

Elia Scattolo is the winner of the best student award at the international conference ECSA-8

December 1, 2021

The student award consists of 500 CHF. It is for a student who has joined the online student competition of the 8th International Electronic Conference on Sensors and Applications held on 1–15 Nov 2021.

The Best Student Award has also been launched to acknowledge the support of the conference esteemed authors and recognize their outstanding scientific accomplishments. The FBK researcher has been awarded for the paper entitled "[Optimization of Focused Ion Beam patterning parameters for direct integration of plasmonic nanostructures on Silicon photodiode](#)".

The awarded work in a nutshell:

"For many applications such as autonomous driving, it is interesting and necessary to be able to detect very weak light pulses in the infrared spectrum. Among the sensors studied, silicon-based single-photon avalanche diodes (SPADs) are the most promising due to their performance and knowledge of silicon technology. The main problem with SPADs is that silicon is almost transparent in the infrared spectrum region, leading to almost no performance. One of the methods we are investigating is to integrate plasmonic nanostructures directly on top of the device to improve the absorption by the confinement of the incident light. In the work I presented at the ECSA-8 conference, I demonstrated how it is possible to integrate these metal nanostructures using a technique called Focused Ion Beam by patterning a uniform metal layer with an accelerated and focused ion beam to obtain the desired nanostructures without changing the state or damaging the device. In particular, I used an innovative FIB machine, to cut lines thinner than 100 nm in silver films using gold ions. This state of the art tool, the first worldwide installed, has been acquired within the program 'KFT-Key enabling technologies Facility in Trento' supported by the FESR (Fondo Europeo per lo Sviluppo Regionale) 2014-2020. A program targeted to ensure nanofabrication capabilities in the Micro Nano Facility of FBK-SD Center."



[Elia Scattolo](#) is a PhD Student @ [MICRO NANO FACILITY](#) – FBK [Sensor & Devices](#) Centre.

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- Awarded Paper: "Optimization of Focused Ion Beam patterning parameters for direct integration of plasmonic nanostructures on Silicon photodiode": <https://sciforum.net/paper/view/11259>

AUTHORS

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