

## OXIDE TFTs FOR DIGITAL HOLOGRAPHY

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Holographic display has been regarded as the ultimate goal of realistic display, for holographic display can express, in principle, all the depth cue, for example, motion parallax, accommodation, occlusion, and convergence. Analog hologram with photographic films show very realistic 3D images using white light. But electronic hologram with electronic SLM (spatial light modulator) show limited picture quality due to large pixel pitch. The required pixel pitch for holographic display with 30 degree viewing angle is about 1 micron meter. To accomplish ultra high resolution display, TFTs with no short channel effects at sub-micron channel length should be developed. Oxide TFTs can be a good candidate due to the absence of short channel effects, very simple device structure and versatile variation of process and channel structure.

BCE structure has been known as the smallest TFT structure for oxide TFTs. High performance BCE oxide TFTs having sub-micron channel length have been developed for the backplane of 3um pitch SLM with 16K x 4K pixels for holographic display.

Vertical channel oxide TFTs are already proposed as the switching device for 1um pitch pixel. But, adaptation of etched surface as back interface with channel layer induce several problems for achieving high performance and low off-currents. Structure and process related issues in vertical channel TFTs will be presented and discussed.

