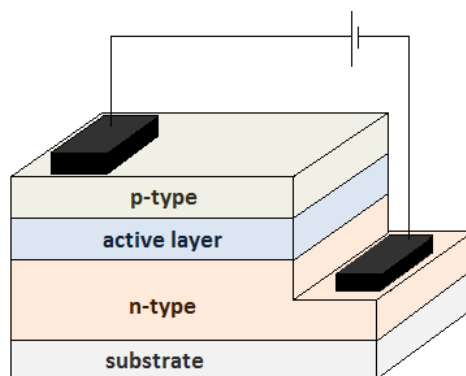


## Ohmic contact to p-type Aluminium Gallium Nitride with high aluminium content

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Aluminium gallium nitride (AlGaN) is a semiconductor material that is widely studied in the electronic and optoelectronic environment. One of the most popular applications of this material is using it to produce UV light emitters such as light emitting diodes (LEDs). The wavelengths range of LEDs based on this material exhibit antibacterial properties such as sterilization of water, food, air and medical devices. They can be successfully used as replacements for large and bulky mercury lamps that are currently in hospitals or private dental clinics. In order for LEDs to work, it is necessary to process the semiconductor and make ohmic contacts of p and n type on it. Fig. 1 shows a diagram of the light emitting diode with contacts on p and n layers.



*Fig. 1. Diagram of an electroluminescent diode (LED)*

Ohmic contacts are LED's necessary low-resistance metal-semiconductor junction, whose task is to supply current to and from the device. A big challenge is create such contact on the p-type layer to aluminum gallium nitride with a high content of aluminum due to its wideband-gap, which affects the properties of this junction. To create such contact, it is necessary to obtain a complicated metal alloy on a suitably modified semiconductor surface.

The goal of the project is to create and optimize ohmic contact on aluminum gallium nitride with high aluminum content. All work will be carried out in The ŁUKASIEWICZ Research Network - Polish Center for Technology Development PORT. The work will include production of various metal alloys with evaporation of metals and their annealing on a differently modified semiconductor surface with the use of hexagonal boron nitride top layer. Success of the project can significantly develop the optoelectronic market and revolutionize the commercial market.