KIOS CENTER OF EXCELLENCE
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
PhD RESEARCH STUDENT

Title	**:** Special Scientist (Ph.D. Research Student)
No. of Position(s)	**:** One (1)
Period	**:** November 2020 – October 2022 (two-year renewable contract, which may be renewed up to a maximum of one further year)
Location	**:** University of Cyprus, Nicosia

JOB TITLE

H2020 FET-OPEN Ph.D. Position in Photonics for Externally Controllable Molecular Communications at the University of Cyprus

JOB SUMMARY

The KIOS Center of Excellence and the Department of Electrical and Computer Engineering at the University of Cyprus (UCY), announce one vacancy for a full-time Ph.D. position (under the Special Scientist category), funded under the European Horizon 2020 project *"GLADIATOR - Next-generation theranostics of brain pathologies with autonomous externally controllable nanonetworks: a trans-disciplinary approach with bio-nanodevice interfaces"*. The GLADIATOR project is a Horizon 2020 FETOPEN project that involves 6 leading academic institutions (University of Cyprus, University of Oulu, Fraunhofer Institute for Biomedical Engineering, Waterford Institute of Technology, Norwegian University of Science and Technology, and Osaka University) and EPOS-Iasis, a vibrant nano-biotechnology SME. The ideal candidate will have a master's degree with specialization in photonics, preferably for biomedical applications. Additional expertise in microelectronics and/or microwave engineering is desirable (but not essential).

JOB DESCRIPTION

The aim of this Ph.D. position is to develop brain micro-implants that incorporate optoelectronics for fluorescence detection, within the framework of the GLADIATOR FET-OPEN project. GLADIATOR targets the creation of a theranostic (therapeutic + diagnostic) system for the diagnosis and treatment of brain cancer, consisting of a head-wearable patch for power transfer and communication with a multimodal (RF, photonic and ultrasound) micro-implant. GLADIATOR will produce a working prototype of a complete, autonomous, clinically-applicable, nanonetwork-based molecular communications system based on externally controllable molecular communications (ECMC). That is, through breakthroughs in both cell biology and RF and photonic devices, the system will both monitor and treat brain tumours. The system will consist of a hybrid bio-electronic interface with coupled external and implantable devices, which will establish communication channels with host-derived fluorescent reporter cells via micro-optoelectronic sensors. The cellular, sub-cellular and electronic components will be integrated into a wireless ECMC system residing on the patient's brain. The system will autonomously monitor the spatiotemporal tumour evolution and recurrence, and will generate on demand appropriate re-programming interventions by stimulating the engineered stem cells.

UNIVERSITY OF CYPRUS

The University of Cyprus was officially founded in 1989 and started operating in Nicosia, the capital of Cyprus, in 1992. Within a short time, the University of Cyprus has managed to achieve international recognition through an impressive course of development. Today, it is ranked 64th best young university (under 50 years) and #351-400 worldwide by the Times New Higher Education Rankings. These and many other distinctions are the result of our dedication to excellence and continuous development. The recruited researcher will have access to the experimental facilities of the Dept. of Electrical and Computer Engineering, including the Optical Diagnostics Lab (http://www.eng.ucy.ac.cy/biaolab/index.html) and the Microwave Photonics Lab (http://www.ece.ucy.ac.cy/Photonics/index.html)

DUTIES AND RESPONSIBILITIES:

- Development of a prototype hybrid brain micro-implant, including optoelectronics for fluorescence detection and heterogeneous integration with the associated drive electronics, transcranial power transfer and transcranial communications. The implemented solution is likely to require a multichip module approach, with development of photonic hybrid integrated circuits as part of this.
- Close interaction and collaboration with other researchers in the GLADIATOR consortium, including reporting to the project coordinator as appropriate.
- Collaborating and supporting the local team at UCY towards the implementation of research objectives.

REQUIRED QUALIFICATIONS AND SKILLS:

- Masters degree in Electronics, Electrical Engineering, Physics or a related discipline (ideally with a specialisation in optoelectronics, photonics or microelectronics)
- Excellent command of the English language (written and verbal).
- Experience of one or more of the following would be considered highly desirable: photonic devices, nano-optics, semiconductor devices, microelectronics, and molecular communications.
- Excellent organisation, time management, collaboration and communication skills.

EMPLOYMENT TERMS:

The position is available on a contract basis for the initial period November 2020 – October 2022 and can be renewed for up to one additional year, subject to a satisfactory performance review. The cost salary for this full-time position is €3800 per month (Cost of employee and employer contributions will be deducted from this amount). The position does not include a 13th Salary bonus.

SUBMISSION OF APPLICATIONS:

Interested candidates should submit the following items in PDF format on the link:
https://applications.ucy.ac.cy/recruitment :

1. Cover letter that specifies their employment availability date.
2. A detailed curriculum vitae (contact address and telephone number should be included).
3. Copies of bachelors/masters degree(s) certificates and of transcripts.
4. The names and contact details of two persons, of whom at least one is an academic, from whom references may be requested.

The applications should be submitted as soon as possible, but not later than Monday, 19 October 2020 at 5 pm.

For more details and clarifications, you may contact Prof. Stavros Iezekiel, +357 22892190, iezekiel@ucy.ac.cy.