

<b>PI name &amp; contact details:</b>	<b>Michael Coey</b> jcoey@tcd.ie
<b>School:</b>	CRANN
<i>Has project been agreed with head (or nominee) of proposed registration school?</i>	
<b>Research Centre / group affiliation:</b>	<b>Magnetism and Spin Electronics Group</b>
<b>Research group / centre website:</b>	<a href="http://www.tcd.ie/Physics/Magnetism/">http://www.tcd.ie/Physics/Magnetism/</a> <a href="http://people.tcd.ie/gdavey">http://people.tcd.ie/gdavey</a>
<b>PI website / link to CV:</b>	<a href="http://www.tcd.ie/Physics/Magnetism/Profiles/mike.php">http://www.tcd.ie/Physics/Magnetism/Profiles/mike.php</a>
<b>Brief summary of PI research / research group / centre activity (2 or 3 lines max):</b> Ours is the leading research group on magnetism in Ireland, with interests ranging from new magnetic materials to spin electronics and unexplained magnetic field effects in chemistry and biology. Michael Coey was the Irish Researcher of the Year in 2012	
<b>Title &amp; brief description of PhD project (suitable for publication on web):</b>  <b>Magnetic Simulation of Structured Neuronal Circuits</b>  Neurones can be cultivated <i>in vitro</i> and grown on lithographically-patterned substrates in any desired two-dimensional structure with simple or multiple connectivity. These structures will be stimulated electrically with patch-clamp electrodes, and also magnetically in a non-contact mode using strong pulsed magnetic fields in order to establish the physical and electrophysiological basis for the contactless magnetic stimulation which is current being tested therapeutically.	
<b>Unique selling points of PhD project in TCD:</b> This is a chance to work on an interdisciplinary project in an internationally-reknown research group, with people from all over the world, and learn how to think practically about a fascinating problem. The project, based in Trinity College, is jointly supervised by Michael Coey (Physics) and Gavin Davey (Biochemistry). It involves leaning about magnetism, electrophysiology, neurons and soft matter. The work is cross disciplinary, and it will be a first step towards establishing the new subdiscipline of nanoneuronics. 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.	
<b>Name &amp; contact details for project queries, if different from PI named above:</b> Michael Coey ( <a href="mailto:jcoey@tcd.ie">jcoey@tcd.ie</a> ) Gavin Davey ( <a href="mailto:gdavey@tcd.ie">gdavey@tcd.ie</a> )	
<b>Please indicate the graduates of which disciplines that should apply:</b> <b>Biophysics, Biochemistry, Neuroscience.</b>	
<b>Ciência sem Fronteiras / Science Without Borders Priority Area:</b> <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)	X
Health and Biomedical Sciences	X
Information and Communication Technologies (ICTs)	

Aerospace	
Pharmaceuticals	
Oil, Gas and Coal	
Renewable Energy	
Minerals	
Biotechnology	X
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	