

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

1. Članica UL (*UL member*):

Univerza v Ljubljani, Fakulteta za strojništvo
University of Ljubljana, Faculty of Mechanical Engineering

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

Uroš Trdan, uros.trdan@fs.uni-lj.si

3. Raziskovalno področje (*Research field*):

2.10.00 Tehniške vede; Proizvodne tehnologije in sistemi

2.10.00 Engineering sciences and technologies; Manufacturing technologies and systems

4. Opis delovnega mesta mladega raziskovalca/ke (*Description 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:

Tematika mladega raziskovalca bo usmerjena na področje naprednih dodajnih tehnologij (*3D tiska kovinskih materialov*) ter naknadnih poobdelav (npr. *lasersko udarno utrjevanje, ultrašpočno utrjevanje, funkcionalne prevleke, ipd.*) za izgradnjo in zagotavljanje funkcionalnosti kompleksnih kovinskih komponent, ki že potekajo v Laboratoriju za varjenje. Ob tem bo znanstveni doprinos raziskovalnega dela usmerjen v nova dognanja za namene orodjarske, letalske, avtomobilske kot tudi vesoljske industrije. Raziskave bodo usmerjene v možnost hitre izdelave prototipov, materialov s funkcijsko gradientnimi lastnostmi ter npr. personaliziranih izdelkov na področju medicine.

Delo bo potekalo v aplikativno usmerjenem laboratoriju v mladi ekipi in v stimulativnem okolju, v sodelovanju z vrhunskimi mednarodnimi inštitucijami in industrijskimi partnerji, pri čemer bodo raziskave podprte z naprednimi eksperimentalnimi tehnikami karakterizacije (XPS, TEM, XRD, AES, SEM/EDS, EBSD, FIB, , elektrokemijska korozija, tribološke lastnosti, idr.). Ob tem bo del raziskav po potrebi izveden tudi na partnerskih ustanovah v tujini (FR, CZ, JP, ZDA idr.)

Kandidati morajo imeti poleg tekočega znanja angleškega jezika (*pisanje in govorjenje*) tudi zaključeno 2. stopnjo smeri strojništva, fizike, elektrotehnike ali metalurgije.

Od kandidatov se pričakuje:

- zanesljivost, samostojnost, organiziranost, ambicioznost;
- analitične sposobnosti;
- komunikativnost, dinamičnost in motiviranost za raziskovalno (timsko) delo;
- zaključen magistrski študij s povprečno oceno študija (ocene vseh izpitov in vaj ter ocena zaključnega dela) najmanj 8/10;
- da od leta zaključka študijskega programa druge stopnje oziroma niso minila več kot 4 leta;
- sposobnost dela v interdisciplinarnem, mednarodnem okolju;
- vozniški izpit (*zaželeno - neobvezno*).

Od kandidatov so zaželene predhodne laboratorijske izkušnje na področju proizvodnih tehnologij ter poznavanje naslednjih programskih orodij: 3D modelirniki (npr.: *SolidWorks*), CAM programi (npr.: *MasterCam*, *SprutCam*), Matlab in LabView, ROS, Design Expert. Morebitna manjkajoča znanja bo kandidat tudi pridobil v okviru usposabljanja.

eng:

The topic of the young researcher will be focused on the field of advanced additive technologies (*3D printing of metallic materials*) and subsequent post-processing (e.g. *laser shock peening, ultrasonic peening, functional coatings, etc.*) to manufacture and ensure the functionality of complex metal components, already underway in the Welding Laboratory. The scientific contribution of research work will be focused on the new findings for the purposes of the toolmaking, aircraft, automotive and space industries. Within the research, also the possibilities of rapid prototyping, manufacturing of functionally graded and e.g. personalized products in the field of medicine will be investigated and analysed.

The work will take place in the application-oriented laboratory in a young team and stimulating environment, in collaboration with respected international institutions and industry partners. Access to all the needed infrastructure and the state-of-the art equipment will be provided to the PhD student (*XPS, TEM, XRD, AES, SEM/EDS, EBSD, FIB, electrochemical corrosion, tribological analysis, etc.*). In addition, part of the research will be, if necessary, carried out at partner institutions abroad (*FR, CZ, JP, USA, etc.*)

In addition to the fluent knowledge of the English language (*writing and speaking*) candidates must have a completed 2nd (*master's*) cycle in the field of mechanical engineering, physics, electrical engineering or metallurgy.

From candidates we expect:

- reliability, independence, organization, ambition;
- analytical skills;
- communicativeness, dynamism, and motivation for research (team) work;
- completed 2nd (*master's*) cycle with an average grade master's degree (together with the assessment of master thesis) of at least 8/10;
- that no more than 4 years have passed since the completion of 2nd (*master's*) cycle;
- ability to work in an interdisciplinary, international environment;
- drivers licence (*desired – not mandatory*).

From candidate we expect to have prior laboratory experience in the field of manufacturing technologies and systems and the knowledge of the following software tools is desirable for training: 3D modelers (e.g. *SolidWorks*), CAM programs (e.g. *MasterCam, SprutCam*), Matlab and LabView, ROS, Design Expert. Any missing knowledge will be gained by the candidate as part of the training.