



LIMMS Internal PZT-MEMS Foundry

Sample your ideas ... Convey it into PZT technology

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Here is the proposal to use piezoelectric effect in your devices. We propose to convey to you the PZT technology from **Stanley Electric Co., Ltd.** Design and layout your micro-nano devices. Photomasks are sent to the Stanley Elec. technology facilities, through the collaboration Toshiyoshi lab./Stanley Elec. PZT technology can be used in a wide range of applications as RF resonators, switches, biochemical resonator sensor, highly sensitive strain gauge, active microfluidics, ...

What are Micro Electro-Mechanical Systems ?

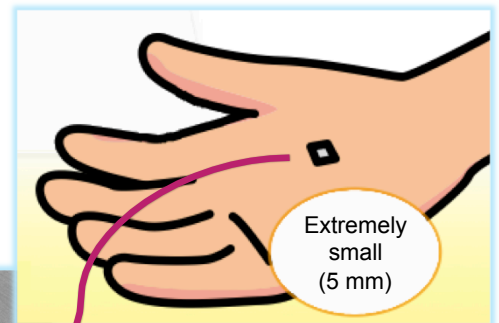
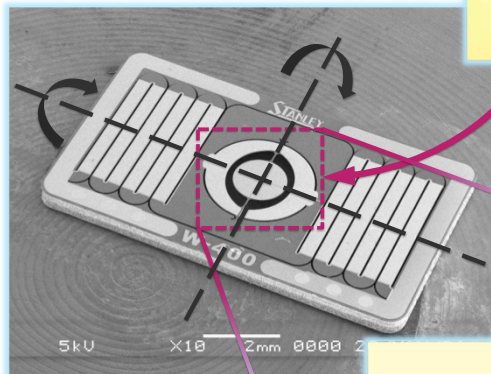
Micro Electro-Mechanical Systems (**MEMS**) are micro-size systems that have a structure in which minimal machine components are made on silicon.

The component integrates actuation and/or sensor which moves from right to left or up and down.

Such microsystems are used in many near at hand places as a detecting sensor...

You can find them in :

- **phones,**
- **video game console,**
- **cars,**
- ...



Stanley Electric Co. is developing an ultra miniature projection display based on a PZT-MEMS technology.
<http://stanley.co.jp>

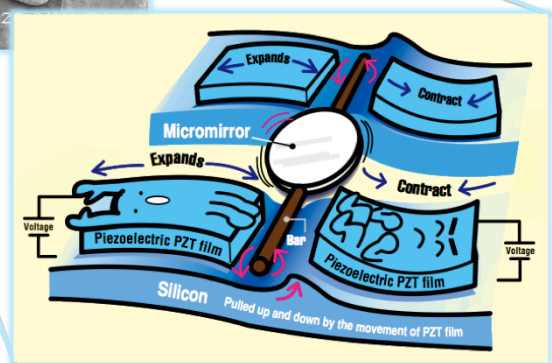
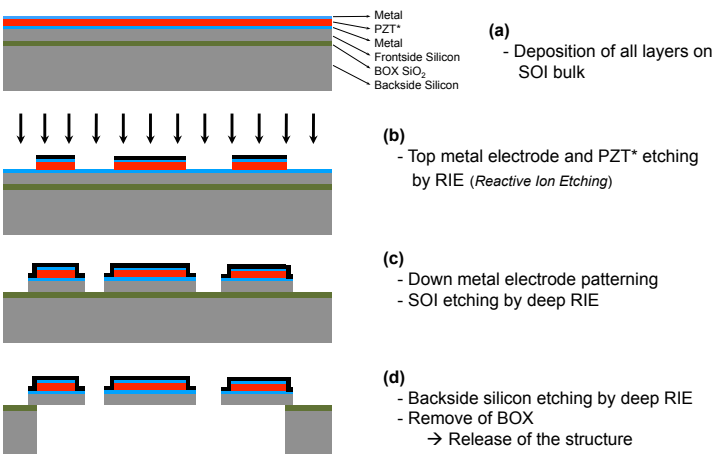
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How ?

The fabrication of MEMS follows a sequence of processes for structuring a raw silicon crystal.

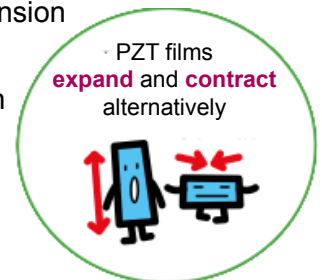
Key processes are lithography, etching, deposition, patterning, doping, ...

Simplified flow chart of the SOI-PZT microfabrication steps



PZT* film expands and contracts depending on the tension polarization.

→ Its minor vibration travels to the bar so that the mirror moves.



*PZT -Lead(Pb) Zirconate(Zr) Titanate(Ti)- is an inorganic compound that shows a marked piezoelectric effect.

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