



Press Release

## X-FAB Enters into Collaboration with IHP to Progress SiGe BiCMOS Technology

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X-FAB Silicon Foundries and IHP - Leibniz Institute for High Performance Microelectronics have announced a major industry-academic partnership. The objective of the cooperation between these two bodies, which brings together X-FAB's proficiency in semiconductor manufacture with IHP's wireless communication expertise, is to exchange knowledge and establish mutually beneficial engineering synergies.

IHP's active devices will be directly integrated into the backend of line (BEOL) of [X-FAB's 130 nm XR013 RF-SOI](#) process featuring Cu and thick-Cu based metallization, alongside high-performance passive elements, such as inductors and transformers. This integration will mean that a wide array of next generation wireless systems concepts can be experimented with.

Another key focus for the collaborative work that has been conducted is the development of [advanced SiGe BiCMOS technologies](#). At the foundation of this will be IHP's SiGe heterojunction bipolar transistors. These offer strong performance parameters, with  $f_T/f_{max}$  figures of up to 250/340 GHz for SG13S-Cu and up to 300/500 GHz for SG13G2-Cu. The 3  $\mu$ m thick low-loss copper interconnects employed are also certain to prove valuable in helping to boost RF performance levels.

Prototyping services for both the RF-SOI and SiGe BiCMOS technologies are offered through IHP and EUROPRACTICE. There will be opportunities for the technologies developed by IHP and X-FAB in relation to optoelectronics and 5G wireless communication systems, as well as for innovative radar implementations.

"SiGe BiCMOS remains an attractive prospect for a number of wireless applications, including 5G, because it enables the integration of high-performance RF on a silicon-based platform. IHP and X-FAB both recognize the huge potential here," said Dr. Greg U'Ren Director of RF Technology at X-FAB. "The technologies that we are working on are the fruit of a synergistic relationship that leverages the respective strengths of each partner."

Prof. Gerhard Kahmen Scientific Director at IHP added; "We are very excited to cooperate with X-FAB being one of Europe's leading semiconductor manufacturers. This partnership enables us to transfer first class research into commercial applications laying ground for next generation high performance RF systems, such as 400G data communication, 60-300 GHz radars and sub-THz imaging."



## About IHP

The IHP is an institute of the Leibniz Association and the European Research and Innovation Center for wireless communication technologies. It conducts research and development of silicon-based systems and ultrahigh frequency circuits and technologies including new materials. Further, it develops innovative solutions for application areas such as wireless and broadband communication, security, medical technology, Industry 4.0, automotive industry, and aerospace. The IHP employs approximately 350 people. It operates a pilot line for technological developments and the preparation of high-speed circuits with 0.13/0.25  $\mu\text{m}$  BiCMOS technologies, located in a 1500 m<sup>2</sup> DIN EN ISO 14644-1 class 3 cleanroom.

[www.ihp-microelectronics.com](http://www.ihp-microelectronics.com)

## About X-FAB

X-FAB is the leading analog/mixed-signal and MEMS foundry group manufacturing silicon wafers for automotive, industrial, consumer, medical and other applications. Its customers worldwide benefit from the highest quality standards, manufacturing excellence and innovative solutions by using X-FAB's modular CMOS and SOI processes in geometries ranging from 1.0  $\mu\text{m}$  to 130 nm, and its special silicon carbide and MEMS long-lifetime processes. X-FAB's analog-digital integrated circuits (mixed-signal ICs), sensors and micro-electro-mechanical systems (MEMS) are manufactured at six production facilities in Germany, France, Malaysia and the U.S. X-FAB employs about 3,800 people worldwide. [www.xfab.com](http://www.xfab.com).

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## Acronyms

|        |                                                 |
|--------|-------------------------------------------------|
| BiCMOS | Bipolar Complementary Metal-Oxide Semiconductor |
| RF-SOI | Radio Frequency Silicon-on-Insulator            |
| SiGe   | Silicon-Germanium                               |