Fabrication Technology, Part II

- Agenda:
  - Process Examples
    - TI Micromirror fabrication process
    - SCREAM
    - CMOS-MEMS processes
  - Wafer Bonding
  - LIGA

- Reading: Senturia, pp. 79-98.

Process Examples

- **Surface micromachining: TI Digital Micromirror Devices (DMDs)**

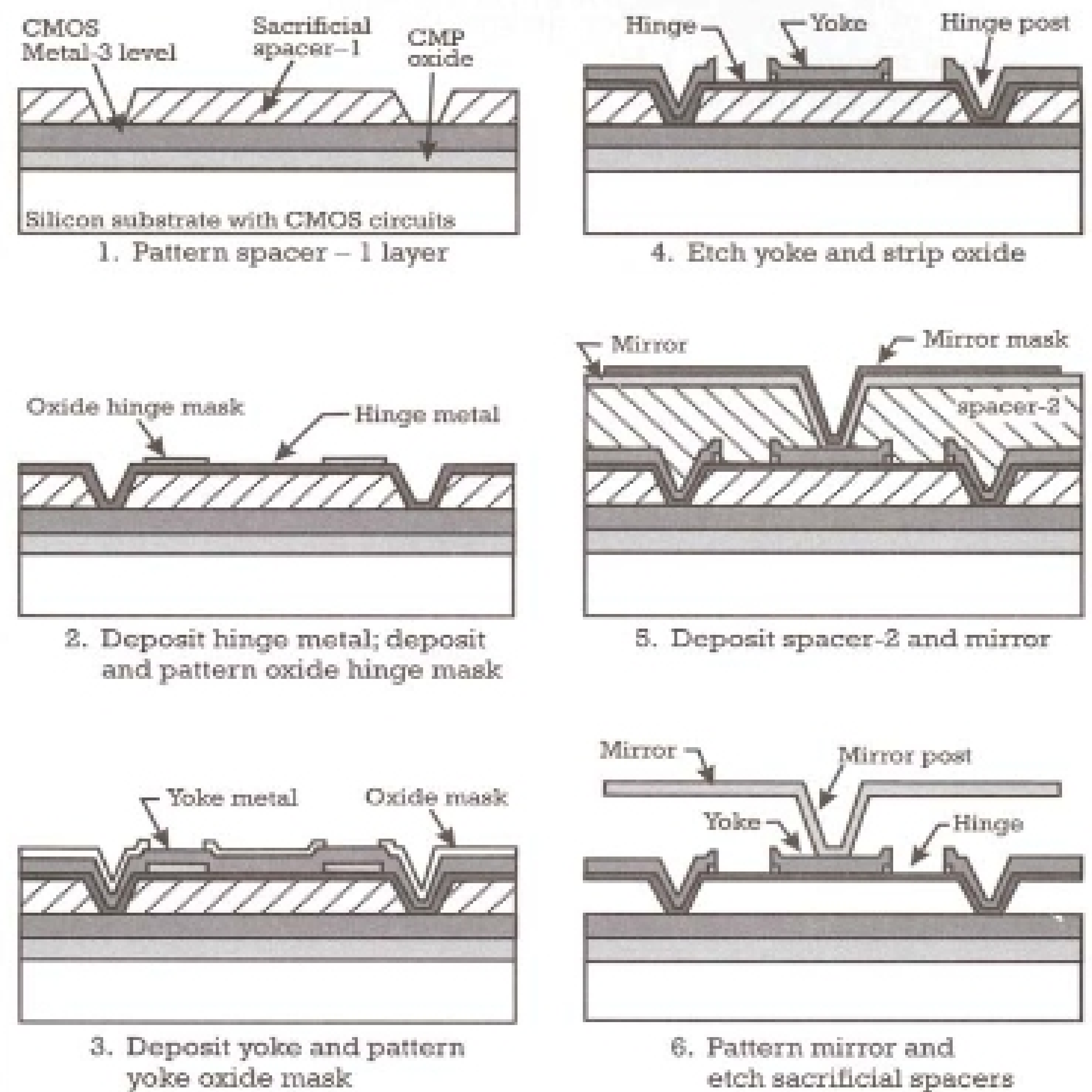
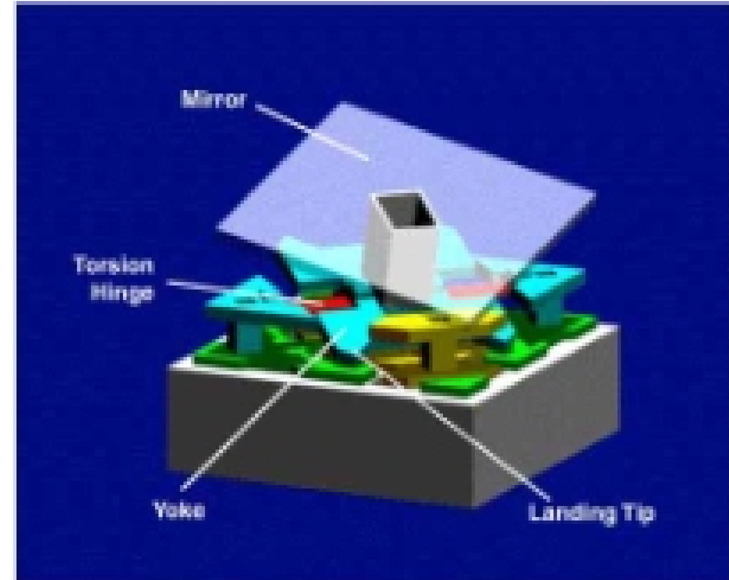
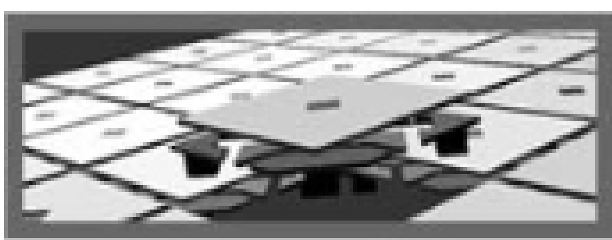


Figure 4.31 Fabrication steps of the Texas Instruments DMD™ [26].

Ref. Maluf, Introduction to MEMS Engineering, p.145.

- Invented by L.J. Hornbeck





Process Examples

- **Bulk-Micromachined Pressure Sensor**
  - Thermal oxide
  - Boron implantation
  - Boron drive-in
  - LPCVD Si_3N_4
  - Backside KOH etch
    - Electrochemical etch stop
  - Metallization

Detailed process steps refer to Senturia p.93

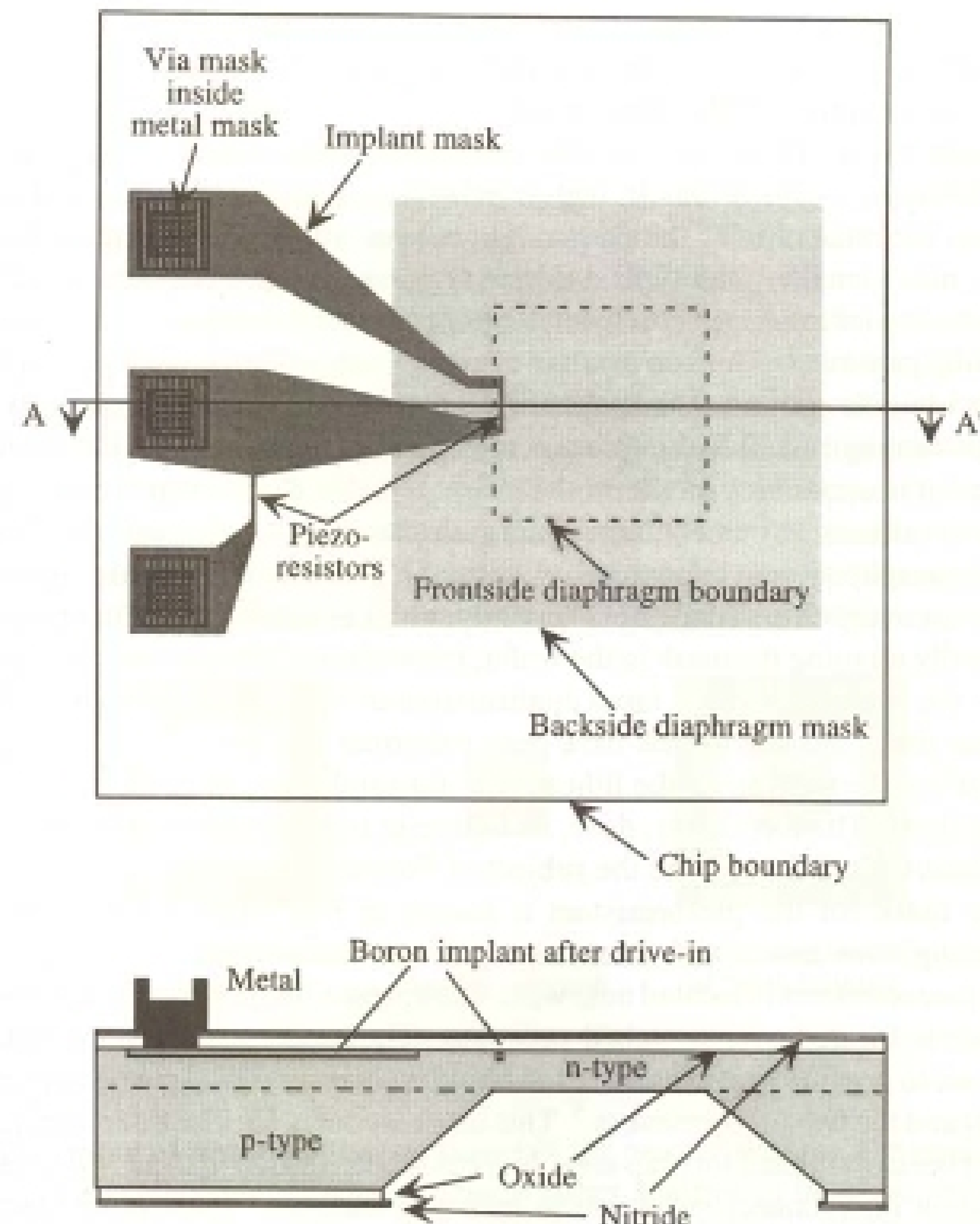


Figure 4.5. Above: an overlay of the four device masks for the pressure sensor example. Below: a not-to-scale cross-section through A-A'.

Ref. Senturia, Microsystem Design, p.97