

Micro LEDforum 2019: Key Technology and Application Market—TrendForce Takeaways

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LEDinside, a division of [TrendForce](#), holds the annual pivotal conference, Micro LEDforum 2019: Key Technology and Application Market, today (2) at Room 201 of the National Taiwan University Hospital International Convention Center. Invited were Rohinni, TORAY, Konica Minolta, PARC, Plessey, Kyung Hee University, Macroblock, Ultra Display, the Industrial Technology Research Institute (ITRI) and other leading manufacturers and experts at home and abroad to give penetrating analyses into the breakthroughs, applications and business opportunities of critical technologies. LEDinside Research Director Roger Chu is also there to provide comprehensive insights into market trends. Seats were filled and the conference well received.

Samsung, Sony, LG Stake Claims for Themselves; Micro LED Finds Use in Super-Large Display Applications

LEDinside Research Director Roger Chu kicks off the conference and points out, with regard to development progress and potential business opportunities with which others are most concerned, that not only do the new forms of micro LED displays surpass OLEDs in brightness and contrast, but they also possess characteristics such as fast response times, low power consumption and high reliability. A rosy outlook awaits these devices if they succeed in mass production and commercialization.

Yet the biggest challenge that micro LED displays face at the current stage lies in cost reduction, including facility improvement, inspection innovation and mass transfer technology development, all of which form areas of intensive research. Cost reduction in the short term remains considerably difficult, thus most suppliers are turning to niche super-large displays as the application category with the most potential to penetrate the market.

Samsung, for example, recently released The Wall Luxury, a modular mini-LED display said to reach up to 292 inches corner to corner. If that wasn't enough, it further showcased at CES this year The Window, a 75-inch modular micro-LED display, which uses LED chips that only measure up to a fifteenth of those used in The Wall, fully demonstrating what it really means to be a "micro LED grade" display.

We also see Sony having set up its 16K CLEDIS micro LED display in Japan, whereas LG showcased its micro LED display powered by TFT backplane technology at InfoComm, June, targeting commercial markets 100 inches and up and projected to reach shelves in the coming 2 to 3 years.

Apple to Drive Business Opportunities for High-End Displays as Businesses Target Mass Production of Mini LED Backlight Products in 2-3 Years

In light of the many micro LED technology hurdles to overcome, mini LED backlight solutions formed the starting point for many suppliers, now to compete directly with OLEDs in the display arena in 2019 after three years of R&D.

Apple's newest Pro Display XDR 32-inch 6K display uses the newest LED backlight solution. Though it may not be the mini LED backlight widely-rumored in the industry, it nevertheless drove the display industry to seek out new technology solutions for high-end products, which will benefit relevant supply chains.

TrendForce explains that due to the potential of mini LED backlight technology to bring about more advanced product specifications, many panel manufacturers are actively developing active driving solutions on glass backplanes in an attempt to lower costs for LED driver ICs and PCBs. Equipment manufacturers are also developing new ways to carry out mass transfer in order to lower manufacturing costs for mini LEDs. Manufacturers hope to reduce costs down to levels acceptable for mass production and commercialization in the next two to three years.

Dynamics and Breakthroughs for the Whole Micro LED Industry Chain

Many speakers, whether at home or abroad, were invited to the conference to give comprehensive analyses covering micro LED manufacturing, system integration to end applications and the market. On the topic of mass transfer, Rohinni, PARC and Ultra Display share different transfer solutions and analyze micro LED transfer materials; TORAY and Konica Minolta focus on innovative inspection techniques and challenges; Plessey introduces a solution that utilizes GaN-on-Si technology to manufacture monolithic micro LED arrays, allowing for the development of AR or MR display applications; and Kyung Hee University discusses solutions with Oxide TFT and LTPS TFT backplane technologies currently being applied to micro LED displays.

Taiwanese manufacturer Macroblock's presentation mainly revolves around a highly integrated micro LED driver IC; ITRI, on the other hand, gave an overview of the industry layout for tech giants around the globe as seen from a 'patent' standpoint, and shared how micro LEDs are currently being used in digital displays, gaming displays and AR applications.

All in all, micro LEDs are still facing quite a lot of challenges, but obvious strides are being made in the technologies of nowadays, especially as more and more panel manufacturers try to combine micro LEDs with TFT backplanes and pull micro LED displays closer towards mainstream. Progress will be made on the road to micro LED commercialization as the technology matures, and total revenue for the micro LED market is forecast to reach US\$4.2 billion by 2023.

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WitsView offers comprehensive coverage of the display industry from upstream components, midstream panels/touch modules to downstream system integrators, brands and channels.

LEDinside covers all aspects of the LED supply chain from upstream equipment/materials, midstream chip/packaging to the downstream backlight and lighting market.

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Media Contact

Pinchun Chou +886-2-8978-6488 ext.669 PinchunChou@TrendForce.com

Lindsay Hou +886-2-8978-6488 ext.667 Lindsayhou@TrendForce.com

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