

# PATHWAYS BETWEEN INDUSTRY & ACADEMIA

## Irish Success in the Marie Curie IAPP Scheme

*Do you have an idea for a new research project that requires  
expertise from both academic and commercial partners?*

*Then the Marie Curie...  
**“Industry-Academia Partnerships and Pathways (IAPP)”**  
scheme is for you!*

*“Nothing in life is to be feared, it is only to be understood.  
Now is the time to understand more, so that we may fear less”*

*IAPP Information Day, Tuesday 7th April (see back page for details)*



Irish Universities Association  
Cumann Ollscoileanna Éireann

Are you involved in trans-national research collaborations with partners from both **industry and academia** and would like to expand your activity?

**€65m**

...will be awarded to innovative inter-sectoral and trans-national research projects, for staff exchanges and recruitment of new researchers.

*What are you waiting for?!*

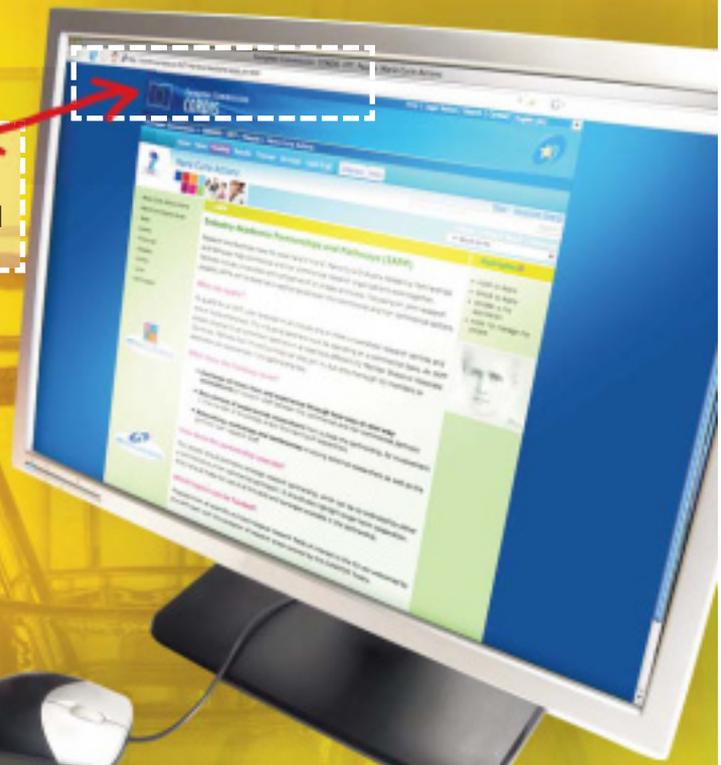
Deadline for submission of proposals is  
Monday 27th July 2009!!

*For more details on the scheme go to:*

[http://cordis.europa.eu/fp7/mariecurieactions/iapp\\_en.html](http://cordis.europa.eu/fp7/mariecurieactions/iapp_en.html)

*On the following pages you can read about some of the Irish-led IAPP projects that were successful in the 2008 call.*

- GigaRadio
- MABFUEL
- Target-Melanoma
- FIRE
- CarMesh
- Notes

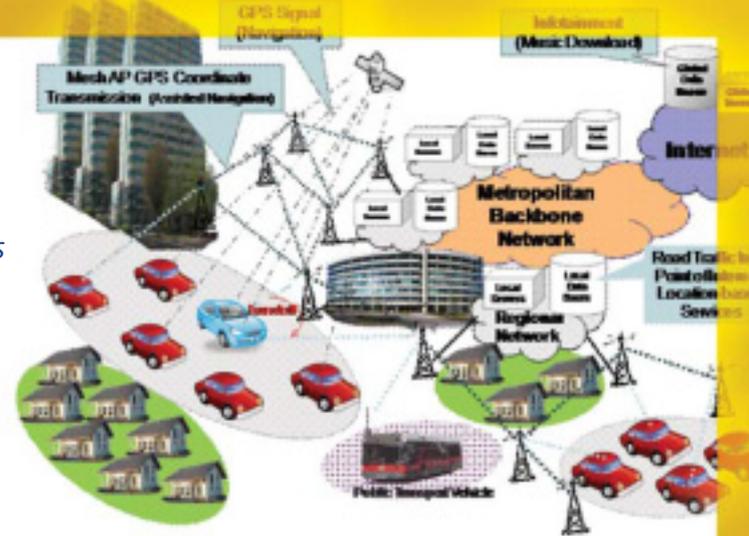


## CarMesh

*Ubiquitous Wireless Mesh Networks for Next-Generation Personal Digital Automotive Services*

Contract Value: €770,000

Coordinating Partner:  
PEL Group University College Dublin



The project acronym is composed of two words, "car" and "mesh", that capture precisely what this project is about. The CarMesh project uses WiFi-based mesh network technology to provide digital automotive services to car drivers and passengers in metropolitan areas. These services are usually called "infotainment" services, since they combine entertainment and information aspects. Infotainment services could be related to safety, traffic information, or other location-based services that might announce nearby business and utility points.

The main innovation in the CarMesh project concerns its concept of a smart city with seamless car-to-infrastructure communications, thereby improving safety, traffic routing efficiency, and enhancing the driving experience through ambient location-based digital services provisioning.

CarMesh is an IAPP project over 48 months, mostly covering all levels of staff secondments, international research workshop organisation, and some staff recruitment. The project stems from a synergy and common research interest between two partners: the PEL group in University College Dublin (Ireland) and Telcordia Technologies (Poland). The two partners were looking for a framework in which they could grow their research collaboration and the Marie Curie IAPP scheme seemed perfect for the type of collaboration the CarMesh partners were seeking. Indeed, the very nature of the IAPP scheme makes it very suitable for industry-academia research collaborations, where research infrastructures and resources are already available at each institution.

UCD brings an advanced knowledge of wireless mesh network design, analysis, and prototyping, while Telcordia Technologies brings its experience in developing and commercialising solutions for car communications and automotive services (mainly deployed in the US). In the CarMesh project the partners will investigate ways to integrate their respective systems and develop added-value services on top.

UCD researchers are particularly keen to interact with Telcordia and acquire their knowledge in automotive services and vehicular communications. Researcher secondments – the main collaboration vehicle in IAPP schemes – are very suitable for knowledge transfer between academia and industry.

## **FIRE**

*Fluid, Ions and Radiation Ensemble in Integrated Plasma Modelling*

Contract Value: €1.75m

Coordinating Partner:

UCD School of Physics Atomic, Molecular, and Plasma Group

**Optimising plasma creation for semiconductor manufacturing requires knowledge in atomic physics, plasma physics, spectroscopy, nanotechnology and pulsed power, as well as atomic and plasma modelling. The FIRE project aims to significantly enhance computational modelling of source optimization and to benchmark theoretical calculations to experimental measurements.**

The current lithographic light source used in integrated circuit manufacturing is a 193-nm excimer laser, capable of producing sub-micron transistor gate widths. To reduce chip sizes further, it is intended to use a plasma created either by an intense laser or high-current pulsed discharge as the next generation lithography, 13.5-nm, extreme ultraviolet (EUV) light source.

FIRE is a collaboration between the UCD School of Physics Atomic, Molecular, and Plasma group, a French high technology SME (EPPRA) and the Russian Keldysh Institute for Applied Mathematics (KIAM).

UCD has one of the best equipped spectroscopy labs in the world and has played an integral role in developing a suitable high volume manufacturing EUV source. EPPRA is a French high technology SME that provides industrial applications in pulsed power. KIAM is involved in mathematical problems in space and atomic and thermonuclear energy.

The Marie Curie Industry-Academia Partnerships and Pathways scheme provides a great opportunity to transfer knowledge about new practices between industry and academia, as well as giving broad research training experience to a number of post-graduate researchers. The impact of the IAPP grant will be to significantly enhance industry collaboration, while providing a comprehensive source optimisation modelling tool with greater 3-D visualisation.

UCD will gain exposure to invaluable industry practices in discharge plasma technology and plasma modelling, resulting in an innovative product that will ensure ongoing research. It is hoped that increased collaboration will also lead to a spinoff company in Ireland.



## GigaRadio

*Radio technologies for short range gigabit wireless*

Contract Value: €1.3m

Coordinating Partner:

Institute of Electronics, Communications and Information Technology  
(ECIT) at Queen's University Belfast

**The objective of the GigaRadio project is to develop underpinning radio technology for Wireless Personal Area Networks (WPANs). WPAN technology is already familiar as Bluetooth® technology used for short range wireless connection of computers and peripherals. In the consumer domain the technology will enable the distribution of high definition video content around the home, connecting high definition video players with displays. The technology will also allow the rapid transfer of vast amounts of data for file sharing or for the purchase and downloading of digital movies at kiosks in the retail environment.**

The GigaRadio project will establish a project consortium including The Institute of Electronics, Communications and Information Technology (ECIT) at Queen's University Belfast, TDK Electronics Ireland Ltd and Decawave (Ireland) Ltd. All three organisations are active in the design of systems for next generation wireless communications.

ECIT has a strong track record in industrial engagement and as a consequence the IAPP scheme was particularly attractive as a means to develop new and existing private sector relationships. Using the unique situation of two European jurisdictions on the island of Ireland we have been able to establish a secondment based consortium between organisations in relatively close geographic proximity. Essentially, we have established a "cross-border" research and development programme funded by Europe.

The four year project will expend 126 researcher months and will involve staff exchanges between the partners. Each partner brings different technical capabilities to the project and through secondments we anticipate significant knowledge transfer to take place.

The 60GHz wireless communications arena will generate significant commercial opportunities. Major consumer electronic companies are already including LCD TVs with wireless video capability. The two industrial partners in the project will take the lead in transitioning the solutions developed in the project to semiconductor and consumer electronics end customers. The GigaRadio project has the potential to see Ireland, north and south, develop a cluster of novel and world-leading capability in next generation, short range wireless communications.



## MABFUEL

*Marine Algae as Biomass for Biofuels*

Contract Value: €1.43m

Coordinating Partner:

Daithi O'Murchu Marine Research Station Ltd

**Using algae to produce biodiesel may be the only viable method by which to produce enough bio-fuel to replace current world petrol/diesel usage. Micro-algae in particular have much faster growth-rates than terrestrial crops. The yield of oil from algae is estimated to be 7 to 31 times greater than the next best crop, oil of palm. As terrestrial contributions are greatly limited by the finite area of land available under any culture method, it is essential that the potential of the marine environment as a source of biomass for bio-fuel production is realised.**

The group, co-ordinated by the Daithi O'Murchu Marine Research Station Ltd (DOMMRS), intends to facilitate a multi-disciplinary research programme aimed at the acquisition of new knowledge and skills in the production of biofuels from native seaweed and cultured micro-algae. The Marie Curie IAPP programme was chosen as the project required both academic and industrial skills. We also had previous experience of the scheme and are currently working on a genetic breeding programme for scallops also funded by this programme.

The essential skills to meet the objectives were not available in any one discipline or in any one country. The seven partners have expertise in aquaculture research, micro- and macro-algal culture, commercial bio-fuel production, oil analysis, physical chemistry, bio-fuel extraction technology and process and risk assessment. Irish Partners are DOMMRS, Green Biofuels Ltd and Dundalk Institute of Technology. International partners are Queens University Belfast, Gaziantep University, Turkey, Ege University, Turkey and Dolphin Sea Vegetable Company, UK.

Some of the benefits of this project to the hosts and broader European area include the reduction in green house gas emissions from the product/s developed; and the creation of a renewable energy source which can be produced domestically thus contributing significantly to the economy. The product will help to meet the government target for bio-fuel production (EC Directive 2003/30) and improve the self-sustainability of the production sector, which in turn would have a positive socio economic impact in peripheral coastal regions.



## NOTES

*Non-stationary response of spatially Extended Structures*

Contract Value: €400,000

Coordinating Partner: School of Engineering, Trinity College Dublin

**Structures like long spanned bridges, tunnels, and pipelines can be significantly affected by vibrations caused by traffic, for example. Most of the attempts to analyse and understand this phenomenon in industrial analysis use stabilising random vibration theory. The reality is that there are in fact complex nonstationary phenomena and this model is too simple to properly understand this phenomenon. A nonstationary theory using an advanced signal processing technique based on wavelet analysis will be developed in NOTES and will be plugged into software jointly with the industrial partner Plaxis BV with a possibility for future industrial use to resolve the problem.**

The Marie Curie IAPP scheme was chosen to develop a common platform between a research led academic institution and a company with complimentary expertise in this area. Trinity College Dublin (TCD) and a commercially successful and publicly acclaimed SME Plaxis BV will work together closely to transfer the technical expertise in the field of dynamic soil-structure interaction and earthquake geotechnical engineering from academia to industry for wider public usage. TCD brings in valuable wisdom and deep insight to the problem gained through highest quality of research. Plaxis BV adds to the project their skills in developing user-friendly robust software and their expertise to transform research outcome into industrial software. The funding of over €400,000 will enable the employment of two experienced researchers and secondments for a total of 6 researchers with various levels of experience between the two partners over a period of 4 years.

The IAPP scheme will provide a mechanism for the Structural Dynamics and Vibrations research group in TCD to have a closer connection to industry and allow them access to the process of transforming research outcome into an industrially usable product in form of software. The project will also have a very positive impact on Plaxis BV by exposing their key engineering staff to new ideas and concepts for technology development.

The senior doctoral researchers from TCD will benefit from the work experience they will acquire from being associated with a high profile software company in the geotechnical industry giving them a sound background to start their career. In addition, the plug-ins developed for the software will provide the researchers in TCD a perfect route to technology transfer opportunities.



## Target-Melanoma

*Molecular Dissection of Melanoma Progression: An integrated Pan-European Approach*

Contract Value: €1.75m

Coordinating Partner:

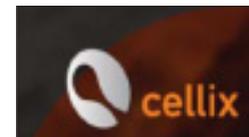
UCD School of Biomolecular and Biomedical Science

**Malignant melanoma is a highly aggressive disease, with minimal treatment options for patients that present in the latter stages. In our Industry-Academia Partnerships and Pathways (IAPP) project, Target-Melanoma, we are investigating the molecular basis underlying this difficult-to-treat disease, focusing on the discovery of new biomarkers (i.e. indicators) or potential targets for therapy.**

Target-Melanoma involves collaboration between 9 partners across 5 EU countries, including 5 academic institutions and 4 SMEs. To implement our project, we believed that the Marie Curie IAPP program was the best funding opportunity to facilitate transfer of technological and intellectual expertise. The total project budget of just over €1.75M will fund both secondments and recruitments between the 9 partners.

This project is wide ranging and will investigate several areas of melanoma biology and advanced biomedical research technology. Specifically, several of our academic groups bring expertise in relation to the study of melanoma progression and epigenetic mechanisms. In addition, they will be providing access to tumour samples, which will be used throughout the project. The SMEs are providing access to and training in advanced technologies, and this project will allow them to expand into the cancer/melanoma area.

In regard to the Irish economy, it is worth noting that UCD is acting as the co-ordinating institution of the project. Moreover, there are three Irish SMEs involved in Target-Melanoma, namely Cellix, SlidePath and OncoMark. The project will support multiple secondments between the Irish SMEs and UCD, as well as the other European-based academic participants. In addition, it will also support recruitment of 3 experienced researchers into the Irish SMEs, which will lead to further development of the products/technology offered by the SMEs. Overall, this project will have a very positive impact on Ireland, by supporting and advancing its biomedical research capacity by high-level training of scientists, as well as leading the way to improvements in the management and treatment of melanoma patients.



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## Information Day on the Marie Curie IAPP Scheme

***Tuesday April 7th 2009, 10.30am-3.30pm***  
***Science Gallery, TCD, Pearse St, Dublin 2***

- **The Technicalities** - overview of the IAPP Scheme
- **Available Support** - financial, mobility, proposal preparation
- **Steps to Success** - advice from successful applicants of the 2008 call
- **Brokerage and Networking** - opportunity to present project ideas and look for project partners

### ***Registration***

Places are limited.

To register email [lia.osullivan@iua.ie](mailto:lia.osullivan@iua.ie) with full name and organisation details. Registration deadline is the 31st March 2009.

Information on the programme and how to participate in the brokerage session is available on:

[www.iua.ie/marie-curie/events-and-training/IAPPApril7th09.html](http://www.iua.ie/marie-curie/events-and-training/IAPPApril7th09.html)