

PI name & contact details:	Professor Louise Bradley Email: bradl@tcd.ie
School:	Physics
<i>Has project been agreed with head (or nominee) of proposed registration school?</i>	Yes
Research Centre / group affiliation:	School of Physics and CRANN
Research group / centre website:	Nanophotonics
PI website / link to CV:	http://www.tcd.ie/Physics/people/Louise.Bradley/
Brief summary of PI research / research group / centre activity (2 or 3 lines max):	
<p>Prof. Bradley's group is interested in the control of light on the nanoscale with a view to applications in the areas of light emission, light harvesting and displays. The group carries out both experimental and theoretical research on manipulation of light using plasmonic structures. A range of nanoscale fabrication and characterization equipment is used to probe the underlying physics and design and test new devices.</p>	
Title & brief description of PhD project (suitable for publication on web):	
<p>Plasmonic structures for colour printing</p> <p>Metal nanostructures with dimensions smaller than the wavelength of light support localized surface plasmon resonances. The metal, shape and size of the nanostructure determine the absorption and scattering cross-sections. This project will investigate the possibilities for colour printing by implementing nanoscale features in embedded and elevated geometries on metallic surfaces. Computational tools will be used to determine the optimal metals, dimensions and shapes that can be used in different wavelength ranges for a variety of applications including sub-diffraction limited printing and optical filters. Among the properties of these systems that have to be considered are the visibility of the scattered light relative to the reflection from a background, the required density of features, the polarization sensitivity of the scattered light, viewing angle and tunability. The optimized patterns will be selected for fabrication and characterization</p>	
Unique selling points of PhD project in TCD:	
<p><i>projects should offer something that's not available in Brazil – specific equipment, multi-disciplinarity, aspects of structured programme, links with industry, placements, links with other research groups etc.</i></p> <p>The Trinity PhD is a structured PhD and students can access discipline - specific training, as well as generic and transferable skills. All PhD students are eligible to participate in the Innovation Academy which offers a Postgraduate Certificate in Innovation and Entrepreneurship to assist PhD students identify and exploit the value within their research.</p>	
Name & contact details for project queries, if different from PI named above:	
Please indicate the graduates of which disciplines that should apply:	
Physics, Electronic Engineering	
Ciência sem Fronteiras / Science Without Borders Priority Area:	
<i>Please indicate the specific programme priority area under which the proposed PhD project fits- choose only one (tick box):</i>	

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	