

## CDT and CIT Demonstrate ITO-Free Lighting Panel

**London, United Kingdom – April 6, 2010** – Cambridge Display Technology today announced the production of an ITO-free P-OLED lighting device using a fine copper mesh. This work was enabled by its work with Conductive Inkjet Technology and their joint 'NOMAD' project funded by the Government-backed Technology Strategy Board.

Project NOMAD started in 2007 with the aim of developing technology for the next generation of low-cost OLED devices by combining advanced manufacturing methods with state-of-the-art polymer OLED materials (P-OLEDs) to enable significant reductions in manufacturing costs for devices such as P-OLED lighting panels.

This demonstration has shown the potential for patterned metal tracking using electroless metal deposition as a replacement for both Indium Tin Oxide (ITO) and traditional sputtered tracking. ITO is widely used as a transparent conductor in the displays, lighting and photovoltaics industries, but is in short supply and expensive. Moreover, ITO is very brittle and can crack during processing, limiting its attractiveness for the next generation of flexible electronic devices. ITO has a high resistivity, this creates problems for large area lighting panels due to the large voltage drops encountered towards the centre of the device giving rise to an unacceptable drop-off in light intensity

The manufacturing method demonstrated in the NOMAD project reduces costs by eliminating ITO along with significantly reducing the capital and processing costs for patterning metal bus bars which distribute current and ensure the uniformity of light emission. CIT's process eliminates the need for traditional vacuum sputtering equipment and etching tanks.

CIT's photoimageable materials have been used to produce sub 10micron copper tracks on glass substrates, resulting in a highly transparent, highly conductive surface without the voltage drops of ITO based technologies. By applying a conductive polymer to these grids a true ITO replacement has been demonstrated and this has allowed a CDT to solution process its advanced layers of white emitting pOLED materials. This development is extremely encouraging and once device optimisation has been completed, it is expected to lead to a significant increase in device efficiency

Jim Veninger, General Manager at CDT commented, "I am impressed by the quality of the fine mesh generated by the CIT process and the resulting emission uniformity of our lighting devices without the need for ITO. While further development is required, I can see CIT's technology supporting low-cost processes for OLED lighting in the near future." Chris Malley, CEO at CIT commented, "It is extremely encouraging to see functioning device being manufactured that, not only offer the potential for high volume solution processable manufacture, but also offer lower cost and higher performance."

The project is being part-funded by the UK Government's Technology Strategy Board and their Lead Technologist in Electronics, Photonics and Electrical Systems Mike Biddle commented "We are extremely happy with the progress made in this project, and to see that this new approach may soon be ready for commercial exploitation in OLED lighting. This is yet another great example of world class businesses coming together in the UK to develop innovative technology with global market potential."

### About CDT

Cambridge Display Technology (CDT), a Sumitomo Chemical Group Company headquartered in Cambourne near Cambridge in the UK, is a pioneer in the development of polymer organic light emitting diodes (P-OLEDs) and their use in a wide range of electronic display products used for information management, communications and entertainment. P-OLEDs are part of the family of OLEDs, which are thin, lightweight and power efficient devices that emit light when an electric current

flows. P-OLEDs offer an enhanced visual experience and superior performance characteristics compared with other flat panel display technologies, and have the key advantage that they can be applied in solution using printing processes. Together, CDT and Sumitomo lead the research and commercialization of light emitting polymer technology used in displays and lighting applications. More information on CDT can be found at: [www.cdtltd.co.uk](http://www.cdtltd.co.uk).

#### **About CIT**

Conductive Inkjet Technology (CIT), a wholly-owned subsidiary of Carclo plc [FTSE: CAR], has developed a unique and revolutionary family of catalytic materials and associated equipment to address the needs of the rapidly emerging printed electronics market. CIT's catalytic inks can be used with inkjet and flexographic printers, and a variation of that ink can be photoimaged to support the higher resolution requirements of touch screens and displays. CIT has focussed on roll to roll manufacturing methods and has developed a full suite of equipment to support processing across a variety of markets. More information on CIT can be found at: [www.conductiveinkjet.com](http://www.conductiveinkjet.com).

#### **About the UK's Technology Strategy Board (TSB)**

The Technology Strategy Board is a business-led executive non-departmental public body (NDPB), established by the Government in 2007 and sponsored by the Department for Business, Innovation and Skills (BIS). Its role is to promote and support research into, and development and exploitation of, technology and innovation for the benefit of UK business, in order to increase economic growth and improve the quality of life. The activities of the Technology Strategy Board are jointly supported and funded by BIS and other government departments, the devolved administrations, regional development agencies and research councils. For further information please visit: [www.innovateuk.org](http://www.innovateuk.org).

#### **Editorial Contact**

##### *CDT Ltd*

Eric Mayes  
Director, Commercial Development

email: [emayes@cdtltd.co.uk](mailto:emayes@cdtltd.co.uk)  
Tel: +44 1954 713600

##### *Conductive Inkjet Technology Ltd*

Chris Malley  
Chief Executive Officer

email: [cmalley@conductiveinkjet.com](mailto:cmalley@conductiveinkjet.com)  
Tel: +44 1223 424323

##### *Technology Strategy Board*

Paul Whittemore  
Head of Communications

email: [paul.whittemore@tsb.gov.uk](mailto:paul.whittemore@tsb.gov.uk)  
Tel: +44 1793 442769