LTPS driven microheater array for phase-change material based reflective display

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Phase-change materials, developed for re-writable optical data storage applications have been developed to show a striking visible colour difference when switched between their two stable, solid states [1]. Modulating this switch by thermal, rather than optical or direct electrical, means, via joule heating from a buried microheater, has enabled efficient, uniform, reversible switching of phase-change materials over display pixel sized areas [2]. Recently, Bodle technologies has extended this approach, using a low-temperature polysilicon (LTPS) backplane array of diode or thin-film transistors (TFTs) to demonstrate a new type of reflective display [3]. The display is ultra-thin, long-term bistable, exhibits sub-microsecond pixel response times and while currently 2-colour only, has potential for full colour capability. This paper will outline the fundamental mechanism of the display, and detail the development of the custom large area, thin film electronic backplane needed to meet the unusual thermo-electro-optical drive requirements.

References

Acknowledgement - The authors would like to thank Lu Feng and Yao QiJun from Tianma Microelectronics Co, Shanghai for their work on the design, fabrication and supply of the LTPS p-i-n diode backplane.