

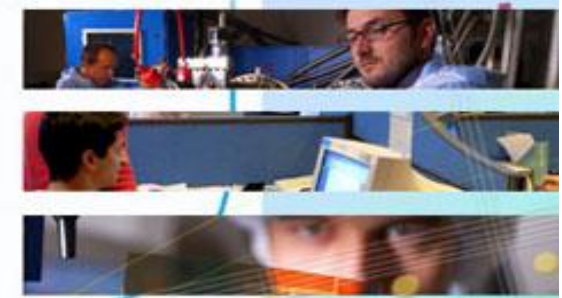
micro and nanoelectronics
microsystems
ambient intelligence
image chain
biology and health



Nanomaterials in LETI

Jean-Jacques AUBERT

leti



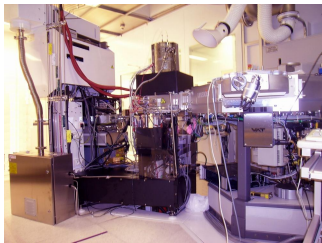
Processes and tools

Electrochemistry

JDP Semitool



PVD/CVD/ALD

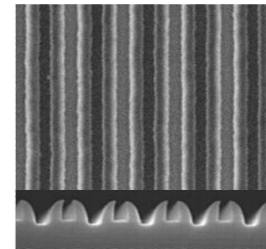


Altatech tool

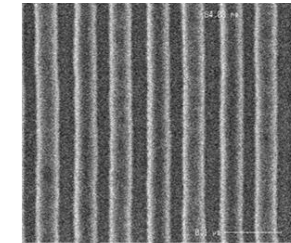


HfSiO deposition

Lithography/etching



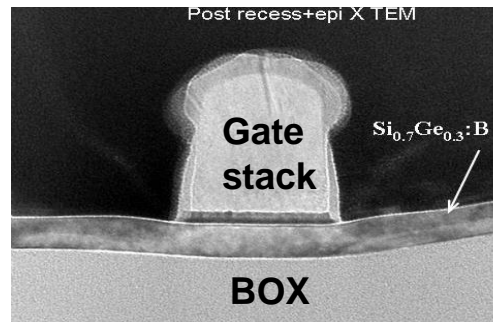
Spacer patterning
45nm/45nm



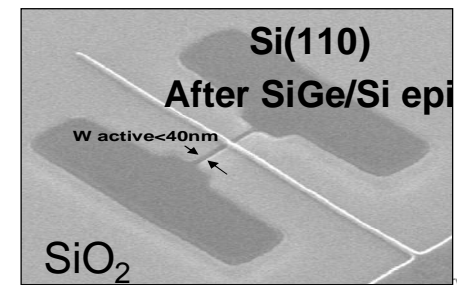
Double patterning
35nm/35nm

Epitaxy

SiGe:B & Si:C selective epitaxy



Localized epitaxy on Si (110)

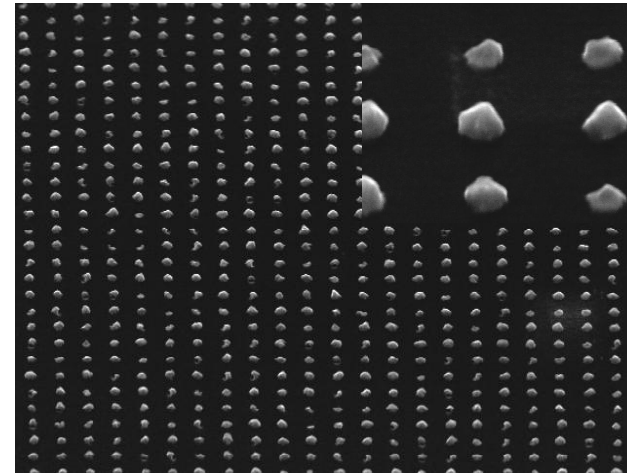


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Nanostructures offer

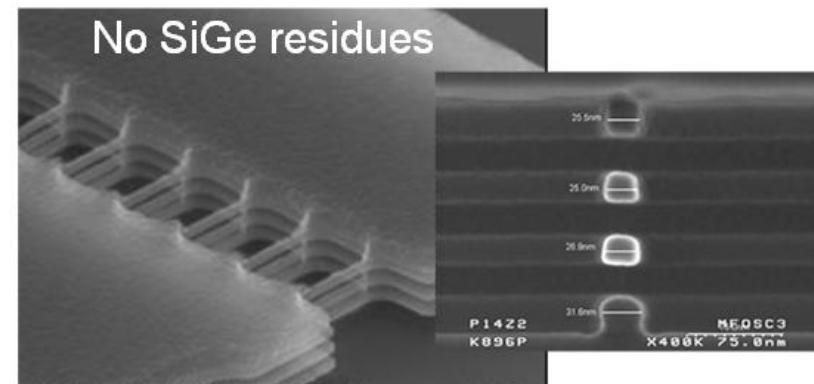
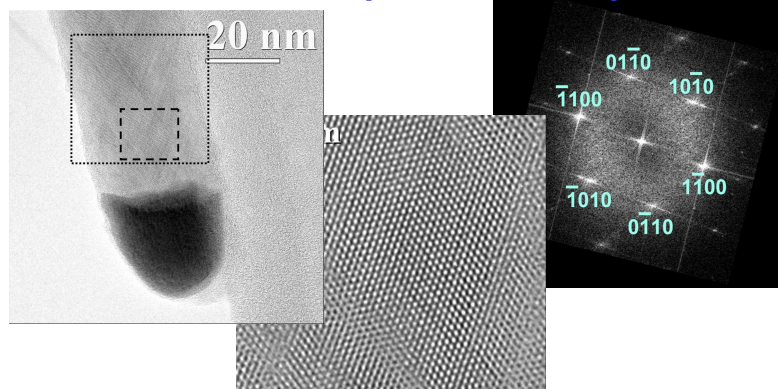
■ Nanodots

- **Surface fonctionalisation - grafting**
OK on dots from 50nm up to 300nm
- **New programs**
Electrodeposition of metals & semi-conductors



■ Nanowires and nanotubes

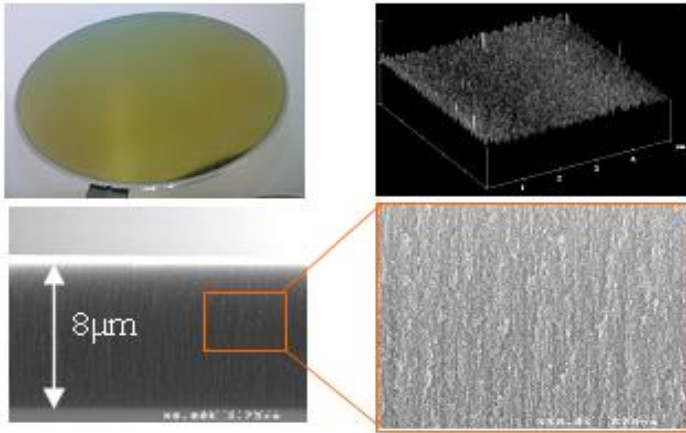
Nanowires growth
Studies with low temperature catalysts



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Nanostructures offer

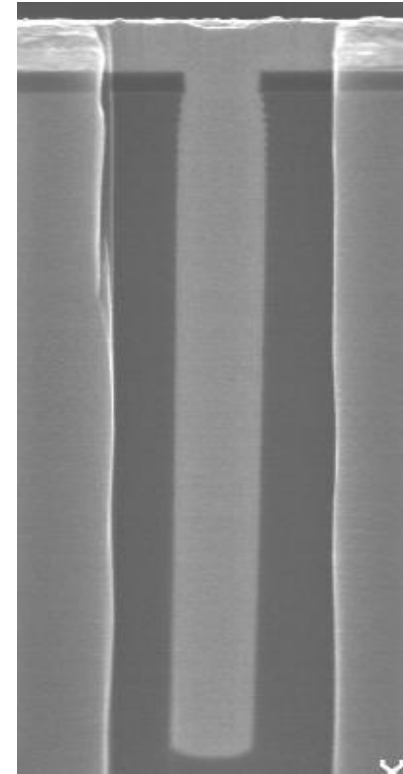
■ Porous silicon



■ TSVs

TSVs metallisation

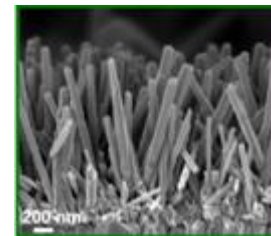
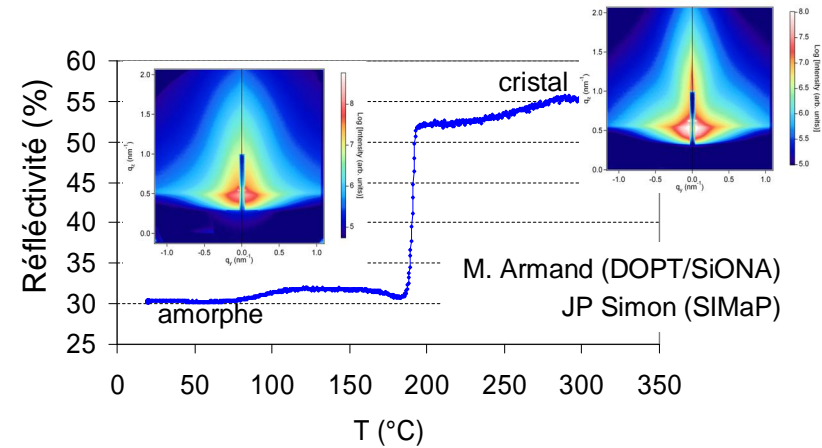
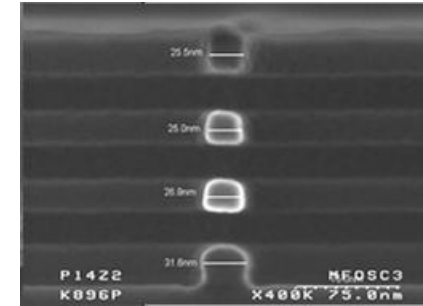
High density structures filling (3x30µm²)



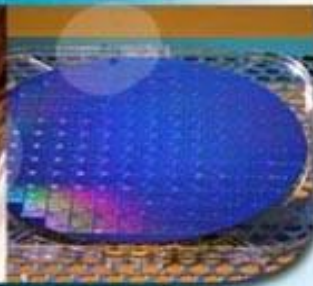
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Applications skilled

- Microelectronics
- Memories
- MEMs NEMs
- Photonics
- Energy
- Biochips



micro and nanoelectronics
microsystems
ambient intelligence
biology and health
image chain



Innovation for industry

Loyalty
Entrepreneurship
Team work
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Team work
Innovation

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