

## PRESS RELEASE

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**STMicroelectronics and the French Institute of Materials, Microelectronics and Nanosciences in Provence (IM2NP – CNRS / Aix-Marseille University / University of Toulon / ISEN) have set up a new joint research laboratory to develop the next generations of high-reliability, ultra-miniaturized electronic components.**

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Building on many years of close collaboration and numerous joint research programs, **STMicroelectronics** (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, and the **French Institute of Materials, Microelectronics and Nanosciences in Provence** (IM2NP – CNRS / Aix-Marseille University / University of Toulon / ISEN engineering school), member of the Carnot STAR (Science and Technology for Research Applications) Institute, have announced the official launch of a new joint research laboratory to develop the next generations of high-reliability, ultra-miniaturized electronic components.

The **Radiation Effects and Electrical Reliability (REER) Joint Laboratory** is a multi-site research establishment that will bring together teams from the IM2NP Institute, based in Marseille and Toulon, and specialist engineers from the ST facility in Crolles, near Grenoble.

The REER Joint Laboratory's science program will focus on two main areas of research: the effect of radiation on digital nanometer-scale circuits and the electrical reliability of nanometer-scale CMOS (complementary metal-oxide semiconductor) technologies. These lines of research are crucially important for ST and its ability to produce integrated circuits with extremely high levels of reliability for a wide range of key sectors, such as the automotive sector, networks, medical, space and security.

For these types of applications, the intrinsic constraints of electronic components (electrical fields, mechanical stress, temperature, etc.) and some environmental constraints (especially particle radiation from natural or artificial sources) are becoming an increasingly critical issue for current and future generations of integrated circuits.

Consequently, they need to be accurately characterized, modelled and simulated in order to predict and mitigate their effects, which is one of the key objectives of the new joint research facility.

In addition, a host of challenges and hurdles need to be overcome in the development of future nanoelectronic technologies, and these must be better understood at all stages of the integration process. The joint laboratory's research will range from the most fundamental

aspects of phenomena at the atomic level to systems, materials, the physics of devices and the design of robust circuits.

Its work will be conducted in a globally competitive environment and will focus on the most advanced microelectronic technologies, such as the 28-nanometer technology node and beyond, in particular the FD-SOI (fully depleted silicon-on-insulator) industrial cluster developed by ST at its Crolles site. This key process technology is enabling ST to spearhead development of the most innovative world-class nanoelectronic circuits.

Recently opened, the joint laboratory is already involved in numerous collaborative programs and projects at the national, European and international level, in conjunction with the European CATRENE cluster, the ENIAC initiative and support programs led by the French General Directorate for Enterprises (DGE) and the French defense procurement agency (DGA). In the next five years, the lab will offer placements for a number of high-level doctoral students, mostly in the context of public-private partnership research supported by the French government's CIFRE scheme (industrial agreement for training through research).

## Logo REER



## Visual REER



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**About STMicroelectronics**

ST is a global leader in the semiconductor market serving customers across the spectrum of sense and power and automotive products and embedded processing solutions. From energy management and savings to trust and data security, from healthcare and wellness to smart consumer devices, in the home, car and office, at work and at play, ST is found everywhere microelectronics make a positive and innovative contribution to people's life. By getting more from technology to get more from life, ST stands for life.augmented.

In 2014, the Company's net revenues were \$7.40 billion. Further information on ST can be found at [www.st.com](http://www.st.com).

**About Im2np**

Im2np is a research institute run under the joint authority of the CNRS (French National Center for Scientific Research) and two universities: Aix-Marseille Université and Université de Toulon. It is also associated with Institut Supérieur d'Electronique et du Numérique (ISEN). With more than 340 scientists, engineers, technicians and PhD students in physics, chemistry and micro-electronics, the Institute gathers the required expertise for research and education in materials, microelectronics and nanosciences and supports a wide range of programs including modelling, design, architecture, processes, materials and their physico-chemical properties. Research is carried out through two departments (Materials & Nanosciences, Micro & Nanoelectronics) involving seventeen research groups.

More information: [www.im2np.fr](http://www.im2np.fr)

**About CNRS**

Founded in 1939, the French national center for scientific research is a public research institution. It produces knowledge and makes it available to serve society. With more than 34,000 employees, distribution throughout France, CNRS produces science in all fields of knowledge, relying on its 1100

research and service units. Many eminent researchers have worked, at some point in their career, in CNRS research labs. With 19 Nobel laureates and 11 Fields prize winners, CNRS has a long tradition of excellence. CNRS also demonstrates its openness to partnerships, notably industrial, with its 4535 main patents, 1438 active licenses and more than 1000 innovative enterprises created since 2000. More information on [www.cnrs.fr](http://www.cnrs.fr)

### **About Aix Marseille University**

Aix-Marseille University (AMU) was officially opened on January 1, 2012, replacing the University of Provence, University of the Mediterranean and Paul Cézanne University.

AMU is now the largest French-speaking University. Our establishment gathers 74,000 students in undergraduate, graduate and continuing education and 8,000 personnel. All disciplines of knowledge are taught: art, literature, languages and social science; law and political science; economics and management; health; and sciences and technology. Bachelors, masters and doctorate degrees are issued as well as university degrees in technology, engineering degrees, medical degrees, and other academic degrees. The quality of student life at our university, a condition for growth and success, is a concern for our university community that wishes to offer each student work conditions, sport facilities and cultural programming of the highest quality. Aix-Marseille University brings together 130 research structures, often in partnership with national research organizations. Five major areas of research are addressed: energy; environmental sciences, earth sciences and astronomy; life and health sciences; advanced sciences and technology; and the humanities and social sciences. Interdisciplinary studies and knowledge development are the main axes of growth for AMU, a university with international ambitions as well as rooted in its territory.

More information on [www.univ-amu.fr](http://www.univ-amu.fr)

### **About Toulon University**

Founded in 1968 and independently managed since January 1st 2012, the University of Toulon (UTLN) places the University's attractiveness at the core of its long-term strategic plan. Well-established throughout the region, the University of Toulon works closely with the region's social and economic institutions to tailor its academic programs and research activities to their needs. The University of Toulon is an interdisciplinary institution with 5 campuses. The University offers a hundred different degrees (excluding medical school) and operates 15 Research Units.

More information on [www.univ-tln.fr](http://www.univ-tln.fr).

### **About ISEN**

L'Institut supérieur de l'électronique et du numérique (ISEN) is a group of Engineering private schools in convention with Government ministry of high education and research (validated by Commission of Engineering degree CTI). Born from the will of Mr. Norbert Segard (telecommunication minister in 1956); L'Institut supérieur de l'électronique du Nord is today a group of four establishments, L'Institut supérieur de l'électronique et du numérique in Lille (1956), in Toulon (1991), in Brest (1994) and in Fès (Maroco). L'ISEN – Toulon teaches today to 450 students per year scientific and technical fields of digital systems and innovation by developing in each institute strong skills in Research & Development activities in straight collaboration with highly rated laboratories and mixed research sections (UMR). L'ISEN is able today, thanks to its great skills and its high level of scored position ranked in the highest level of institutes devoted to Engineering formation. Some quantitative results about ISEN: it is 1700 students in initial formations, 300 students in alternated formation, 50 PhD students, 178 teachers and searchers with 120 searchers, 260 temporary teachers whom 50% are coming from industries, 9 professional fields, 96 teaching modules in master degree, 16 nationalities, 26 academicals collaborations with foreign academies, 12 laboratories with 2 joint laboratories with CNRS. Some complementary information are available at the website <http://www.isen.fr> which connects to each school of the ISEN group.