



- **Informations:**

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- Lyon Institute of Nanotechnologies (INL) – academic laboratory – INSA & ECL
- Materials / Electronics / Photonic
- The Expertise : functional nanomaterials deposition, structuration and characterizations

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- Idea:
 - Nanoelectronic / photonic for sensing, neuromorphic applications
 - Skills: from materials to system

- Material skill :
 - Mostly on ferroelectric oxide thin films

Si, SiC, aSi, Oxides (BaTiO_3 , SrTiO_3 , SrRuO_3 , PbZrTiO_3 , VO_2 ...), Nitrides (TiN , AlN , SiN)

Nanolyon platform

- Epitaxial growth (MBE, VPE, PVD)
- Thermal & plasma ALD
- Evaporators (Joules effect, e-beams)
- PECVD-ECR, PECVD, LPCVD, Reactive sputtering
- Electrodeposition
- Sol-gel



Lithography

- E-beam writers
- UV interferential laser holography
- Micro-contact imprint

Etching-Micromachining

- RIE, ICP
- UV nanosecond laser micromachining
- Micro-milling machine

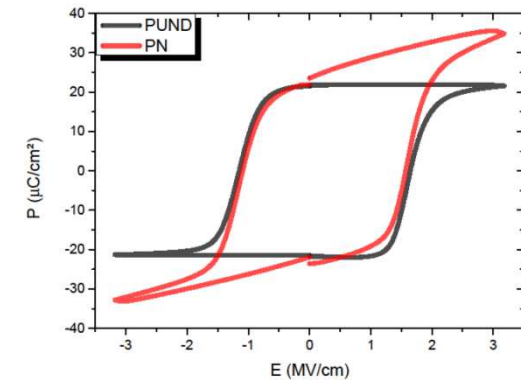
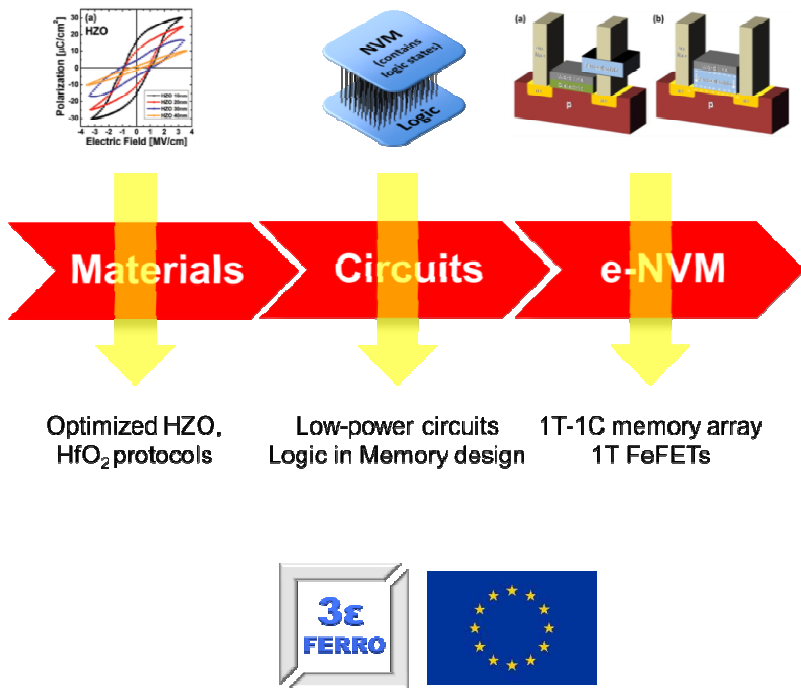
Metrology-characterization

- Microscopy (optical and electronic)
- Profilometer (optical and mechanical)
- Near Field: AFM, AFM, STM, SNOM
- Analytic : SIMS, ellipsometry, FTIR
- Surfaces : XPS-XPD, STM, PM-IRRAS
- Structures : TEM, HDXR



Nanolyon platform





10nm thick ferroelectric oxide

3eFERRO

Energy Efficient Embedded *Non-volatile Memory & Logic* based on Ferroelectric Hf(Zr)O₂