**Color Management for Wide-Color-Gamut UHDTV Production**


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Ultra-high-definition television (UHDTV) is a wide-color-gamut system, as standardized in Rec. ITU-R BT. 2020 and SMPTE ST 2036-1, that covers most real object colors and encompasses the gamuts of high-definition television (HDTV), Adobe RGB, and DCI-P3. The development of wide-gamut displays and high-quality gamut mapping is a major challenge in the workflow of UHDTV production today. While monochromatic light sources, such as lasers, are ideal for UHDTV wide-gamut displays, wide-gamut liquid crystal displays with non-monochromatic backlight sources, such as quantum dot light-emitting diodes, may well be used from the viewpoint of both cost and performance. Furthermore, a high-quality gamut mapping algorithm between UHDTV and HDTV for live broadcast production is essential. This paper offers solutions to these challenges.

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**A Flexible Display Driven by Oxide-Thin-Film Transistors and Using Inverted Organic Light-Emitting Diodes**


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An 8-inch oxide-TFT-driven flexible display using inverted organic light-emitting diodes (iOLEDs) with an inverted device structure was demonstrated. We employed iOLEDs with an air-stable electron injection layer and longer lifetime. An oxide-TFT backplane having good electrical performances (mobility ~7 cm²/Vs, on/off ratio >10⁷) was also fabricated on a plastic substrate at low temperature (i.e., below 160°C). The fabricated flexible iOLED display showed clear and stable color moving images and produced uniform RGB emissions from each pixel, even when it was bent.

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**Active-Matrix Spindt-Type Field Emitter Array with Faster Response Time for Image Sensor with High-Gain Avalanche Rushing Amorphous Photoconductor Target**


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A novel active-matrix driving circuit, consisting of a level-shifter in each pixel and low-voltage (5 V) vertical and horizontal scanning circuits, was simulated and fabricated as part of an effort to develop a flat image sensor consisting of a Spindt-type field emitter array (FEA) and a high-gain avalanche rushing amorphous photoconductor target for ultrahigh-sensitivity compact high-definition television (HDTV) cameras. Although the active-matrix driving circuit developed in our previous work could not drive the FEA quickly enough to meet the HDTV standard, the simulation and experimental results reported here show that the novel active-matrix driving circuit can shorten the response time and potentially meet the HDTV standard.