

# Press release

## **Two Major EU Research Institutes and Three High-tech SMEs Launch Project to Industrialize New World Record High-density Capacitors**

*PICS project will develop innovative Atomic Layer Deposition materials and tools for high density 3D integrated capacitors*

GRENOBLE and CAEN, France – Oct. 23, 2013 –CEA-Leti, Fraunhofer CNT and three European SMEs, IPDiA, Picosun and SENTECH Instruments, have launched a project to industrialize 3D integrated capacitors with world-record density.

The two-year EU-funded [PICS](#) project is designed to develop a disruptive technology that results in a new world record for integrated capacitor densities (over 500nF/mm<sup>2</sup>) combined with higher breakdown voltages. It will strengthen the SME partners' position in several markets, such as automotive, medical and lighting, by offering an even higher integration level and more miniaturization.

The fast development of applications based on smart and miniaturized sensors in aerospace, medical, lighting and automotive domains has increasingly linked requirements of electronic modules to higher integration levels and miniaturization (to increase the functionality combination and complexity within a single package). At the same time, reliability and robustness are required to ensure long operation and placement of the sensors as close as possible to the "hottest" areas for efficient monitoring. For these applications, passive components are no longer commodities. Capacitors are indeed key components in electronic modules, and high-capacitance density is required to optimize – among other performance requirements – power-supply and high decoupling capabilities. Dramatically improved capacitance density also is required because of package shrink.

IPDiA has for many years developed an integrated capacitors technology that out performs current technologies (e.g. tantalum capacitors) in terms of stability in temperature, voltage, aging and reliability. Now, a technological solution is needed to achieve higher capacitance densities, reduce power consumption and improve reliability. The key enabling technology chosen to bridge this technological gap is atomic layer deposition (ALD) that allows an impressive quality of dielectric.

The PICS project consortium will address all related technological challenges and setup a cost-effective industrial solution. Picosun will develop ALD tools adapted to IPDiA's 3D trench capacitors. SENTECH Instruments will provide a new solution to more accurately etch high-K dielectric materials. CEA-Leti and Fraunhofer CNT will help the SMEs to create innovative technological

FP7-PICS Project Contact:  
Charlotte JENNEQUIN - IPDiA  
E-Mail: [info@fp7-pics.eu](mailto:info@fp7-pics.eu)  
2 rue de la girafe  
1400 Caen, France  
[www.fp7-pics.eu](http://www.fp7-pics.eu)

# PICS

solutions in order to improve their competitiveness and gain market share. Finally, IPDiA will manage the industrialization of these processes.



*Picture right: Prototype of medical pills integrating temperature sensor and RF transceiver  
Picture left: 3D trench capacitors integrated into Silicon*