

Project 4.5 Rocksalt (MgZn)O alloys and (MgZn)O/MgO quantum structure and their application in deep-ultraviolet light-emitters experimental

Supervisors: Henryk Teisseyre

Institute: IFPAN

Unit: ON4

Background:

ZnO-based materials have important potential industrial and medical applications due to their biocompatibility and biodegradability properties. The main goal of the project is to perform a systematic study of the $\text{Mg}_x\text{Zn}_{1-x}\text{O}$ alloys and quantum structures in the RS phase. This study will include their epitaxial growth and the experimental determination of their fundamental physical properties (bandgap nature, energy bandgaps, bandgap offsets, etc.), which will be supported by theoretical simulations of their electronic and optical properties. In a second stage, we will exploit the grown quantum structures to demonstrate oxide-based emitters at wavelengths smaller than 300nm. The main outcome of the project will be a set of new oxide materials enabling the fabrication of deep-UV emitting devices and a proof-of-principle working device

Aim:

Fabrication of deep-UV emitting devices.

Requirements:

- Master's degree in physics (or an equivalent that qualifies one for PhD studies in physics in the country of issue),
- to be employed, the candidate must be accepted into the PhD school in which the Institute of Physics participates,
- applications for the position are through recruitment to the School, online at warsaw4phd.eu.

Main research field: Physics

Sub Research Field: Physics of semiconductors

Career Stage: Early stage researcher

Research Profile (details): First Stage Researcher (R1)

Type of Contract: Fixed term (32 months)

Status: Full-time

Funding:

Grant funding of 4000 PLN per month, before subtracting obligatory employer and employee social security contributions (~15%), for 32 months. Afterwards, standard Polish PhD scholarship (about 2360 PLN/month net in years 1-2, 3640 PLN/month net in years 3-4).

Contact: teiss@ifpan.edu.pl