

Kratek opis usposabljanja mladega raziskovalca (*Short description of the Young Researcher's training*)

1. Raziskovalna organizacija (*Research organisation*):

Fakulteta za strojništvo, Univerza v Ljubljani

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

Prof. dr. Iztok Golobič, iztok.golobic@fs.uni-lj.si

3. Šifra in naziv raziskovalnega področja (*Research field*):

2.13 Procesno strojništvo

4. Kratek opis usposabljanja mladega raziskovalca (*Short description of the Young Researcher's training*):

Mladi raziskovalec se bo zaposlil v Laboratoriju za toplotno tehniko na Katedri za toplotno in procesno tehniko, kjer se bo vključil v raziskovalno delo programa Prenos toplote in snovi (P2-0223, 2015 – 2021) in bo sodeloval v tekočih raziskovalnih projektih in pri prenosu znanja v industrijsko okolje s področja toplotnih, procesnih in okoljskih tehnologij. Od kandidata se pričakuje, da se bo vpisal na doktorski študij Fakultete za strojništvo Univerze v Ljubljani na smer Energetske, procesne in okoljske inženirske znanosti.

Dogajanje v mejni plasti predstavlja glavno omejitev procesov prenosa toplote in snovi. Kandidatovo raziskovalno delo bo zato predvidoma ožje usmerjeno na področje izboljšane prenosa toplote in preučevanja interakcij vplivnih parametrov na trdno-kapljevito-parni mejni plasti. Pri tem bo posebna raziskovalna pozornost namenjena snovanju, izdelavi in testiranju naprednih funkcionalnih površin za izboljšani prenos toplote pri faznih spremembah s poudarkom na ploščnem prenosniku toplote in njegovi učinkovitosti. Pri eksperimentalnem raziskovalnem delu bo uporabljal metode hitrotekočega snemanja procesov prenosa toplote in snovi v vidnem in v infrardečem spektru ter fluorescenčno termografijo.

Usposabljanje kandidata bo povezano z mednarodnim sodelovanjem raziskovalne skupine, kjer se od kandidata v okviru njegovega študija pričakuje tudi krajše izpopolnjevanje na eni izmed tujih inštitucij, kot so Massachusetts Institute of Technology (MIT), University of Illinois at Urbana-Champaign (UIUC) ali v okviru sodelovanja z Evropsko vesoljsko agencijo (ESA) ter krajše izpopolnjevanje v podjetju Danfoss v Sloveniji in na Nizozemskem.

Young Researcher will be employed at the Laboratory for Thermal Technology (Chair of Heating and Process Engineering), where he/she will take part in research activities under the Heat and mass transfer program (P2-0223, 2015-2021), current research projects and transfer of knowledge in the fields of thermal, process and environmental technologies into the industrial environment. The candidate is expected to enroll into the PhD program (field of study: Energetical, Process and Environmental Engineering Sciences) at the Faculty of Mechanical Engineering, University of Ljubljana.

Processes in the boundary layer represent the main limitation of heat and mass transfer processes. The candidate's research will therefore be focused primarily on heat transfer enhancement and the study of interactions between influencing parameters at the solid-liquid-gaseous interface. Special research attention will be paid to the design, fabrication and testing of

advanced functionalized surfaces for enhanced phase-change heat transfer with a focus on the plate heat exchanger and his effectiveness. The candidate will study the heat and mass transfer processes using the methods of high-speed videography in the visible and infrared spectrum and fluorescence thermography.

The candidate's training will be connected with the international cooperation of the research group and the candidate will be expected to undergo a short training at one of foreign institutions including Massachusetts Institute of Technology (MIT), University of Illinois at Urbana-Champaign (UIUC) or within the group's cooperation with the European Space Agency (ESA) and short research training in company Danfoss in Slovenia and in the Netherlands.