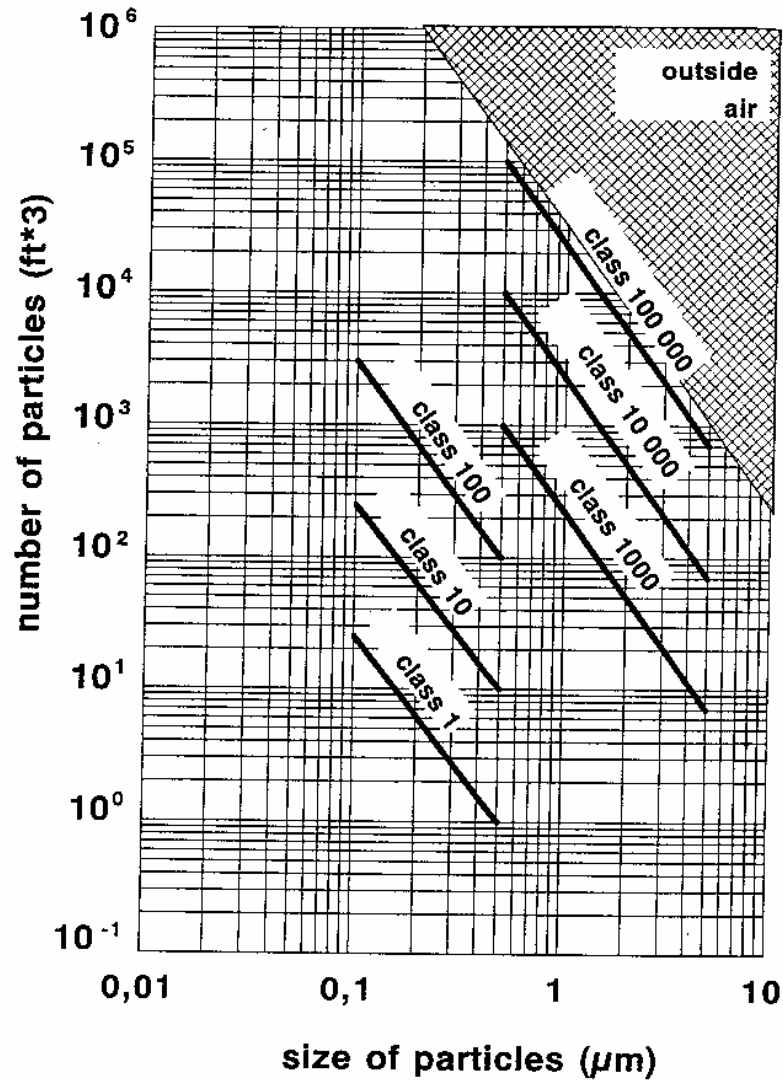


Fig. 1 Comparative scale of semiconductor sensors. (After Ref. 1)

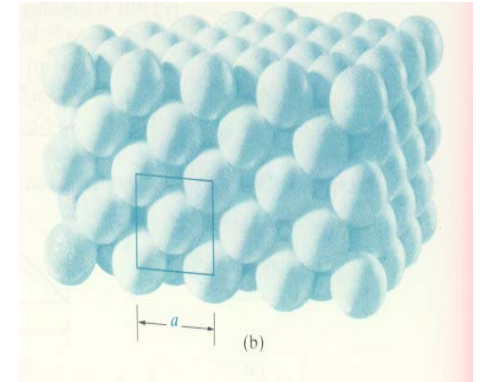
- **Clean room**



- The quality class of clean room

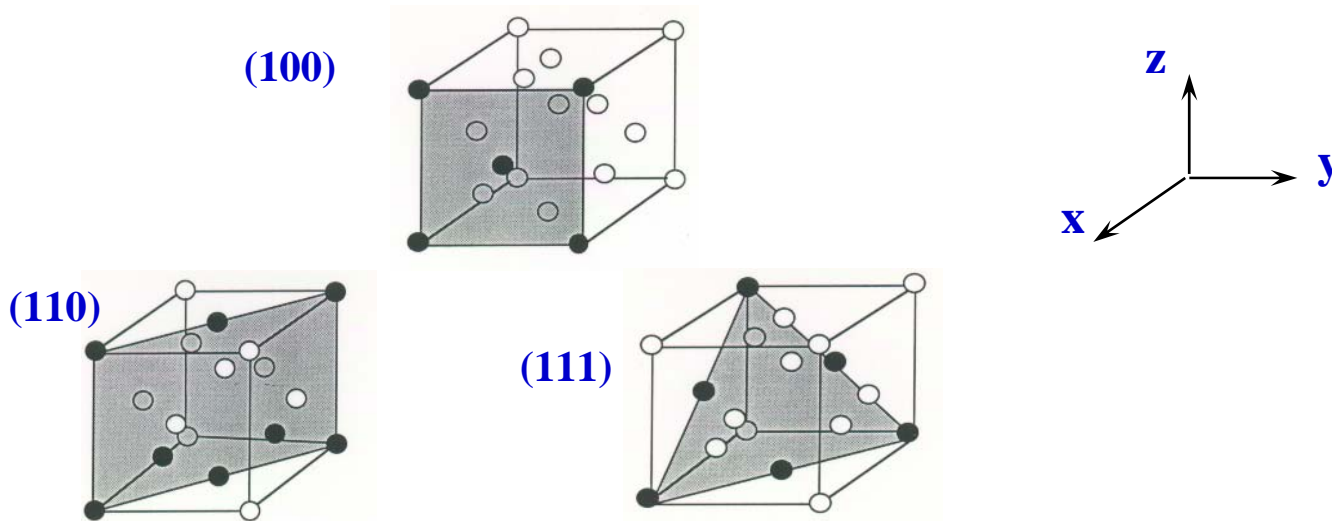


- **Crystal structure of a single crystal silicon**

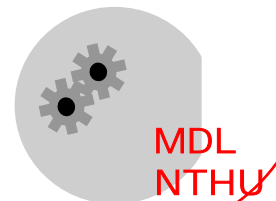


L.H. Van Vlack, Element of Material Science and Engineering, 1989.

- **Three important crystal planes in the silicon unit cell**

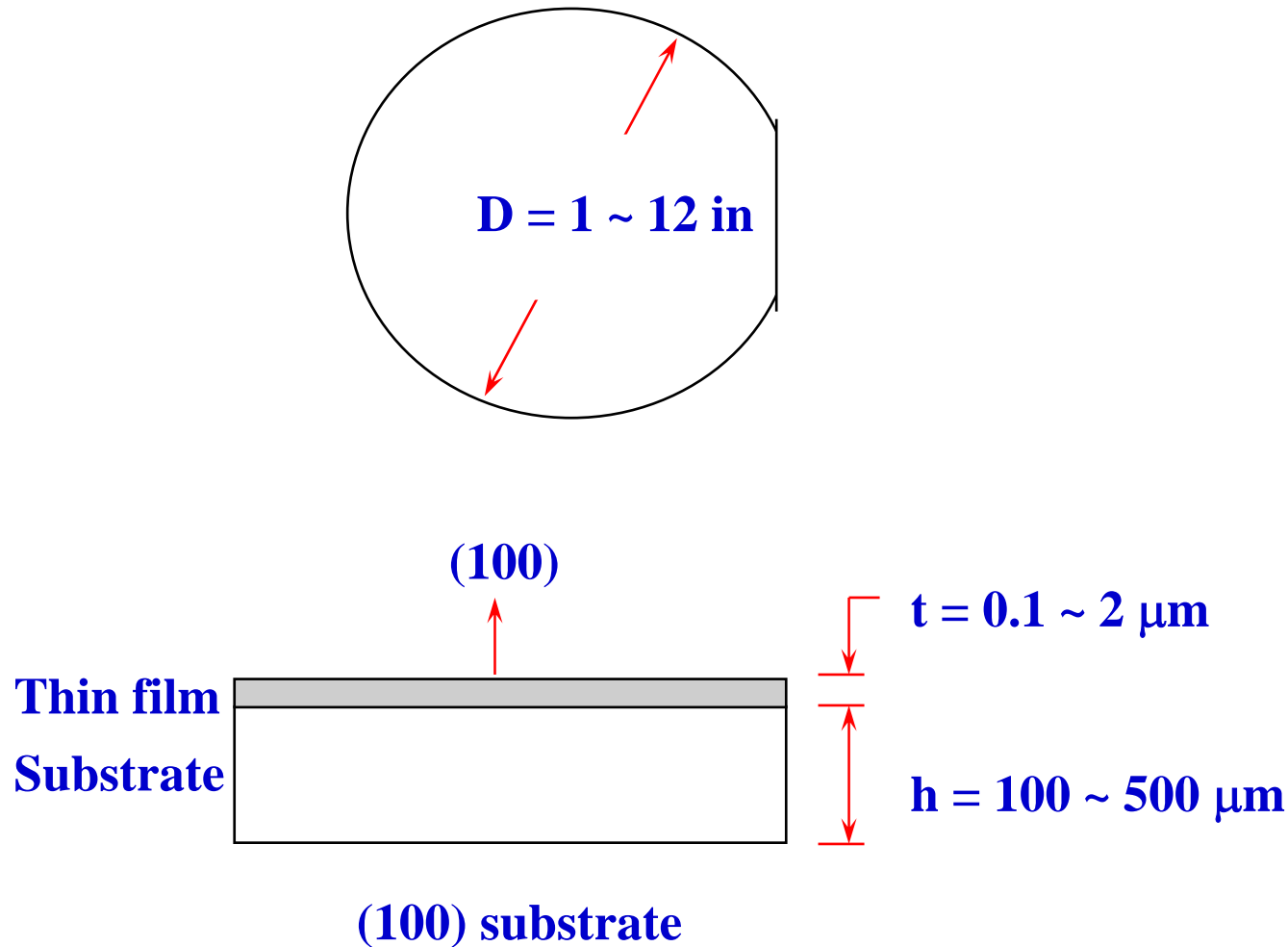


J.A. Wickert, D.N. Lambeth, and W. Fang, STLE/ASME Tribology Conference, 1991.

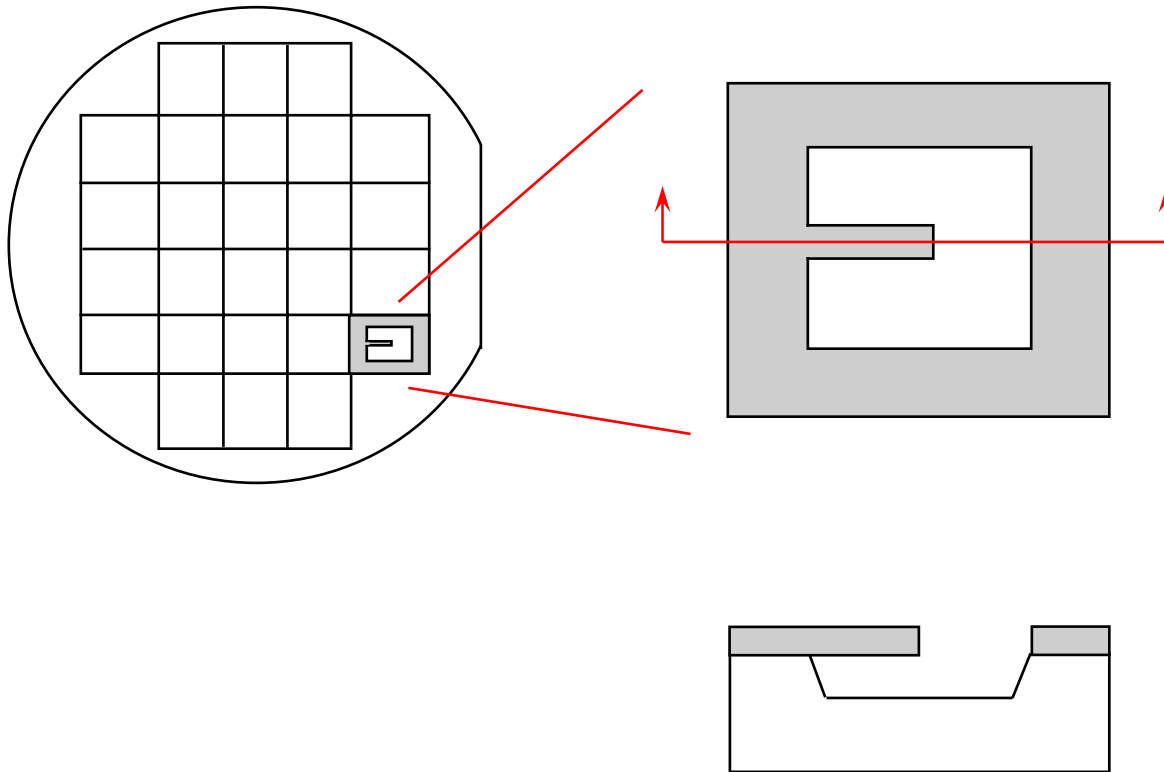


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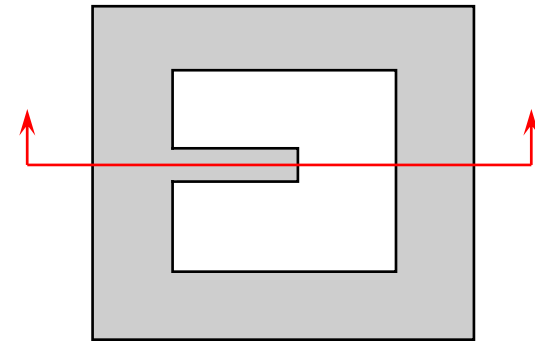
- **Silicon substrate (wafer) and thin film**



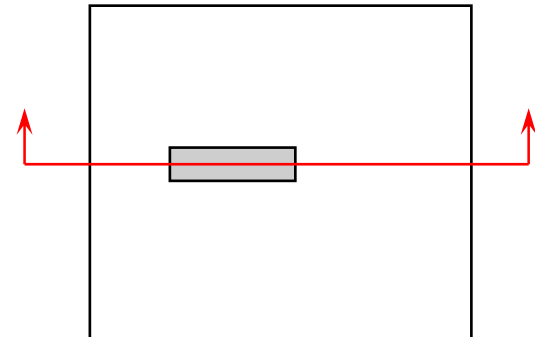
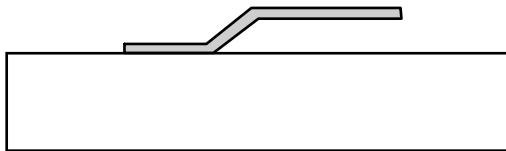
- **Batch fabrication**



- **Bulk micromachining**



- **Surface micromachining**



- **LIGA process**

LIGA is the abbreviation of three German words

Lithographie (lithography in English)

Galvanoformung (electroplating), and

Abformung (moulding)

