

Flexible and stretchable electronics

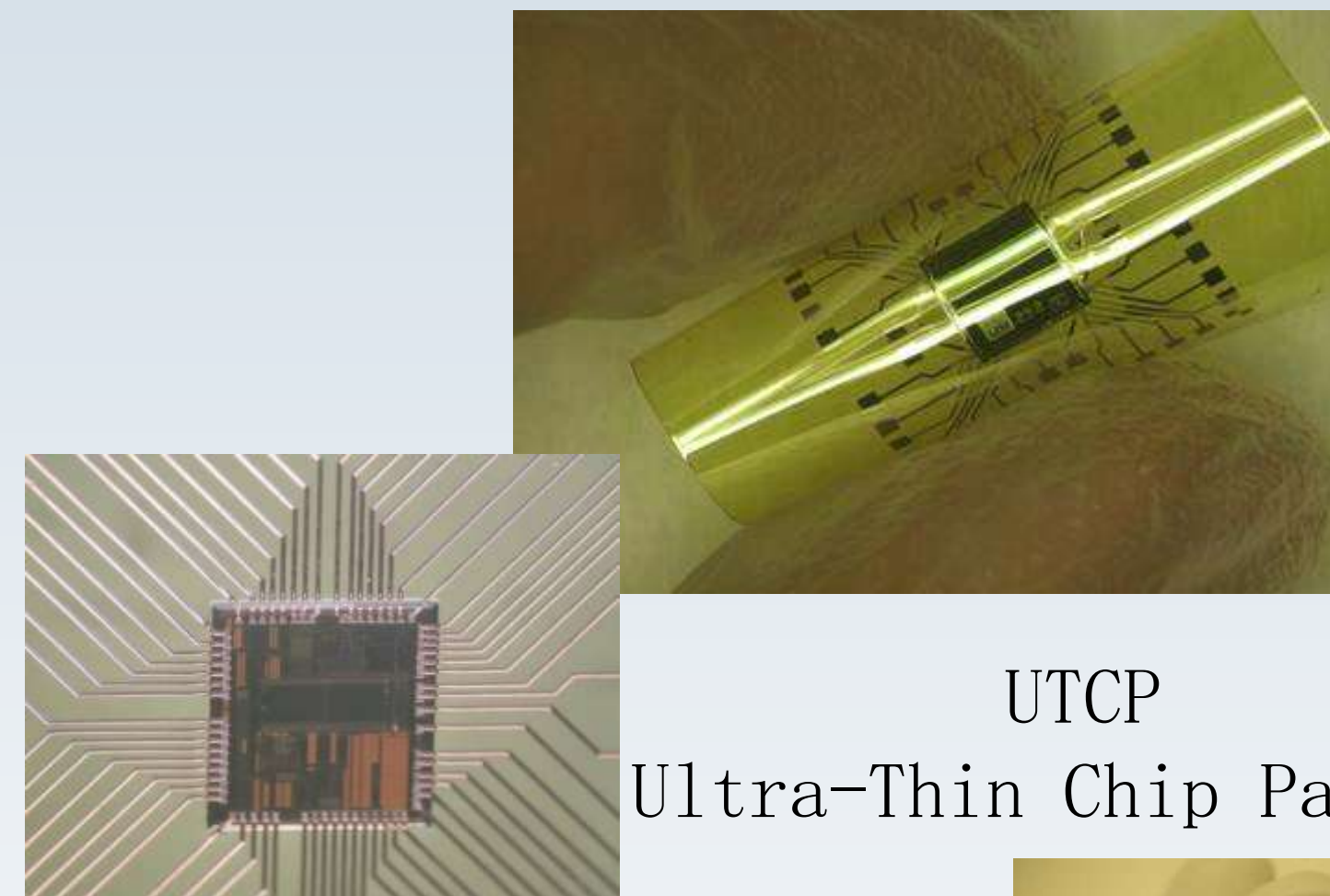
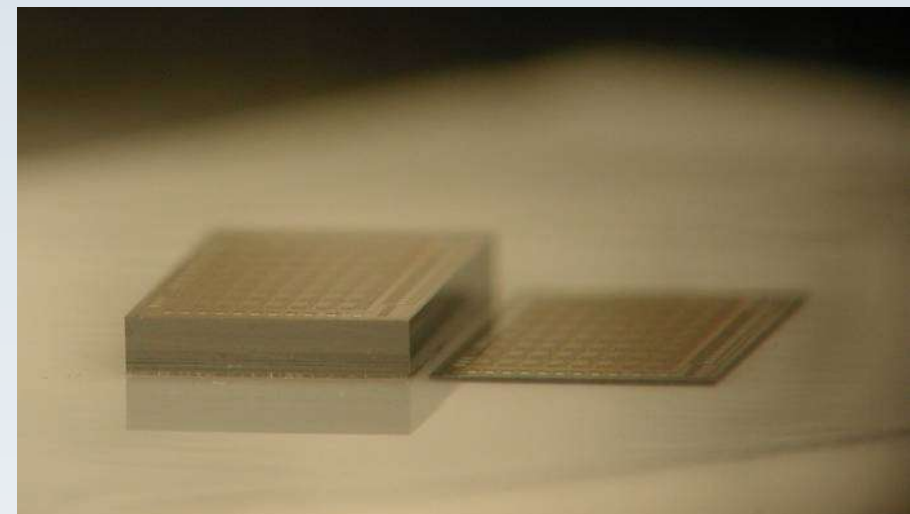
Centre for Microsystems Technologies
Ghent University - IMEC

Technologiepark Building 914 A

9052 Zwijnaarde, Belgium

Die embedding

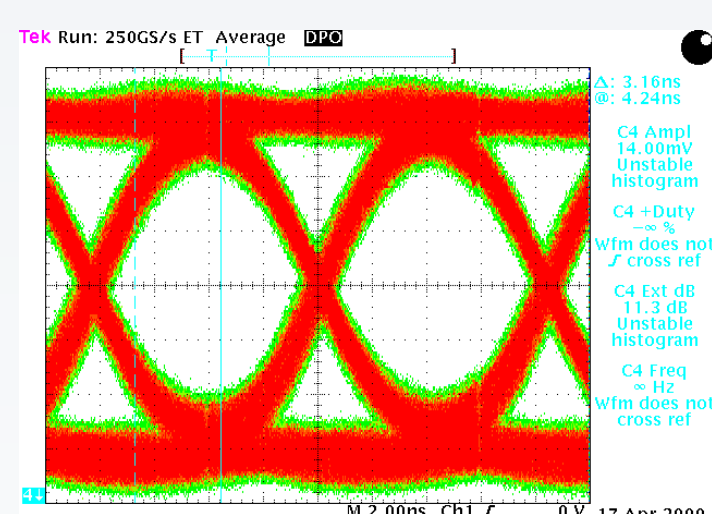
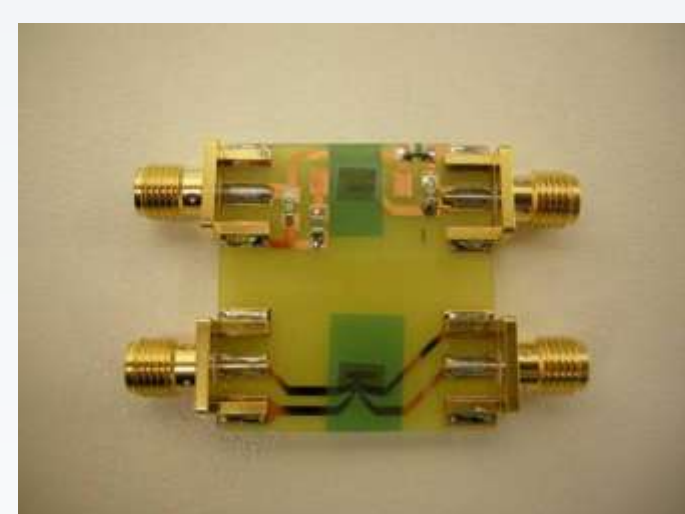
Thinning dies (Si and GaAs)



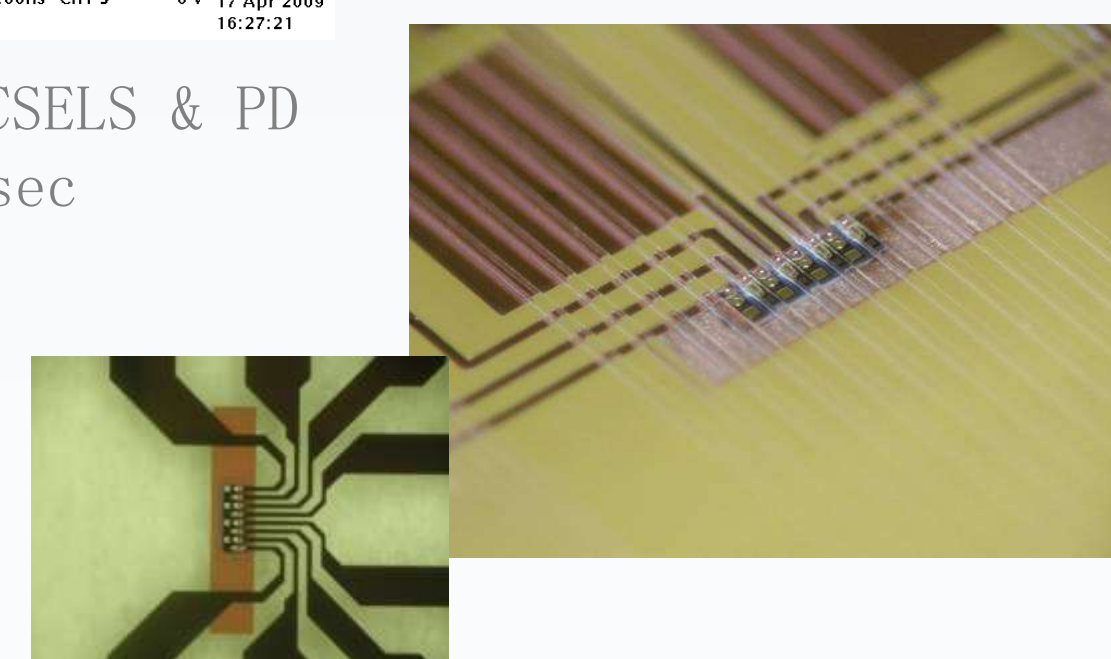
UTCP
Ultra-Thin Chip Package

Integrated microcontroller device

Optics in flex



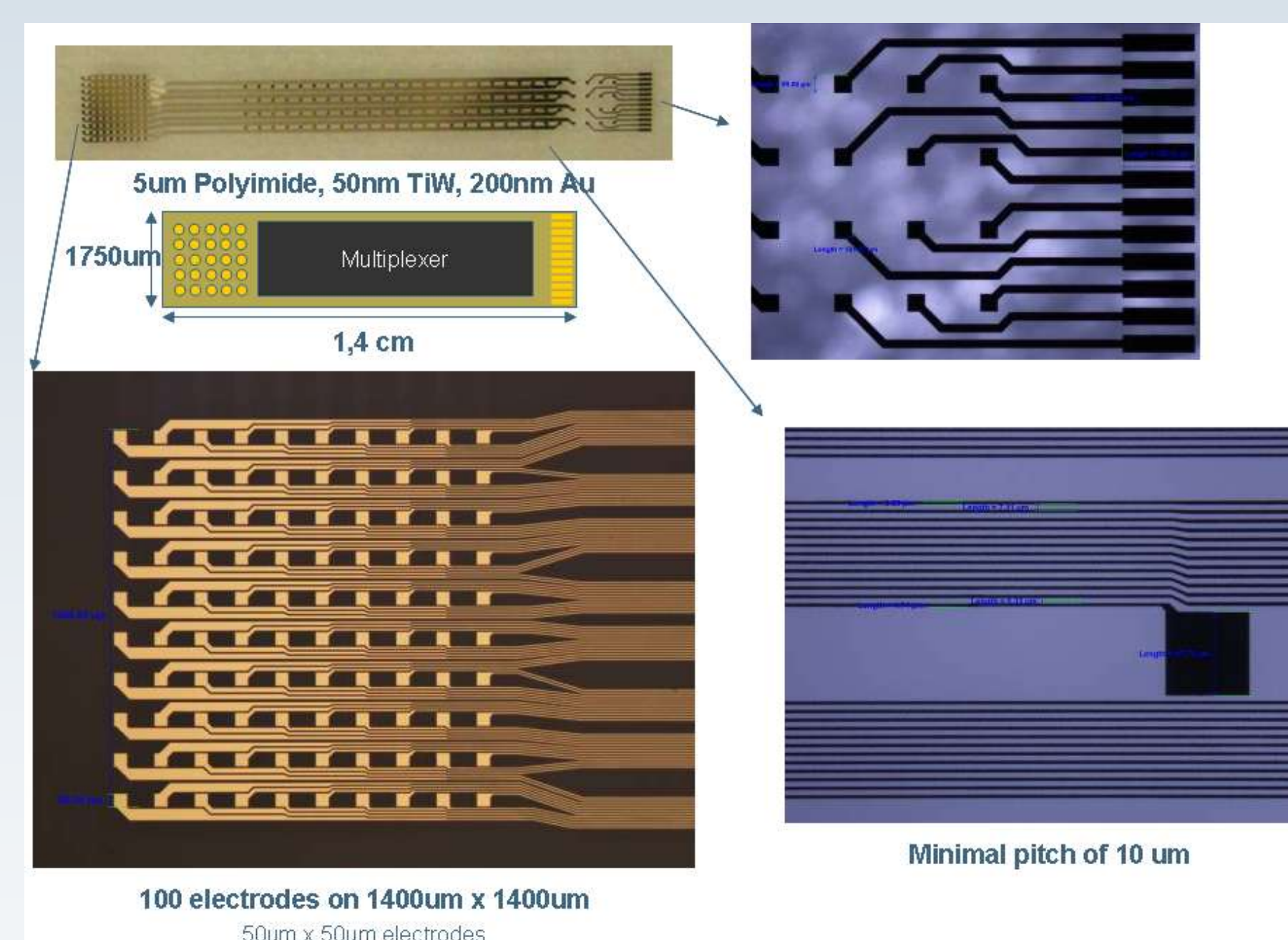
optical link with embedded VCSELs & PD operating up to 1.6 Gbit/sec



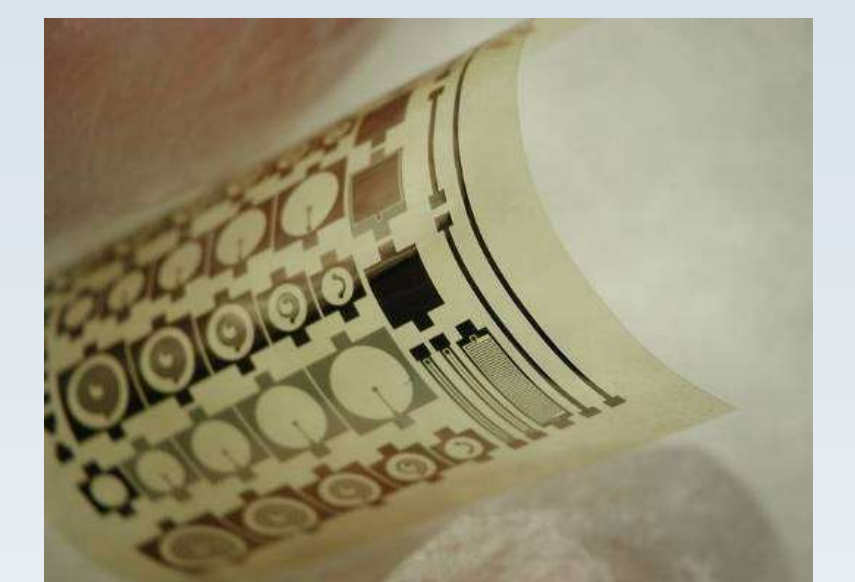
Display driver suited for flexible displays

embedded VCSELs addressing flexible waveguides

Thin film components

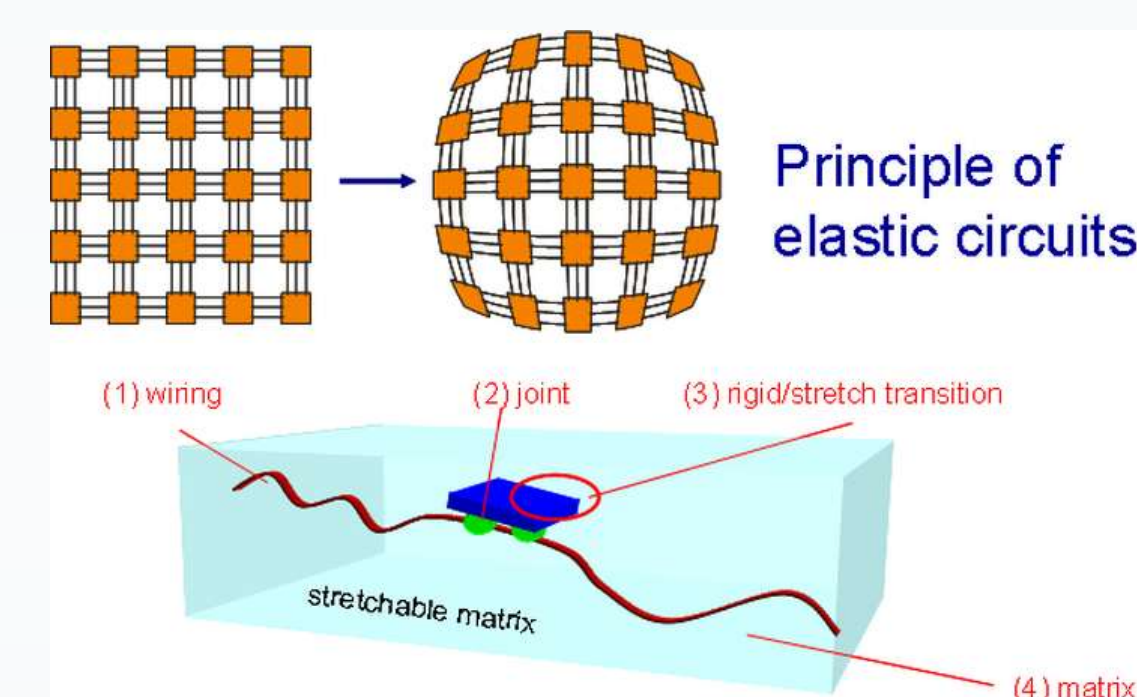


Flexible thin film electrodes

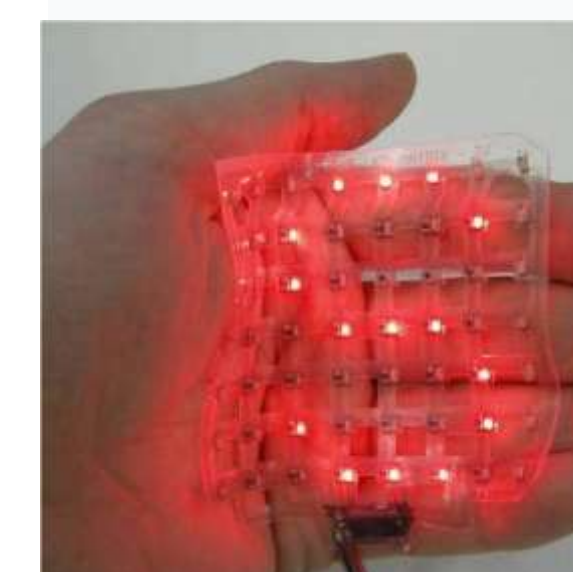


RF passives on PI

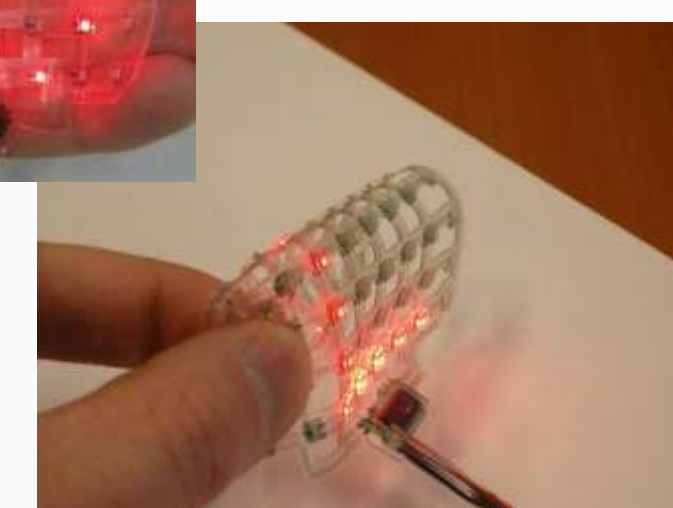
Stretchable electronic circuits



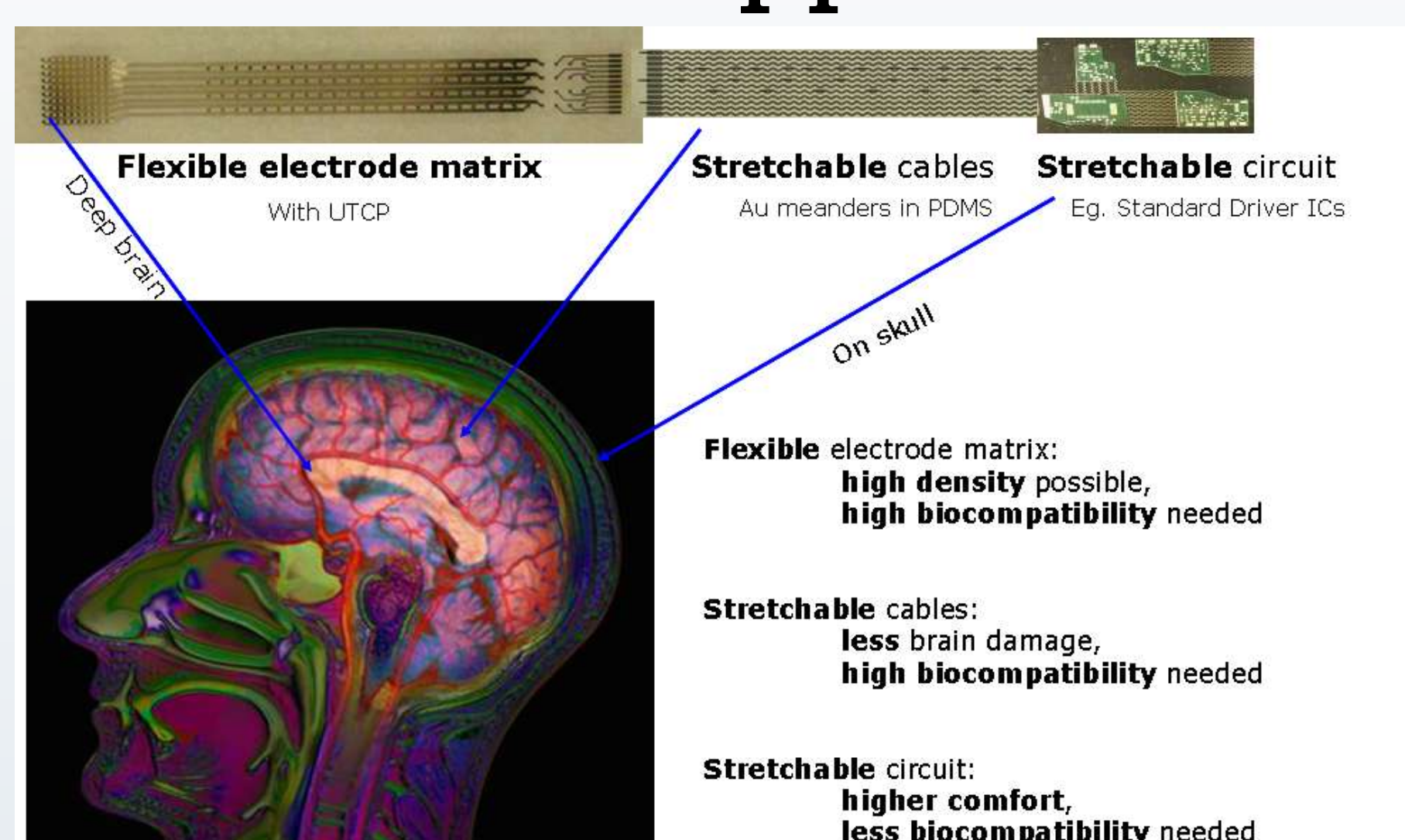
Principle of elastic circuits



Stretchable LED displays



Biomedical applications

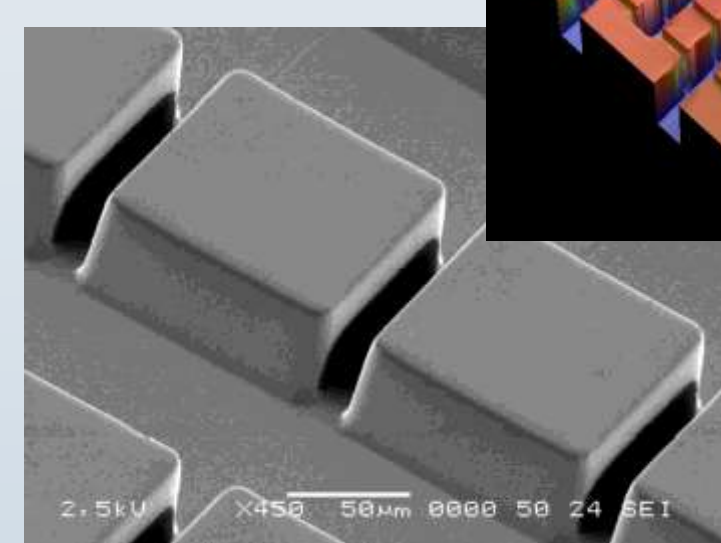
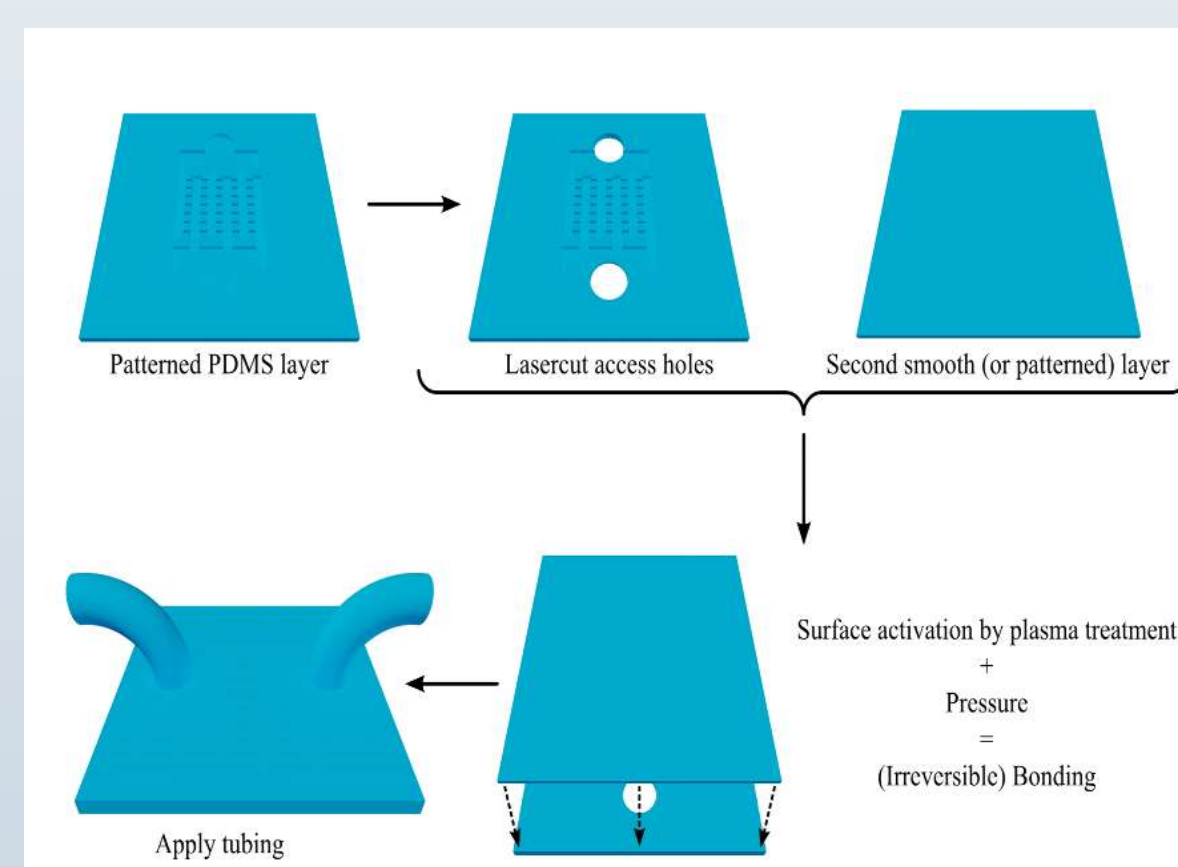


Neuroprobes

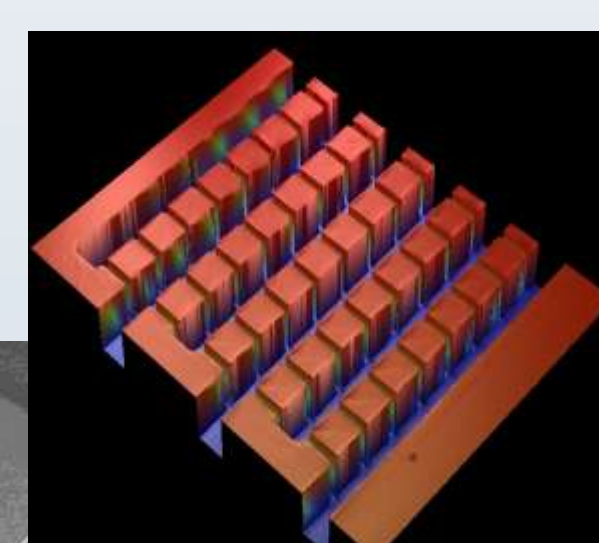
Flexible electrode matrix:
high density possible,
high biocompatibility needed

Stretchable cables:
less brain damage,
high biocompatibility needed

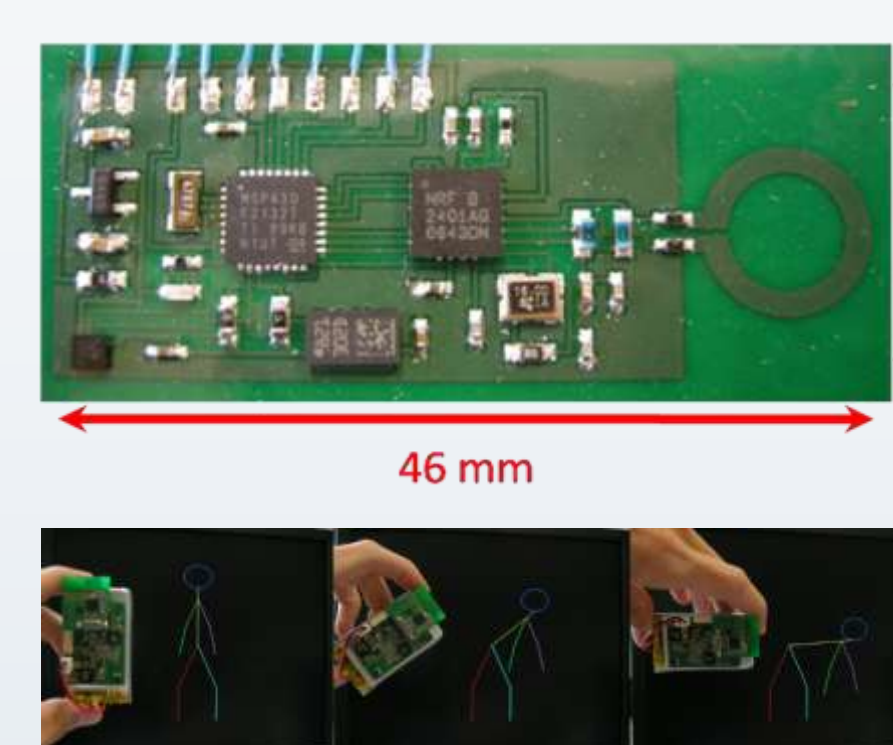
Stretchable circuit:
higher comfort,
less biocompatibility needed



Microfluidics



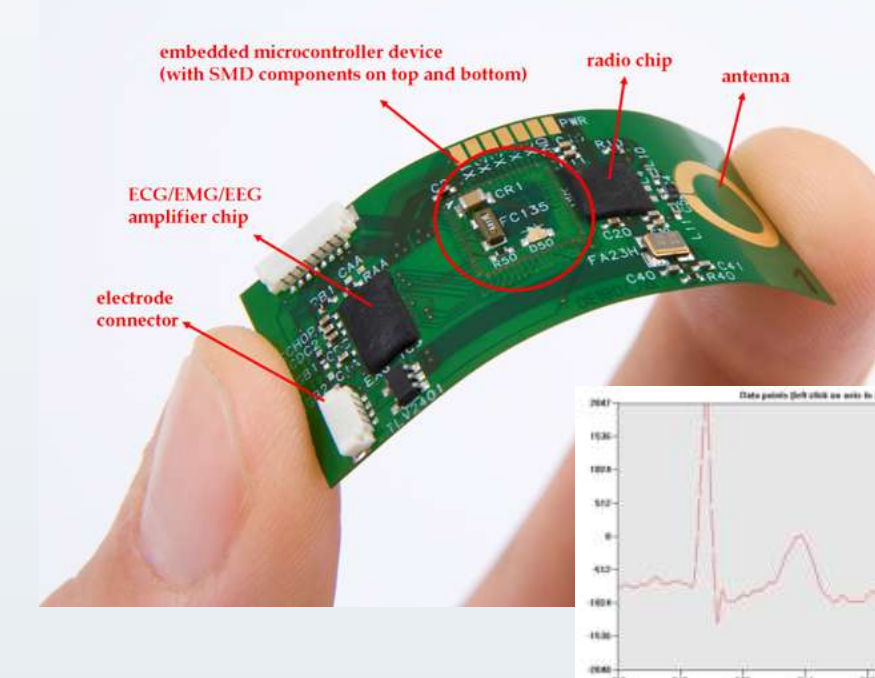
Wearable electronics



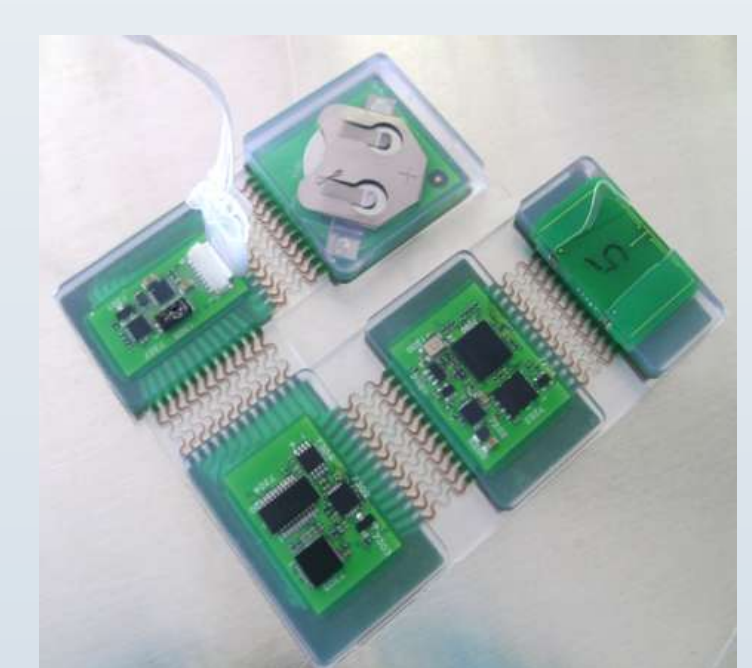
Wireless movement sensors



Smart textiles



Wireless ECG monitor

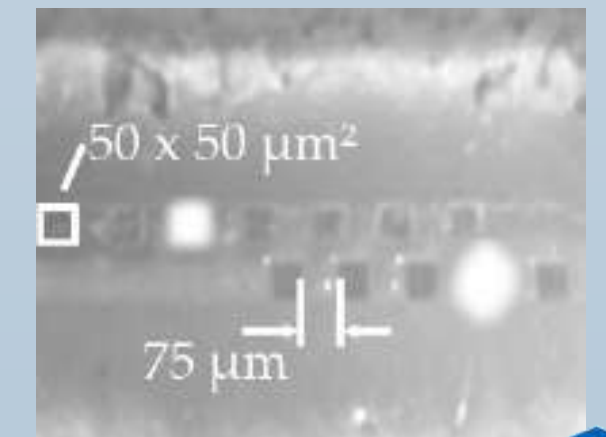
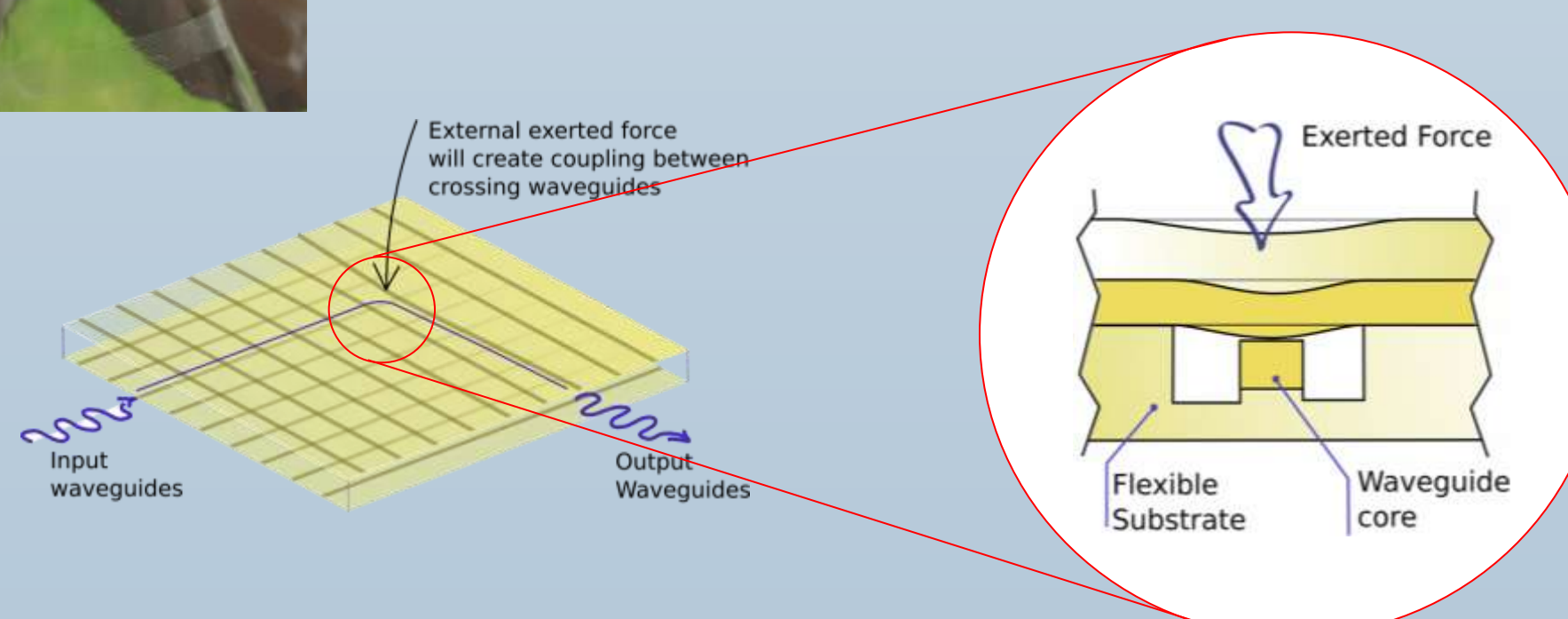


Fitness monitor

Optical sensors



Pressure-tactile sensor



Smart implants
(bladder pressure sensor)