Hexagon Tower SmartKem

Bev Brown, CTO at SmartKem, describes how the company is revolutionising the display industry with its truFLEX® semiconductor platform, leading to its rapid expansion at Hexagon Tower.

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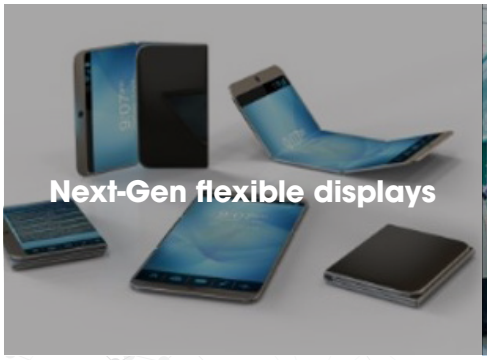
Please can you start by telling us a bit about SmartKem.

SmartKem was founded in 2009, and is a leading manufacturer and supplier of organic semiconductor and electronic materials that can be converted into transistors to drive high-tech OLED and LCD displays. Our truFLEX® semiconductors can be printed onto flexible polymers as thin as a piece of clingfilm, enabling the replacement of silicon backplanes – which are inflexible – with something that is rollable or even foldable!

What are the applications of this technology?

It's an exciting area which is evolving very quickly. Our technology is applicable to a wide range of industries and applications, and is especially being used in next-generation, wearable, mobile, automotive and embedded electronic displays. Foldable phones are a popular application, and truFLEX will help to enable an improved user interface, allowing large screens that can be folded to fit into a pocket, but offering more robustness than traditional screens that break easily. Wearable technology is also on the rise and, if you look at the current smart watches and fitness trackers on the market, they have fairly clunky electronics with thick form factors and their displays are rigid. Our technology allows the development of much more ergonomic plastic bands – just a few millimetres thick – with a fully integrated flexible display.

On a larger scale, printed sensors or conformable displays in the automotive industry are gaining a lot of interest. At the moment, even in high-end cars, the display is often a disappointing flat pop-up LCD touchscreen. However, flexible displays that are conformable to the shape of the dashboard are already at a prototype stage; they will offer more aesthetically pleasing interfaces for the customer, and are an exciting prospect for designers, who will no longer be constrained by the need to designate a flat space for manufacturers."



What are the benefits of this technology?

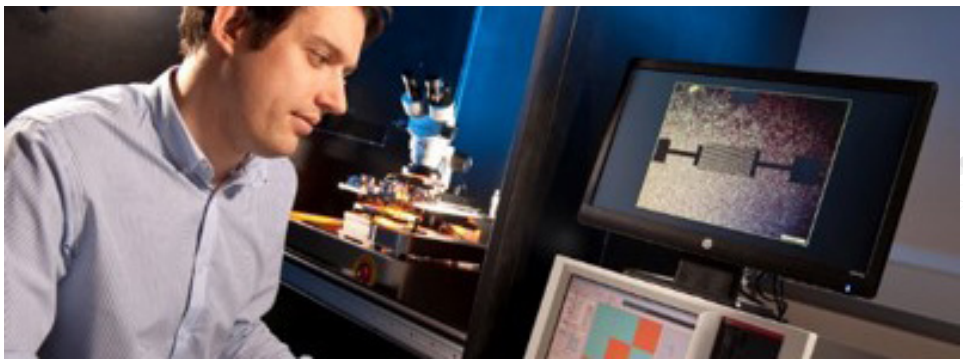
Manufacturing silicon backplanes is typically very energy- and chemical-intensive. truFLEX offers a thin film transistor platform that can be coated onto plastics at a low temperature, which is more economical, energy efficient and environmentally friendly. Not only does this benefit production, but the displays produced from our technology are much lighter, have a thinner form factor for the backplane, and are unbreakable, while being easily scalable to large displays. If you drop a device with a SmartKem backplane, you don't have to worry about the transistors breaking – they are very robust.

Have you always been based at Hexagon Tower, and why did you choose to locate there?

No, the company's first technical facility opened in 2009 and was in Wales. In 2014, we secured funding from a consortium of high-quality investors, and could focus on the development of the technology. We needed an upgraded technical facility to support this growth and expansion, and Hexagon Tower offered us everything we needed. The main attraction was the geographical location of the facility coupled with access to a pool of local chemical expertise, especially in organic molecule synthesis, making recruitment of top-class chemists easier. The site itself offered excellent facilities that are incredibly cost-effective; we've hosted some of the largest display companies in the world and our investors here, and they've been very impressed at the set-up we have.

Are there any additional benefits to the site?

It's helpful to be in close proximity to other scientific and technical companies in the tower and in the local area. We're producing materials to lower than parts-per-billion levels of impurity and this requires access to sophisticated analytical techniques. We couldn't afford to invest in the equipment needed for this analytical work as a start-up, but found that an analytical company was already based at the Hexagon Tower with a full suite of the necessary equipment. As a result, we outsource a lot of our analyses to the company which is very useful. We are also near to the new Graphene Centre, and have good ties with Manchester and Liverpool Universities; we currently have five physics graduates working on making transistor arrays as part of our peripheral activities. Overall, it's a great place to be, the new reception area provides an excellent space for greeting clients, and the site services team is very receptive to any requests we make – we're very happy here.



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To learn more about SmartKem, visit www.smartkem.com/
To find out more about the facilities and opportunities at Hexagon Tower, visit www.hexagon-tower.co.uk