Opis delovnega mesta mladega raziskovalca/ke (D*escription of the Young Researcher's position)*

1. Članica UL (*UL member)*:

Univerza v Ljubljani, Fakulteta za elektrotehniko *University of Ljubljana, Faculty of Electrical Engineering*

2. Ime, priimek in elektronski naslov mentorja/ice (*Mentor's name, surname and email*):

Matej Možek (matej.mozek@fe.uni-lj.si) *Matej Mozek (matej.mozek@fe.uni-lj.si)*

3. Raziskovalno področje (*Research field*):

2.09 Elektronske komponente in tehnologije *2.09 Electronic components and technologies*

4. Opis delovnega mesta mladega raziskovalca/ke (D*escription of the Young Researcher's position)*: Vključuje morebitne dodatne pogoje, ki jih mora izpolnjevati kandidat/ka za mladega raziskovalca/ko, ki niso navedeni v razpisu za mlade raziskovalce.

slo:

Tema raziskovalnega dela mladega raziskovalca/ke (MR) bo načrtovanje, izdelava in integracija silicijevih senzorskih in aktuatorskih struktur s pametno elektroniko, kar bo vodilo v realizacijo kompleksnejših mikroelektronskih sistemov za medicinske, farmacevtske ali procesno-kemijsko inženirske aplikacije.

Delo MR predstavlja nadaljevanje obstoječih raziskav Laboratorija za mikrosenzorske strukture in elektroniko (LMSE) na področju polprevodniške tehnologije, MEMS, elektronskih vezij, mikrofluidike in debelo- ter tankoplastnih materialov v elektroniki.

Cilj raziskovalnega dela MR je razširitev obstoječih znanj na področju naprednih senzorskih sistemov za ključne aplikacije v medicini, farmaciji in procesnem-kemijskem inženirstvu. Takšni sistemi bodo poleg osnovnih mikrofluidnih funkcij (kontrole pretoka, mešanja, usmerjanja itd.) izvajali še druge pomembne funkcije, kot so merjenje temperature, gretje, zagotavljanje električnega polja, biološko zaznavanje, zbiranje električnega naboja idr.

Narava dela MR bo izrazito interdisciplinarna, saj bo vključevala raziskovalna področja materialov, mikrofluidne mehanike, elektronskih komponent, vezij, numeričnih simulacij in programiranja. Tema MR se tesno prepleta z izvajanjem obstoječih projektov programske skupine Mikrostrukture in nanostrukture, kot npr. Nautilos (Novi pristopi v podvodnih tehnologijah za napredno, nizkocenovno oceanografijo), ki poteka v okviru Obzorja 2020.

MR mora imeti sposobnost strokovnega delovanja v mednarodnem okolju, kar zajema osnove pisanja znanstvenih člankov in dobro znanje angleškega jezika (B2/C1). Od MR se pričakuje visoka motiviranost, ki obsega samoiniciativnost, inovativnost, natančnost in zanesljivost pri delu. MR se aktivno vključuje v ekipo LMSE, pri čemer mora pokazati vnemo za sodelovanje z ostalimi sodelavci LMSE.

MR bo opravljal/a doktorski študij na doktorskem študijskem programu Elektrotehnika, Univerze v Ljubljani.

eng:

Main research topic of the young researcher candidate (YRC) will be the design, manufacturing and integration of silicon sensor and actuator structures with smart electronics, which will lead to the realization of more complex microelectronic systems for medical, pharmaceutical or chemical process engineering applications.

Research work of YRC will represent a continuation of existing research of the Laboratory for Microsensor Structures and Electronics (LMSE) in the field of semiconductor technology, MEMS, electronic circuits, microfluidics and thick- and thin-film materials in electronics.

Primary aim of YRC research work is to expand existing knowledge in the field of advanced sensor systems for key applications in medicine, pharmacy and chemical process engineering. In addition to basic microfluidic functions (flow control, mixing, etc.), such systems will perform other important functions, such as temperature measurement, heating, electric field instantiation, biological detection, electric charge collection, etc.

Nature of YRC activity will be highly interdisciplinary, as it will include research areas of materials, microfluidic mechanics, electronic components, circuits, numerical simulations and programming. Research topic of YRC is closely intertwined with implementation of existing projects of the program group Microstructures and Nanostructures, such as. Nautilos (New Approaches in Underwater Technologies for Advanced, Low-Cost Oceanography), which is taking place under Horizon 2020.

YRC must have the ability to work professionally in international environment, which includes the basics of writing scientific articles and a good knowledge of English (B2 / C1). YRC is expected to be highly motivated, which includes self-initiative, innovation and reliability at work. YRC can look forward to integration into the LMSE team, and must therefore exhibit enthusiasm to work with other LMSE staff.

YRC will conduct his/her doctoral study within doctoral studies program of Electrical Engineering, University of Ljubljana.