PI name & contact details:	**Prof. Vojislav Krstić** **e-mail: krsticv@tcd.ie**
School: ***Has project been agreed with head (or nominee) of proposed registration school?***	**School of Physics** ***Yes***
Research Centre / group affiliation:	**Centre for Research on Adaptive Nanostructures and Nanodevices**
Research group / centre website:	**www.crann.tcd.ie**
PI website / link to CV:	**www.crann.tcd.ie/Research/Investigators/School-of-Physics/Prof-Vojislav-Krstic.aspx**

Brief summary of PI research / research group / centre activity (2 or 3 lines max):
Research on electronic transport, magnetoelectrical and -optical properties in novel nanosized and nanostructured materials, comprising magnetic-field- and temperature-dependent experiments. Materials investigated: Ge & InAs nanowires, graphene, chiral nano-metals, carbon nanotubes

Title & brief description of PhD project (suitable for publication on web):
Title: "Production & optoelectronic characterisation of topologically chiral nano-metals"

Topologically chiral metals of nanoscale size are a form of metamaterials which exhibit novel optical and magnetoelectronic properties due the fundamental symmetry-breaking they impose on their electromagnetic response function. Within this project the properties of such nanosized chiral metals are to be evaluated in view of their applications as optoelectronic functional components in energy-harvesting devices and optoelectronic converters. For this the intrinsic resonant plasmon wavelengths and the electrical conductivity of the chiral nano-metals are to be determined, also in the presence of a magnetic field. The project's experimental work implies the production of individual chiral nano-metals, more specifically three-dimensional nano-helices with different structural parameters, by using existing physical techniques and their electrical contacting. The probing of the nano-helix' optical and electronic properties is to be carried out by transmission/reflectance and (magneto)transport measurements, respectively, under predominantly ambient conditions.

Unique selling points of PhD project in TCD:

- the candidate will be exposed to new, only recently developed nanotechnology to produce nanoscaled metamaterials for a broad range of optical and optoelectronic applications

- the candidate will be able to work in a highly interdisciplinary team of people with expertise in electrical transport and optics combined of the PI's research group (production, transport, magnetoelectronics) and another leading research group at Trinity College Dublin (optics)

- the candidate will work on a project with clearly applied research character and will be thus exposed industry-relevant questions/problems and their solutions within such a framework

- the candidate will be supported by the hosting PI in participating in the Innovation Academy

Name & contact details for project queries, if different from PI named above:
-/-

Please indicate the graduates of which disciplines that should apply: **Physics** **Electrical Engineering** **Materials Science** **Nanoscience**	
Ciência sem Fronteiras / Science Without Borders Priority Area: *Please indicate the specific programme priority area under which the proposed PhD project fits- choose only one (tick box):*	
Engineering and other technological areas	
Pure and Natural Sciences (e.g. mathematics, physics, chemistry)	
Health and Biomedical Sciences	
Information and Communication Technologies (ICTs)	
Aerospace	
Pharmaceuticals	
Oil, Gas and Coal	
Renewable Energy	
Minerals	
Biotechnology	
Nanotechnology and New Materials	X
Technology of prevention and remediation of natural disasters	
Biodiversity and Bioprospection	
Marine Sciences	
Creative Industry	
New technologies in constructive engineering	