

News Release

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BASF and CLAP enter into technology transfer agreement for OLED Under Panel Sensor (UPS) optical film

- **BASF's polymerizable Liquid Crystal technology enables CLAP to supply reliable and high-performance display optical films for customers worldwide**
- **BASF and CLAP offer a unique optical film solution enabling sensors to be mounted under display panels with high signal to noise ratios**
- **Technology enables notch-less full screen OLED smartphones**

Seoul, Korea – June 26, 2019 – BASF, the world's leading chemical company, and CLAP, a Korean optical film manufacturer, have signed a technology transfer and license agreement regarding an optical film technology for coating OLED Under Panel Sensors (UPS). The UPS technology can maximize the display area for mobile devices, with all sensors being hidden under the display.

The agreement enables CLAP to manufacture optical films using BASF's Liquid Crystal (LC) materials and coating technology to deposit films with retardation and polarization properties, which can be patterned according to optical design requirements. CLAP's UPS film – a thin, coated, patterned film-stack – can solve the internal noise problem from reflected light, that occurs when installing optical sensors under panels to develop notch-less full-screen OLED smartphones. Micro-patterning enables customized light management that is required for designing the sensors.

“As a film manufacturer with excellent expertise in display applications, CLAP is the preferred partner that can effectively commercialize BASF's LC technology for

sensor applications” said Lothar Laupichler, Senior Vice President of BASF’s Global Electronic Materials Business. “Our LC material technology, accumulated over years of research and experience, is the ideal solution to improve the sensitivity of smartphone sensors. Combined with CLAP’s film and device technology, we will be able to provide a reliable solution to customers in the display market.”

“BASF’s superior functional light control materials will help to solve the problem that occurs in under panel optical sensors and further contribute by providing high-quality products,” said CLAP CEO Kim Sung-Ho. “The unique technology is an enabler for notch-less displays.”

Seung Moon-Soo, CEO of CleanWrap, a Korean food packaging product manufacturer, and also the parent company of CLAP, said, “We target a sustainable and innovative product portfolio, and believe BASF’s unique technology and product portfolio will provide an ideal fit to address consumer’s needs in the electronic market and beyond.”

About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. The approximately 122,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is organized into six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions. BASF generated sales of around €63 billion in 2018. BASF shares are traded on the stock exchange in Frankfurt (BAS) and as American Depositary Receipts (BASFY) in the U.S. Further information at www.basf.com.