

HORIZON  
2020

# A generic CMOS-compatible platform for co-integrated plasmonics/photronics/electronics PICs towards volume manufacturing of low energy, small size and high performance photonic devices

## Fact Sheet

### Project Information

#### PLASMOfab

Grant agreement ID: 688166

[Project website](#)

#### DOI

[10.3030/688166](https://doi.org/10.3030/688166)

Project closed

#### EC signature date

10 November 2015

#### Start date

1 January 2016

#### End date

31 December 2018

#### Funded under

INDUSTRIAL LEADERSHIP - Leadership in enabling and industrial technologies - Information and Communication Technologies (ICT)

#### Total cost

€ 4 150 246,25

#### EU contribution

€ 3 580 691,25

#### Coordinated by

ARISTOTELIO PANEPISTIMIO  
THESSALONIKIS

 Greece

## Objective

PLASMOfab aims to address the ever increasing needs for low energy, small size,

high complexity and high performance mass manufactured PICs by developing a revolutionary yet CMOS-compatible fabrication platform for seamless co-integration of active plasmonics with photonic and supporting electronic. The CMOS-compatible metals Aluminum, Titanium Nitride and Copper, will be thoroughly investigated towards establishing a pool of meaningful elementary plasmonic waveguides on coplanar photonic (Si, SiO<sub>2</sub> and SiN) platforms along with the associated photonic-plasmonic interfaces. The functional advantages of PLASMOfab technology will be practically demonstrated by developing two novel functional prototypes with outstanding performances:

1) a compact, plasmonic bio-sensor for label-free inflammation markers detection with multichannel capabilities and record-high sensitivity by combining plasmonic sensors with electrical contacts, Si<sub>3</sub>N<sub>4</sub> photonics, high-speed biofunctionalization techniques and microfluidics

2) a 100 Gb/s NRZ transmitter for datacom applications by consolidating low energy and low footprint plasmonic modulator and ultra high-speed SiGe driving electronics in a single monolithic chip.

The new integration technology will be verified through wafer-scale fabrication of the prototypes at commercial CMOS fabs, demonstrating volume manufacturing and cost reduction capabilities. PLASMOfab technology will be supported by an EDA software design kit library paving the way for a standardized, fabless plasmonic/photonic IC eco-system.

## Fields of science (EuroSciVoc)

[natural sciences](#) > [physical sciences](#) > [classical mechanics](#) > [fluid mechanics](#) > **[microfluidics](#)**

[engineering and technology](#) > [electrical engineering, electronic engineering, information engineering](#) > [electronic engineering](#) > [sensors](#) > **[biosensors](#)**

[engineering and technology](#) > [environmental biotechnology](#) > **[biosensing](#)**

[natural sciences](#) > [chemical sciences](#) > [inorganic chemistry](#) > **[transition metals](#)**

[natural sciences](#) > [biological sciences](#) > [biochemistry](#) > [biomolecules](#) > **[proteins](#)**



## Keywords

[photonic integrated circuit](#)

[plasmonic waveguide](#)

[silicon photonics](#)

[CMOS technology](#)

[100 Gb](#)

[s electronics](#)

[plasmonic modulator](#)

[monolithic integration](#)

[multi-channel sensing](#)

[biomarker detection](#)

## Programme(s)

[H2020-EU.2.1.1. - INDUSTRIAL LEADERSHIP - Leadership in enabling and industrial technologies - Information and Communication Technologies \(ICT\)](#)

MAIN PROGRAMME

## Topic(s)

[ICT-27-2015 - Photonics KET](#)

## Call for proposal

[H2020-ICT-2015](#)

[See other projects for this call](#)

## Funding Scheme

[RIA - Research and Innovation action](#)

## Coordinator



**ARISTOTELIO PANEPISTIMIO THESSALONIKIS**

Net EU contribution

**€ 612 500,00**

Total cost

**€ 612 500,00**

Address

**KEDEA BUILDING, TRITIS SEPTEMVRIOU, ARISTOTLE UNIVERSITY CAMPUS  
546 36 THESSALONIKI**

**Greece**

Region

**Βόρεια Ελλάδα > Κεντρική Μακεδονία > Θεσσαλονίκη**

Activity type

## Higher or Secondary Education Establishments

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

## Participants (10)

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### UNIVERSITE DIJON BOURGOGNE

 France

Net EU contribution

€ 375 750,00

Address

ESPLANADE ERASME MAISON DE L UNIVERSITE

21078 Dijon Cedex 

Region

Bourgogne-Franche-Comté > Bourgogne > Côte-d'Or

Activity type

Higher or Secondary Education Establishments

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 430 200,00

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 THIRD-PARTY 

### CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS

 France

Net EU contribution

€ 54 450,00

Address

RUE MICHEL ANGE 3

75794 Paris 

Region

Activity type

## Research Organisations

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

**€ 54 450,00**



## EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZUERICH

 Switzerland

Net EU contribution

**€ 0,00**

Address

**Raemistrasse 101**

**8092 Zuerich** 

Region

**Schweiz/Suisse/Svizzera > Zürich > Zürich**

Activity type

## Higher or Secondary Education Establishments

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

**€ 569 505,00**



## GESELLSCHAFT FUR ANGEWANDTE MIKRO UND OPTOELEKTRONIK MIT BESCHRANKTERHAFTUNG AMO GMBH

 Germany

Net EU contribution

**€ 429 860,00**

Address

## OTTO BLUMENTHAL STRASSE

52074 Aachen 

SME 

Yes

Region

**Nordrhein-Westfalen > Köln > Städteregion Aachen**

Activity type

**Other**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

**€ 429 860,00**



## AMS-OSRAM AG

 Austria

Net EU contribution

**€ 502 833,75**

Address

**TOBELBADERSTRASSE 30 SCHLOSS PREMSTATTEN**

**8141 Premstatten** 

Region

**Südösterreich > Steiermark > Graz**

Activity type

**Private for-profit entities (excluding Higher or Secondary Education Establishments)**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

**€ 502 883,75**



## KEYSIGHT TECHNOLOGIES DEUTSCHLAND GMBH

 Germany

Net EU contribution

€ 281 265,00

Address

**HERRENBERGER STRASSE 130**

**71034 Boeblingen** 

SME 

**Yes**

Region

**Baden-Württemberg > Stuttgart > Böblingen**

Activity type

**Private for-profit entities (excluding Higher or Secondary Education Establishments)**

Links

[Contact the organisation](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 281 265,00



## UNIVERSITAT DES SAARLANDES

 Germany

Net EU contribution

€ 225 000,00

Address

**CAMPUS**

**66123 Saarbrücken** 

Region

**Saarland > Saarland > Regionalverband Saarbrücken**

Activity type

**Higher or Secondary Education Establishments**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 225 000,00



## MELLANOX TECHNOLOGIES LTD - MLNX

 Israel

Net EU contribution

**€ 355 000,00**

Address

**YOKNEAM ILIT INDUSTRIAL ZONE HERMON BUILDING**

**20692 YOKNEAM** 

Activity type

**Private for-profit entities (excluding Higher or Secondary Education Establishments)**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

**€ 355 000,00**



## SYNOPSIS SOFTWARE NETHERLANDS BV

 Netherlands

Net EU contribution

**€ 244 188,75**

Address

**CAPITOOL 50**

**7521 PL Enschede** 

SME 

**Yes**

Region

**Oost-Nederland > Overijssel > Twente**

Activity type

**Private for-profit entities (excluding Higher or Secondary Education Establishments)**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost




€ 244 188,75

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## AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH

 Austria

Net EU contribution

€ 499 843,75

Address

**GIEFINGGASSE 4**

1210 Wien 

Region

**Ostösterreich > Wien > Wien**

Activity type

**Research Organisations**

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Total cost

€ 499 843,75

**Last update:** 18 July 2023

**Permalink:** <https://cordis.europa.eu/project/id/688166>

European Union, 2025