

PI name & contact details:	Prof. Matthias Möbius
School: <i>Has project been agreed with head (or nominee) of proposed registration school?</i>	Physics
Research Centre / group affiliation:	School of Physics, Trinity College
Research group / centre website:	Soft matter group, Foams & Complexity group
PI website / link to CV:	http://www.tcd.ie/Physics/people/Matthias.Moebius/index.php http://www.tcd.ie/Physics/Foams/
Brief summary of PI research / research group / centre activity (2 or 3 lines max):	
<p>We study the structure and flow of amorphous Soft Matter systems, such as foams, emulsion and granular media through experiments and simulations. Current research efforts are focused on the interplay between the microscopic dynamics and non-linear macroscopic flow of foams and emulsions and also on fundamental studies of bubble formation during electrolysis.</p>	
Title & brief description of PhD project (suitable for publication on web):	
<p>Bubble formation in electric & magnetic fields</p> <p>Micro-bubbles are widely used in microfluidic devices, for drug delivery and as ultrasonic contrast agents. With current techniques, size control and uniformity remain a challenge due to the hydrodynamic instability occurring during bubble formation. The goal of the project is to gain a detailed understanding of the bubble formation process for various liquids under a wide range of flow conditions. Furthermore, we would like to study how electric and magnetic fields influence this process and the resulting change in bubble size at detachment. This experimental project involves high speed imaging on the micron scale and analysis through custom written image processing software. Hydrodynamic simulations may also be used to complement experimental findings.</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, Physical Chemistry	
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	X
Pure and Natural Sciences (e.g. mathematics, physics, chemistry)	x
Health and Biomedical Sciences	
Information and Communication Technologies (ICTs)	
Aerospace	
Pharmaceuticals	
Oil, Gas and Coal	
Renewable Energy	
Minerals	
Biotechnology	
Nanotechnology and New Materials	
Technology of prevention and remediation of natural disasters	
Biodiversity and Bioprospection	
Marine Sciences	
Creative Industry	
New technologies in constructive engineering	