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## News Release

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### **Merck KGaA, Darmstadt, Germany, acquires liquid crystal windows (LCW) specialist Peer+**

- **Long-standing cooperation partner Peer+ becomes a wholly owned subsidiary of Merck KGaA, Darmstadt, Germany as of July 1, 2014**
- **With the acquisition of the startup company Peer+, Merck KGaA, Darmstadt, Germany, is further advancing the future-oriented technology for liquid crystal windows**
- **Merck KGaA, Darmstadt, Germany, wants to launch the mass production of liquid crystal windows with cooperation partners in the glass and facade technology sector**

Darmstadt, Germany, June 30 – Merck KGaA, Darmstadt, Germany, a leading company for top-quality high-tech products in the pharmaceutical and chemical sectors, is acquiring the Dutch specialist for smart window technology Peer+ as of July 1, 2014. The two companies have agreed not to disclose the purchase price.

Merck KGaA, Darmstadt, Germany, is pursuing a strategy of leveraging its expertise as the global market leader in liquid crystals in order to develop new fields of application for innovative liquid crystal technology. With the acquisition of its long-standing cooperation partner Peer+, Merck KGaA, Darmstadt, Germany, is further advancing the development of the future-oriented market for liquid crystal windows and is bolstering its position as the technology and innovation leader for liquid crystal materials also for applications far from displays. The major innovation of liquid crystal windows lies in their ability of continuously variable switching from light to dark in just seconds. The optimally controlled light and

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temperature management can thus decisively improve the energy efficiency of a building. In addition, the smart windows technology opens up totally new architectural possibilities. Merck KGaA, Darmstadt, Germany and Peer+ have been cooperating closely since 2011 to develop a market-ready product and production concept for liquid crystal windows. In 2012, the cooperation partners entered into a shareholder agreement under which Merck KGaA, Darmstadt, Germany, acquired 70% of the capital interest in Peer+. Merck KGaA, Darmstadt, Germany is now also acquiring the remaining 30%, including around 3% from the Eindhoven University of Technology (TU/e), which co-founded Peer+ in 2008 and has been intensively supporting it since then.

In the future, Merck KGaA, Darmstadt, Germany, will concentrate the research and development activities of the liquid crystal windows technology at the Peer+ site in Eindhoven, the Netherlands. Merck KGaA, Darmstadt, Germany will not produce the liquid crystal windows itself. "We see ourselves as an advisor and technology supplier for the industry. We aim to become the leading supplier for liquid crystal materials for the production of smart windows. The liquid crystal technology has proven itself in display applications for decades. It has great potential for revolutionary new applications, such as smart windows, and as the technology leader we want to develop these new markets with strong partners," says Walter Galinat, Head of the Performance Materials division at Merck KGaA, Darmstadt, Germany, explaining the reasons for the acquisition of Peer+.

"Together with cooperation partners in the glass and facade technology sector, we want to develop the liquid crystal windows technology ready for mass production. With our expertise and experience in research and development as well as pilot production, we can acquire a pioneering role in the smart windows market and effectively support the industry in integrating this technology into mass production," says Michael Heckmeier, Head of LC Research and Development in the Performance Materials division.

Peer+ has already built an R&D production line for small quantities in Eindhoven. This shows how to integrate the concept of liquid crystal windows into industrial settings. "In the next step, we are planning together with our partners a pilot line for custom-tailored projects in the premium segment of glass facades. We plan to enter the market with our first pilot projects already in 2015," says managing director of Peer+ van Oosten.



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As part of its "Fit for 2018" transformation and growth program, besides efficiency improvement measures Merck KGaA, Darmstadt, Germany, is also driving initiatives and investments for securing future growth, also including the acquisition of Peer+.

**Liquid crystal windows** basically consist of two panes of glass that are glued together at a distance of a few micrometers. The inward-facing sides of the panes are covered with a transparent, electrically conductive layer (transparent conductive oxide) as well as an orientation layer (polyimides). The gap between the coated substrates is filled with a special liquid crystal mixture. The light transmittance of the window can be controlled by applying a low electrical voltage. The liquid crystal windows technology developed by Peer+ and Merck KGaA, Darmstadt, Germany, excels by a number of unique properties: The liquid crystal windows can be switched in just seconds from light to dark and vice versa. Continuously variable dimming and segmented switching are also possible in the future. It will be relatively simple to integrate the technology into all conventional windows. Liquid crystal windows open up totally new possibilities in facade design, for example with very large-surface windows or unusually shaped windows, as well as individual coloring of each single window. The optimally regulated light and temperature management can decisively improve the energy efficiency of a building. Solar cells can be additionally integrated as an option. Liquid crystal windows are extremely durable and also suitable for extreme climate conditions.

**Peer+** arose from a research project of the Eindhoven University of Technology (TU/e) in 2008. In close collaboration with the department of Chemical Engineering and Chemistry (research group of Profs. Dick Broer and Albert Schenning) and the Building Physics section as well as Merck KGaA, Darmstadt, Germany, the founders Casper van Oosten and Teun Wagenaar soon succeeded in making Peer+ one of the few specialists worldwide in the smart glass technology sector.

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### **About Merck KGaA, Darmstadt, Germany**

Merck KGaA of Darmstadt, Germany, is a leading company for innovative and top-quality high-tech products in the pharmaceutical and chemical sectors. Its subsidiaries in Canada and the United States operate under the umbrella brand EMD. Around 38,000 employees work in 66 countries to improve the quality of life for patients, to further the success of customers and to help meet global challenges. The company generated total revenues of € 11.1 billion in 2013 with its four divisions: Biopharmaceuticals, Consumer Health, Performance Materials and Life Science Tools. Merck KGaA of Darmstadt, Germany is the world's oldest pharmaceutical and chemical company – since 1668, the name has stood for innovation, business success and responsible entrepreneurship. Holding an approximately 70 percent interest, the founding family remains the majority owner of the company to this day.