

JOB OFFER

Position in the project:	PhD student „Use of tunnel junctions for inverting built-in electric fields”
Scientific discipline:	Physics
Job type (employment contract/stipend):	stipend
Number of job offers:	1
Remuneration/stipend amount/month (“X0 000 PLN of full remuneration cost, i.e. expected net salary at X 000 PLN”):	Stipend amount 4500 PLN
Position starts on:	November 1, 2018
Maximum period of contract/stipend agreement:	23 months
Institution:	Institute of High Pressure Physics Polish Academy of Sciences, Sokołowska 29/37, 01-141 Warsaw
Project leader:	dr Henryk Turski
Project title:	<i>“Polarity engineering in Nitride heterostructures”</i> <i>Project is carried out within the Homing programme of the Foundation for Polish Science</i>
Project description:	<p>The project focuses on nitride vertical devices with inverted built-in polarization fields in structures grown on Ga-polar GaN substrates. To build such devices we will exploit unique features of n-p tunnel junctions (TJ). Growth of n-p TJ preceding the active region of the device allows to incorporate the active region within the p-n configuration rather than the commonly used n-p one. This results in an inverted built-in electric field direction inside the active region.</p> <p>Additionally, such devices will profit from having the n-type layer on the top. We will show that both features can lead to new applications of light emitting devices, laser diodes and transistors. Unique capabilities of the plasma-assisted molecular beam epitaxy system (high growth rate nitrogen plasma source, high Mg flux cell and Ge doping) installed in Warsaw will be crucial for samples growth.</p> <p>Project will be carried out in collaboration with groups at Cornell University and Wrocław University of Technology.</p>
Key responsibilities include:	<ol style="list-style-type: none"> 1. Molecular Beam Epitaxy (MBE) of tunnel junction structures using different growth conditions. 2. Characterization of n-p diode structures: atomic force microscopy measurements, current-voltage measurements, transfer length measurements. 3. Theoretical calculations of tunneling current as a function of different doping levels and different chemical composition of the junction.
Profile of candidates/requirements:	<ol style="list-style-type: none"> 1. MSc or MA degree in Physics or Engineering sciences 2. PhD status (enrolled on PhD studies) 3. Scientific publications will be an asset 4. Good understanding of solid state physics and quantum mechanics. 5. Knowledge on the properties of semiconductors of wurzite structure (with electric fields) and knowledge of their

	characterization methods 6. Experience in molecular beam epitaxy (MBE) and/or processing will be an asset 7. Very good command of English (oral and written) 8. Motivation and passion for experimental work
Required documents:	1. Application letter 2. CV 3. Essay describing scientific interests and achievements of the candidate, including the information about candidate contributions to scientific projects if applicable. Maximum length 3500 characters. 4. Copy (scan) of the university diploma. 5. Document confirming the PhD status. 6. Student visa – for candidates from outside of European Union
We offer:	Scientific experience and work in an international team in the Institute of long gallium nitride GaN-related research. Collaboration with Cornell University in USA, University in Montpellier in France, Universidad Politécnica de Madrid in Spain, University of Waterloo in Canada, Paul-Drude Institut in Berlin. Possibilities to attend conferences.
Please submit the following documents to:	henryk@unipress.waw.pl
Application deadline:	October 29, 2018, 12:00. Recruitment talks are planned between October 30 and 31, 2018
For more details about the position please visit (website/webpage address):	
Euraxess job/stipend offer (in case of PhD and postdoc positions):	https://euraxess.ec.europa.eu/jobs/341826

Please include in your offer:

“I hereby give consent for my personal data included in my application to be processed for the purposes of the recruitment process under the Personal Data Protection Act as of 29 August 1997, consolidated text: Journal of Laws 2016, item 922 as amended.”