



World's first 65-inch PEDOT Touch Sensor developed by Heraeus and SigmaSense

Revolutionary large touch sensor, enabled by SigmaSense Touch Controller, provides superior optical clarity, reliable flexibility and reduced cost

Heraeus, the world leader in polymer material innovations, and SigmaSense, the global leader in touch sensing performance, have jointly developed a breakthrough fully-functional 65-inch PEDOT polymer touch sensor. This game-changing development – a world first – is poised to disrupt the touch sensor market providing superior optical clarity, reliable flexibility, reduced costs and SigmaDrive performance and functional advantages. This paves the way for affordable interactive displays of all sizes – even over 100 inches.

The solution is based on Clevios™, a flexible and robust conductive PEDOT polymer, and enabled by SigmaDrive™, SigmaSense's current-mode sensing technology which supports super high resistance sensors at ultra-low voltages.

Heraeus Clevios™ Technology

Clevios™ PEDOT:PSS, the class leader in the field of conductive polymer chemistry, was formulated and coated via roll-to-roll process by Elite Optoelectronic Co., Ltd. (EOC). The sensor was then structured by laser patterning, processed, and assembled by Shenzhen Touchworks Optoelectronics Co., Ltd. (TWS). TWS laminated the sensor onto a flat panel display incorporating SigmaSense's disruptive SigmaDrive™ touch controller.

Clevios™ PEDOT:PSS coatings do not add haze to the films, even under off-angle viewing, and thus provide superior optical clarity to the touch sensor regardless of the viewing angle or lighting conditions. Ultra-low light reflection is another advantage of Clevios™ that benefits the touch sensor optics due to its low refractive index, which matches with the refractive indices of the plastic or glass substrates. This intrinsic optical property facilitates invisible patterning by laser.

PEDOT:PSS has mechanical flexibility that is ideal for a range of narrow bezel and flexible computing applications. Flexibility eliminates costly crack-yield losses due to bending or flexing

the films. A sufficiently thin sensor can be wrapped around the edges of the display to hide the bezel electrodes for narrow bezel designs – a feat that is risky today.

"SigmaSense delivers an unparalleled new sensing technology that can drive our higher resistance conductive polymers in touch sensors at sizes over 65 inches," said Dr. Armin Sautter, Head of Technical Service Display at Heraeus GmbH. "The SigmaSense touch controller unleashes our optically superior sensor technology for use in markets that were not possible in the past."

SigmaSense touch controller technology

SigmaSense has developed a new, innovative current mode analog to digital converter (ADC) technology. When this technology is applied to touch sensing, a hundred to over a thousand times better signal-to-noise is achieved compared to existing solutions. Large high resistance conductive polymer sensors are now possible for the industry. In addition, the entire display surface is sensed concurrently providing high speed human interface reports and high-fidelity information of all objects touching or in near proximity to the sensor surface. High speed, high-fidelity data necessary for machine learning object categorization bring a new generation of user experiences. High performance with low latency enables action-intensive gaming applications and gaming controllers to achieve new levels of capability.

"Large, flexible, PEDOT touch sensors will provide a new generation of user experiences at price points that enable broad adoption," said Steve Sedaker, SigmaSense's CMO. "Our SigmaDrive™ technology touch controllers are the world's only controller that can drive these high resistance sensors at these large sizes."

