



## **SmartKem's Novel Organic Semiconductor Materials Achieve 'Better Than Amorphous-Silicon' Performance**

(July 5th, 2011) – SmartKem Limited, the developer of novel, printable organic semiconductor materials and ink formulations for flexible electronics announced that its advanced semiconductor materials have achieved performance “better than amorphous-silicon” in recent testing.

The testing was carried out by the UK's National Printable Electronics Technology Centre (PETEC) by incorporating SmartKem's semiconductors into flexible thin film transistor (TFT) panels and assessed performance using a range of industry standard test methods. The device preparation was performed in ambient air indicating the excellent stability of this material ink formulation.

SmartKem's advanced semiconductor materials excelled in testing and achieved a significant increase in TFT mobility performance over many other commercially available organic equivalents, across a range of transistor geometries. For example the average mobility across a range of devices at 30  $\mu\text{m}$  channel length was recorded as  $4.0 \text{ cm}^2 / \text{Vs}$ . Even more impressive was the short channel length performance with a recorded mobility of  $2.5 \text{ cm}^2 / \text{V}$  at 4  $\mu\text{m}$ .

SmartKem believes that the PETEC test results confirm these organic semiconductor materials are now aligned with the current and future performance requirements of printable transistors for the implementation of flexible drive electronics for display-based applications such as ePaper, HD-LCD and OLED.

There is a strong drive in the electronics sector towards printable transistors that will enable low cost, portable devices such as thin-film TV's, lightweight smart phones and tablet PC's. Organic semiconductors can be used to fabricate lightweight, flexible electronics and are considered an exciting alternative to silicon semiconductors. Carefully formulated 'inks' can be used to print circuits onto thin flexible substrates such as plastics and paper, enabling new form-factor electronics and radically simplifying the manufacturing process.

PETEC is a highly regarded technology institute, prototyping and characterising the performance of printable electronics, assisting businesses in the industry by testing and reporting on their processes in a production quality environment.

“We are thrilled that our organic semiconductor materials out-performed amorphous-silicon in recent independent testing. Given that this is our entry level technology we really feel that we can continue to improve and develop groundbreaking new technology”, comments Steve Kelly, CEO of SmartKem. “This is an exciting time for the business. Our materials have the potential to enable a substantial breakthrough in the development of high performance printable transistors – the holy-grail for the electronics market. We have already commenced sampling programs with major device manufacturers in the UK and mainland Europe and are putting plans in place to expand this test program into the Asia market.”

For more information on SmartKem and its innovative materials, please call 01745 535190, email [enquiries@smartkem.com](mailto:enquiries@smartkem.com) or visit [www.smartkem.com](http://www.smartkem.com)

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**About SmartKem**



SmartKem is a high tech enterprise developing an exciting new technology platform focusing on high performance/high value organic semiconductor materials that can be 'printed' to form electronic circuits onto lightweight, rugged and low cost polymer films. Based in the world class Optic Technium centre, North Wales, SmartKem's main objective is to respond to the demand for low cost, low weight, low energy, rugged electronics. The SmartKem team has proven expertise and experience in the fields of organic semiconductors, specialist ink-technology and printable transistors and was a recent winner of the inaugural Oxford Venturefest gold award for 'British Technology Innovation of the Year'.

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