



DIT Hothouse is the award winning Innovation and Technology Transfer Centre at Dublin Institute of Technology. The centre is responsible for the commercialisation of research, the transfer of technology from DIT to industry and the management of the Hothouse Venture Programme for business start-ups. DIT Hothouse has assisted over 250 new firms that have created 1,000 jobs and has licensed over 40 new technologies to multi-nationals and Irish SMEs.

### ● Technologies to License

#### Information and Communications Technologies

- 1 **Interactive Rich Media Location Based Tour Guide - mobiSurround** is an interactive location based mobile tour guide for public spaces such as galleries, exhibitions, zoos etc. It features real-time navigation and high definition media content including speech, music and sound effects which update automatically as the user moves around a given location.
- 2 **Mobile Learning Application for Students of Chinese - ChiPs** is a dialogue-based, mobile application for learners of Chinese which helps them with the correct pronunciation of tones using a Western-friendly display.
- 3 **Natural Dialogue Learning Software for Students of English - FLUENT** is a new language learning software and database package which teaches real, natural dialogue to learners of spoken English. The technology is designed as a web-based application that can be implemented for desktops, tablets or smart mobile devices.
- 4 **Tunepal** is a 'find-by-playing' search engine application for traditional music and has been listed in the top twenty cultural apps available for the iPhone by the Sunday Times along side Shazam and Spotify.
- 5 **3D Character Animation Technology** improves the production workflow for animators and has enhanced life-like qualities. The technology is semi-automated, character and language independent and re-usable as it employs pre-defined gesture and movement libraries.
- 6 **Universal Interactive Touch Table - Projectable** is a groundbreaking new projection technology that instantly transforms a passive surface such as a table, kitchen counter, workbench or whiteboard into a smart interactive surface for collaboration or individual work. Users can interact with a computer display projected onto the surface simply by tapping on it with their fingers.
- 7 **Interactive Music Archive Access System (IMAAS)** improves search and audio processing functionality using 'musical' queries such as tempo, instrument type, key and time signature.



- 8 **eDocument Security System – Stegocrypt** This technology authenticates image based e-documents (certificates, letters, signatures etc) using both encryption and steganography to hide information, without reference to a host image.
- 9 **Multi-Algorithmic Encryption on a USB Key - Cryptic** is a new multi-algorithmic encryption technology that provides enhanced security on storage devices through the use of a unique set of algorithms hidden on a USB key.
- 10 **Compact UWB Antennas** provide enhanced performance at low cost. The multiband antenna has a frequency range of 2.4GHz to 10.6 GHz that covers Bluetooth/WLAN and all the bands in the FCC and EU Ultra Wide Band standards.

### Industrial Technologies

- 11 **Advanced Surface Treatment for Protection against Wear and Corrosion** An advanced surface treatment for the protection of surfaces against corrosion and combined wear/corrosion (Tribocorrosion) degradation. It can be used as a pre-treatment for corrosion protection in the aerospace and automotive industries and can be used as a sealant on any conducting surface including metals.
- 12 **Mass Produced Individualized Anti-Counterfeit Hologram** Helps safeguard against counterfeit products through the mass production of individualized holograms each containing a unique number or code. This technology would be of particular interest to medical devices and pharmaceutical manufacturers who want to enhance product security.
- 13 **Humidity Sensitive Holograms** change colour with the humidity of the surrounding environment. Applications include humidity measurement/indication, security authentication and brand protection for pharmaceuticals, electronics and consumer goods.
- 14 **Desktop Photolithography** allows direct, pixel by pixel, writing of computer generated holograms using a single beam and ordinary incoherent light. Applications include holographic security and the printing of passive optical devices and components.
- 15 **Disposable Fibre Temperature Sensors** are inexpensive single-loop, single-mode fibre sensors that have a linear response with temperature and a high performance in terms of range (-40°C to +400°C) and resolution (<0.5°C).



## Lifesciences

- 16 **Cell Detection and Analysis in Cytopathology** This software provides complete automation in the detection and segmentation of cells for applications in cytopathology using optical microscopy. It allows users to detect and isolate a cell and cell nucleus from a digital image composed of a large complex of cells.
- 17 **Holographic DNA Detector** uses polymer film to create a holographic pattern, highly visible in room light wherever the target DNA is present. It does not require expensive fluorescence hardware.
- 18 **Cervical Cancer Analyser** is an automated diagnostic system for screening cervical cancer that has high specificity and high sensitivity. Based on algorithms to analyse raman spectra of sample cells and classify samples by comparison with a pre-defined sample database. Both sensitivity and specificity are greater than 99% accurate because unlike current cervical cancer screening processes, there is less reliance on human subjectivity in favour of more automation. It can be used with conventional microscopes or more advanced image analysers and it can also be used as a point of care system.
- 19 **Skin Cancer Screening System** screens for skin cancer using photographs and a knowledge database (KDB) that can be used in a general practice. The screening system delivers high accuracy and automation through the application of advanced texture analysis using fractal geometry.
- 20 **DNA-Targeted Copper Anticancer Agents** effectively kill cancer cells by targeting their DNA. The compounds have shown excellent in vitro results against a wide range of tumorous cells including; lung, breast, prostate, colon and cisplatin-resistant ovarian.
- 21 **Antioxidant Rich Food Ingredients** A novel process that converts apple waste into an antioxidant rich food ingredient through the extraction of apple peel derived polyphenols.
- 22 **Light-Activated Anti-Bacterial Powder** is highly effective against harmful bacteria such as E. Coli and MRSA. This patented self-sterilising material is activated by indoor light and reduces the need for repeated cleaning using chemicals such as bleach. This powder can be incorporated into a number of products such as paints, fabrics, furniture etc.
- 23 **Production Analyser for Industrial Fermentation Processes** Provides a method of quantifying the dynamic behaviour of filamentous microbes from a set of digital images for the optimisation of industrial fermentation processes. The system has the potential to deliver significant cost savings and improved efficiency in biomass production through effective environmental control and monitoring of industrial fermentation processes.



- 24 **Non-Thermal Preservation for Juices** DIT researchers have developed protocols for the ozonation and ultrasonication of fruit juices. These non-thermal technologies pasteurize and extend the shelf life of fruit juices and do not affect their quality.

### Clean Technologies

- 25 **Compact Hot Water Energy Saver-Warmer Wedge** A compact high energy storage device that delivers major savings for domestic water consumers. It clips onto the outside of hot water cylinder tanks, capturing energy collected at off-peak rates and releasing it back into the tank during peak hours to keep the water hot for longer periods. By reducing energy demand during peak hours it is cost-effective and environmentally friendly.
- 26 **Wind and Wave Farm Power Prediction** This software uses new statistical modelling methods to more accurately estimate the power generated by wind and wave energy conversion technologies based on measurements of the wind velocity and associated variables. The technology can assist with selecting the optimum location for wind and wave farms and monitor and predict their likely power output.
- 27 **Chromate Free Sol-Gel Pre-Treatment and/or Primer for Aluminium** is thinner (<5mm) and lighter than conventional chromium free primers (50mm) leading to cost savings in aircraft fuel consumption. It is also easy to apply and has applications within the aerospace, automotive, architecture and construction industries.
- 28 **Energy Efficient HVAC System** greatly reduces energy requirements and operational costs. It involves a cost effective air bypass system and an air equalisation system to reduce air pumping requirements and eliminate hotspots.
- 29 **Energy Efficient Data Centre Cooling System** A data centre cooling system that uses ambient cooling technologies to greatly reduce energy requirements. The system includes a patent-pending air flow control arrangement.
- 30 **Integrated Switchable Mirrors for Solar Panels** uses switchable mirrors for solar energy concentration to direct solar power to photovoltaic (PV) cells or solar thermal systems.



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