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Merck KGaA, Darmstadt, Germany, and FlexEnable take major step forward in Plastic Liquid Crystal Display technology

- **New technology makes bendable, light, thin and unbreakable Liquid Crystal Displays (LCDs) possible**
- **Application of organic transistor technology offers a route to low-cost solutions for volume manufacturing**
- **Concept will be attractive for many LC modes**

Darmstadt, Germany, February 11, 2015 – Merck KGaA, Darmstadt, Germany, the global market and technology leader for liquid crystals and organic electronic materials, is partnering with the UK based company FlexEnable, the leader in the development and industrialization of flexible organic electronics. As part of this joint project, the two companies have reached an important next stage in plastic LCD technology. A plastic LCD has been developed which is completely free of glass, instead using organic transistors on a plastic sheet, offering multiple benefits. Plastic LCDs have the potential of making products ten times thinner, more than ten times lighter, and cheaper than conventional glass-based displays – all while delivering differentiating product benefits of being shatterproof and even conformal.

The demonstrator was developed in a very short timeframe, and combines the key benefits of organic transistor technology (OTFT), including superior quality and yield. Ultimately, it shows a route to low-cost solutions for volume manufacturing with LCDs, the dominant display technology in the market today. FlexEnable has now demonstrated the world's first plastic LCD with active-matrix in-plane switching (IPS). It uses FlexEnable's OTFT array as well as Liquid Crystal (LC) and organic semiconductor

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materials from Merck KGaA, Darmstadt, Germany. While the first demonstrator employs an IPS mode, this concept will be equally attractive for many other LC modes and applications such as e-readers, dynamic public signage and advertising.

“We are very happy about this step forward as it clearly shows the enormous innovation potential the LC technology holds for us to explore,” said Inese Lowenstein, Head of the Display Materials business unit of Merck KGaA, Darmstadt, Germany. “It also shows that plastic-based bendable or even flexible displays are not a dream, but a true possibility and encourages us to develop new LC modes especially for this application. Now we can also imagine how the size of LC displays can grow even further, by making them lightweight, transportable and unbreakable.”

Indro Mukerjee, Chairman of FlexEnable, acknowledged the relevance of the new development, adding, “I congratulate the FlexEnable team and partners for demonstrating another example of how mature and advanced our transistor platform is. To achieve this within just months rather than years is a testament to the depth of understanding and IP we have across our toolkit of industrially proven processes. Plastic LCDs bring clear benefits where weight and thickness is key – including volume consumer and industrial markets. It also offers a route to simpler, lower cost device stacks for display makers.”

In addition to Merck KGaA, Darmstadt, Germany and FlexEnable, other project partners who worked on this achievement include display technology experts from the Institute for large area microelectronics at the University of Stuttgart (Germany), plastic film supplier LOFO High Tech Film (Germany), specialized resist supplier Micro Resist Technology (Germany), and backlight supplier Etkes and sons (Israel). The project was co-funded by the seventh Framework Program of the European Union.

FlexEnable has been created from Plastic Logic's people and its technology assets in Cambridge, UK. To find out more about FlexEnable and its robust, flexible displays please visit www.flexenable.com. Companies interested in working together with FlexEnable should contact info@flexenable.com.



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