



## Research at the University of Limerick

Research is a key activity across the four Faculties at the University of Limerick. The University is focused on translational research – the application of fundamental research to topics of industrial, commercial and social significance. During the academic year 2007-2008 the University was awarded €41 million in research contracts. Contracts were awarded from agencies such as Science Foundation Ireland (SFI), the Higher Education Authority (HEA), the European Union (EU FP7 Projects) and Enterprise Ireland (EI). There are currently over 800 postgraduate research students registered at the University. The number of international research students, post-doctoral researchers and senior research fellows has grown significantly over the last number of years.

The University's research strategy is focused on the development of a number of key research areas. These include:

- Materials and Surface Science
- Structural Biology and Biomaterials
- Biophotonics
- Information and Communications Technology (software engineering, telecommunications & networks, test & reliability)
- Work, Quality & Productivity
- Humanities & Social Sciences
- Energy and Sustainable Environment
- Food and Health
- Applied Mathematics

### **Materials & Surface Science - [www.ul.ie/mssi](http://www.ul.ie/mssi)**

The Materials & Surface Science Institute (MSSI) at UL was established in 1998. The research strengths and interests of MSSI are as follows; (i) microscopy and nanomaterials, (ii) biomaterials, (iii) composite and glass materials, and (iv) bio/catalysis and clean technology.

The MSSI has recently been awarded €5M EU funding for a research project aimed at significantly improving an array of biomedical devices including



cardiovascular (heart) stents, urinary stents, orthopedic implants and grafts and developing MRSA resistant hospital gowns. The trans-European project team plans to use nanotechnology to develop MRSA-resistant textiles such as hospital gowns and beddings, which can kill bacteria and be self-sterilising. Project partners include nine other European agencies, as well as NUI Galway and Irish companies BeoCare and Cook Medical.

### **Biomaterials**

This key area focuses on biomaterials and biomedical engineering. In addition to research on vascular grafts and on artificial joints there are a number of highly successful research groups including the Stokes Research Institute (biofluidics-cancer diagnostics), and the Biomedical Electronics Research Centre.

### **Structural Biology**

UL focuses on the niche area of membrane proteins and in the wider context of protein isolation, crystallisation and three-dimensional structure elucidation. The SSPC (Solid State Pharmaceutical Cluster) is currently engaged in extensive research in the area of pharmaceutical crystallisation. Nine leading international pharmaceutical companies including Pfizer, Glaxo Smith Cline and Schering Plough are partners in this project.

### **Biophotonics**

Biophotonics is part of the National Platform in Biophotonics Imaging. The UL grouping has been involved with Royal College Surgeons Ireland for over two years and in this time has generated significant research outputs and established strong international links with institutions across Europe in the areas of polarisation spectroscopy and image processing, which have provided the possibility to look beneath the tissue (e.g. skin) surface and map red blood cell concentration (a key indicator of tissue viability). These developments now require further study for assessment of skin cancers, excessive blushing, and inflammation and tumour angiogenesis.



### **Lero – [www.lero.ie](http://www.lero.ie)**

The Irish Software Engineering Research Centre – Lero - was established in November 2005 with support from Science Foundation Ireland. Research focuses on specific domains, especially those where reliability is crucial, including automotive, medical devices, telecommunications and financial services. Lero also offers a four-year Structured PhD programme in Software Engineering.

### **Humanities & Social Sciences - Study of Knowledge in Society**

[www.ul.ie/isks](http://www.ul.ie/isks)

The Institute for the Study of Knowledge in Society (ISKS) was established in 2006 with the objective of building on UL's unique reputation in Ireland for integrated, interdisciplinary Arts, Humanities and Social Sciences research. ISKS has 47 associates, 60 PhD students, 4 postdoctoral fellows, and 1 research scholar. The Institute was awarded 2.5 million in PRTL4 for its 'Knowledge Interfaces' project. ISKS is based in the Faculty of Arts, Humanities and Social Sciences, but has associates in all of the faculties of the University, drawn from a range of diverse disciplines and departments including: Languages and Cultural Studies, Sociology, Politics and Public Administration, History, Law, Computer Science and Information Systems, Physical Education and Sports Science, Occupational Therapy, Psychology, Graduate Medical School, Economics, Irish World Academy of Music and Dance and Management and Marketing.

The current programme in ISKS includes the following themes or interfaces:

- Shaping Technology
- Understanding Health
- Changing Communication
- Governance and citizenship
- Modelling development
- Cultural cohesion and diversity
- Understanding equality

### **Energy and Sustainable Environment**

The Charles Parsons Initiative was formed in 2006 following the merger of the Centre of Environmental Research (CER), the Optical Fibre Sensor Research Centre (OFSRC), and Marine Robotics Research Centre (MRRC). Research



focuses on three main areas: energy, marine technologies and environmental monitoring & sustainability markers. CPI currently has 30 faculty and 60 researchers.

### **Food and Health**

UL has acknowledged expertise in the area of functional foods and the wider food health area. Funding from the European Union and the Department of Agriculture has led to significant growth in research activity. Key areas include: food quality, food safety, rapid food-borne pathogen detection, modified atmosphere packaging and nutrition/functional food ingredients. The University's strategy in this area is to ensure that food science and health occupies a central role in teaching and research activities, encompassing existing strengths and critical mass in Physical Education and Sports Science, in Health Sciences and in Clinical Therapies.

Further information on research activities at the University and on individual research institutes and centres may be found on the Research Office website [www.research.ul.ie](http://www.research.ul.ie) and on the Graduate School website [www.graduateschool.ul.ie](http://www.graduateschool.ul.ie)