

Press Release

06.12.2019

Chances of Plasmonics

Dr. Leonetta Baldassarre receives International IHP "Wolfgang Mehr" Fellowship Award 2019

Frankfurt (Oder). Dr. Leonetta Baldassarre has been awarded today with the International IHP "Wolfgang Mehr" Fellowship Award 2019 at IHP – Innovations for High Performance Microelectronics. The Italian receives the prize for her research in the field of plasmonics and nano-optics, that are also thoroughly researched at IHP. Thanks to this award, she will perform her research at IHP for three month exploiting infrared spectroscopy, i.e. the study of the interaction between matter and infrared electromagnetic radiation. While a spectroscopist uses light to understand the properties of materials, with plasmonics one can exploit nanostructures to achieve sub-diffraction hot-spots, i.e. small volumes in space where the electromagnetic field is greatly enhanced. "With the plasmonic approach we aim to do sensing, this is in principle a fast and reliable method to identify molecules, in particular for point of care testing", Dr. Baldassarre describes her research. "It is a mixture of disciplines: Physics, Biology, Chemistry etc. Here at IHP I get more the technological point of view. The aim is to work with the perspective of a plasmonic lab on chip device, which can be then used for several sensing applications," she says.

Dr. Baldassarre researches at the department of physics at the Sapienza University of Rome in Italy, where she develops and applies near-field spectroscopy with quantum cascade lasers and atomic-force microscope tips. Her research topics, especially within the GEMINI EU project, recently ended, include antenna-enhanced mid-infrared spectroscopy and few-molecule infrared spectroscopy. Furthermore, she is member of the Italian Society of Optics and Photonics (SIOF), which is part of the European Optical Society, a non-profit organisation to bring together and encourage the cooperation of all with an interest in optics, optoelectronics and related scientific fields, to make practical use of research results, and to support the industrial exploitation of optics.

The International IHP "Wolfgang Mehr" Fellowship Award has been presented since 2016 and is dedicated to the former scientific director of IHP Prof. Wolfgang Mehr, who passed away in 2015. Prof. Mehr was head of the institute from 2002 to 2014 with a sustainable strategy and led it to an internationally recognized, excellent research institution. Indeed his solution-oriented determination is one of the important criteria in selecting the award winners. Last year, Prof. Davide Bertozzi from University of Ferrara received the prize for his research in the field of electrooptical interconnect technologies. In 2017, Prof. Niels Pohl from Ruhr University Bochum was honoured for his research in the field of millimeter wave



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radar and ultra-high frequency sensors. The first award winner in 2016 was Dr. Fabio Coccetti for his scientific work in the field of 2D materials.

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“Wolfgang Mehr” Fellowship Award winner 2019: Dr. Leonetta Baldassarre (middle) with Prof. Christian Wenger (l.), Department Head Materials Science, and Prof. Bernd Tillack (r.), Scientific Director of IHP. © IHP 2019

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IHP is an institute of the Leibniz Association and conducts research and development of silicon-based systems and ultrahigh frequency circuits and technologies including new materials. It develops innovative solutions for application areas such as wireless and broadband communication, security, medical technology, industry 4.0, automotive industry, and aerospace. IHP employs approximately 300 people. It operates a pilot line for technological developments and the preparation of high-speed circuits with 0.13/0.25 μm BiCMOS technologies, located in a 1000 m² class 1 cleanroom.

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