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**Title**

**IR photodetector based on the GaAs nanowire**

**Authors**

**Eduard Monaico, Veaceslav Ursaki, Elena Monaico, Ion Tiginyanu**

**Institution**

**Technical University of Moldova, National Center for Materials Study and Testing**

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**Description  
EN**

Herein, we propose the manufacture of IR photodetector based on GaAs nanowire with good sensitivity and dynamic characteristics prepared by a cost-effective electrochemical etching of GaAs wafer, which does not require sophisticated and expensive equipment. The electrochemical etching being performed at room temperature in 1M HNO<sub>3</sub> electrolyte. A special design of contacts was applied via laser beam lithography on selected nanowires. The deposition of Cr/Au ohmic contacts at the ends of the GaAs nanowire ensures the operation of the photodetector in photoconductor mode.

INTERNATIONAL EXHIBITS

## EUROINVENT 2021

The analysis of the photocurrent build-up and relaxation for a photodetector produced on nanowires with different diameters shows that the measured photoresponse at the voltage of 5V increases from 50 mA/W to 100 mA/W with the increase of the nanowire diameter from 200 nm to 400 nm. It should be noted that, because the photodetector operates in the photoconductor mode, the photocurrent increases linearly with increasing polarization. Thus, at a polarization voltage of 15V the photoresponse is higher than 100 mA/W for all three manufactured photodetectors.

The task solved by the proposed invention consists in the elaboration of an infrared radiation photodetector with photoresponse of the order of 100 mA/W, which can be incorporated on a wide variety of substrates.

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