



EUROPRACTICE webinar series

January-
February 2022

INTRODUCTION TO IMEC'S MPW SERVICES

A EUROPRACTICE WEBINAR SERIES

Many novel more than Moore technologies nowadays are not yet available through commercial foundries, and the only way to access them is joining the R&D Programs from research centres like imec. Although this generally does not represent an issue for large companies, it often raises concerns amongst smaller players, like start-ups, scale-ups, small and medium enterprises (SMEs) and universities, which do not have the same amount of resources to minimize potential risks that large companies have.

To help them bridging the gap and lower the entry barrier to its advanced process technologies, imec provides affordable and easy access to its expertise and state-of-the-art facilities through its Multi-Project Wafer (MPW) services. In MPWs, different customers share masking and processing costs by combining their designs into one mask set, which results in a factor of 10 cost reduction.

This webinar series is designed by EUROPRACTICE to introduce its community to imec's MPW advanced process technologies offering. The series will start with imec's Silicon Nitride Photonics MPW platform, BioPIX, based on 180nm CMOS node process technology and with target applications in visible and near IR spectrum such as bio-photonics, LIDAR, or quantum computing. Next, we will have the webinar on imec's Silicon Photonics MPW platform, iSiPP50G, based on 130nm CMOS node process technology which co-integrates a wide variety of passive and active components to support a wide range of optical transceiver architectures at a data rate of 50Gb/s. Last, but not least, we will present imec's Gallium Nitride Integrated Circuits (GaN-IC) technology for power electronics MPW platform, which permits the monolithic integration of power and control devices on a single die, allowing full isolation between power devices, drivers, control, and protection circuits. This leads to higher power density and faster switching capabilities in very small form factors.

All the webinars are hosted by Maria Martinez Valado (imec) who leads the imec MPW services team. Please do not hesitate to contact her with any questions at Maria.MartinezValado@imec.be.

PROGRAM INCLUDES 3 WEBINARS

26 January 2022
16:00 CET

Adil Masood

BioPIX – imec's Silicon Nitride Photonics Platform

► [Click here to register](#)

9 February 2022
16:00 CET

Dr. Mulham Khoder

Imec's Silicon Photonics MPW service

► [Click here to register](#)

23 February 2022
16:00 CET

Dr. Urmimala Chatterjee, Maritza Tangarife Ortiz

GaN-on-SOI technology for highly integrated GANICs

► [Click here to register](#)

WHAT WILL YOU DISCOVER?



BioPIX – imec's Silicon Nitride Photonics Platform

26 January, 16:00 CET

Adil Masood

Silicon Nitride, just like Silicon, is a material highly compatible with CMOS processing technology. That means that Silicon Nitride Photonic Integrated Circuits (PIC) can potentially reap the same benefits from the processing technology as Silicon PICs do, such as small feature size, compact design, high repeatability and yield, scalability to volume production etc.

Furthermore, the transparency window of Silicon Nitride is broader than the one of Silicon, and not only covers Near Infrared but also Visible spectrum. This expands the portfolio of Silicon Nitride photonics by enabling applications in the domains of bio-photonics, sensing, LIDAR, quantum computing etc.

This webinar will provide an overview of Silicon Nitride PICs and will provide insights into Silicon Nitride photonics platforms based on imec's CMOS pilot lines. It will give an overview of how the fabrication capabilities are used for making the geometries which manipulate light on chips for a wide range of applications. This webinar will also explain how the Silicon Nitride photonics platform can be accessed for fabless manufacturing at different scales – from prototyping to low-volume production.





Imec's Silicon Photonics MPW service

9 February, 16:00 CET

Dr. Mulham Khoder

Silicon Photonics has proven to be a prime technology for realizing high-speed optical interconnects for tele- and datacom. The application range of Si-Photonics goes far beyond that to include, and not be limited to, optical sensing, biomolecule detection, drug development, and point-of-care diagnostics.

This webinar will provide an overview of the different Silicon Photonics platforms based on imec's CMOS pilot lines.

The main focus will be on iSiPP50G platform, which gives access to Photonic Integrated Circuit (PIC) prototyping and small volume production. This platform offers state-of-the-art performance, design flexibility, and thickness control.

In this presentation, we will go through the passive and active library components offered by imec and explain how to get access and technical support to these platforms. Furthermore, we will show the possible optical coupling options and available options for packaging.



GaN-on-SOI technology for highly integrated GANICs

23 February, 16:00 CET

Dr. Urmimala Chatterjee, Maritza Tangarife Ortiz

This webinar will take you to a deep dive into imec's GaN-on-SOI technology.

It is well known that GaN technology can drive the high frequency operation for power circuits beyond today's limit. However, this extremely good frequency capability introduces some challenges to operate the transistor efficiently. Although discrete GaN devices today dominate the GaN market, monolithically integrated GaN power IC fully utilizes the fastswitching capability of GaN technology by reducing the parasitic and ringing, which enables a fast efficient switching operation.

The main goal of this webinar is to introduce the details of monolithically integrated GANICs in all GaN technology. We will also discuss technological and circuit level challenges of monolithic integration in GaN technology. One of the major problems is the back-gating effect (BGE) that highly impacts the performance of an integrated half-bridge (HB) switch. As a potential solution imec proposes to implement it on GaN-on-SOI (silicon on insulator) substrate with trench isolation to fully isolate the HEMTs as well as their respective silicon device layers that are cut off horizontally by a trench.