

News Release

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Liquid Crystals for New Optical Applications: Collaboration with the University of Leeds

- **Research partnership will focus on the growth market for digital optical liquid crystal applications**
- **Merck KGaA, Darmstadt, Germany is intensifying development of advanced LC materials optimized for applications beyond displays**

Darmstadt, Germany, May 18, 2017 – Merck KGaA, Darmstadt, Germany, a leading science and technology company, announced today that it has signed a five-year research collaboration agreement with the University of Leeds. The aim is to develop new digital optical applications with liquid crystals under the umbrella of the “Emerging Innovation – LC 2021” strategic initiative. As a global market and technology leader for liquid crystals (LC), Merck KGaA, Darmstadt, Germany, sees great future potential in optical applications. The University of Leeds is one of the United Kingdom’s most renowned research institutions and has recently built a reputation in particular for non-display applications such as switchable contact lenses.

Mark Verrall, Head of R&D for the Display Materials business unit at Merck KGaA, Darmstadt, Germany, explained that “the University of Leeds is an ideal partner for us, because the research teams have broad expertise and have the means to build prototypes of the future devices. As for our role, we’ll concentrate on developing advanced liquid crystal materials specially designed for these new optical applications beyond displays.”

Sir Alan Langlands, Vice-Chancellor of the University of Leeds, said: “This exciting research collaboration reflects our determination to develop real-world solutions from science and engineering research. Our university has a strong track record of world-leading research in liquid crystals. Its academics have a growing reputation



for inventing applications for liquid crystals way beyond the technology familiar to most of us through flat screen monitors.”

Tremendous potential for growth in digital optical applications

Merck KGaA, Darmstadt, Germany, will invest £ 1.0 million in its collaboration with the University of Leeds, which is aimed at developing optical applications with liquid crystals to market readiness. Digital eyeglasses, switchable contact lenses, virtual-reality glasses, and other optical instruments are an interesting growth market. In addition, the partners plan to develop new applications for controlling lighting in homes and cars as well as sensors. The company’s customers are also increasingly interested in optical applications. Merck KGaA, Darmstadt, Germany, is therefore intensifying its research activities in LC materials with high birefringence for optical use. The University of Leeds possesses both the expertise and state-of-the-art facilities in order to conduct feasibility studies and develop prototypes of the devices. The declared goal is also to jointly apply for patents for such applications.

The partnership with Merck KGaA, Darmstadt, Germany, coincides with significant investment by the University in both world-class research staff and facilities in this field. Work is well underway on a £ 96 million investment to integrate Engineering and Physical Sciences, bringing together talented physicists, chemists, materials scientists, engineers and computer scientists to address some of humanity’s greatest challenges. It is due to open in 2020.

About the University of Leeds

The University of Leeds is one of the largest higher education institutions in the UK, with more than 33,000 students from 147 different countries, and a member of the Russell Group research-intensive universities. It is a top 10 university for research and impact power in the UK, according to the 2014 Research Excellence Framework, and positioned as one of the top 100 best universities in the world in the 2015 QS World University Rankings.

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About Merck KGaA, Darmstadt, Germany

Merck KGaA, Darmstadt, Germany, is a leading science and technology company in healthcare, life science and performance materials. Around 50,000 employees work to further develop technologies that improve and enhance life – from biopharmaceutical therapies to treat cancer or multiple sclerosis, cutting-edge systems for scientific research and production, to liquid crystals for smartphones and LCD televisions. In 2016, Merck KGaA, Darmstadt, Germany, generated sales of € 15.0 billion in 66 countries. Founded in 1668, Merck KGaA, Darmstadt, Germany, is the world’s oldest pharmaceutical and chemical company. The founding family remains the majority owner of the publicly listed corporate group. Merck KGaA, Darmstadt, Germany, holds the global rights to the „Merck“ name and brand. The only exceptions are the United States and Canada, where the company operates as EMD Serono, MilliporeSigma and EMD Performance Materials.