NanoChromics™ Enabled Functional Media

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Abstract

The rapid advancements in printed electronics allow for the creation of low cost special purpose smart devices integrating sensing, logic, communication and electro-optic effects into a new breed of "Functional Media."

NanoChromics™ displays (NCD) are based on solid-state electrochromic phenomena incorporating advanced in molecular technology and nanomaterial formulations. NCD™ displays are designed to be thin, lightweight, and power-efficient with best in class readability and high contrast ratio. They can be manufactured using a wide range of techniques, including flexography, silkscreen and inkjet printing.

NCD™ displays can be made to represent simple icons such a corporate logos, 7 segment and 13 segment characters for numeric and alphanumeric displays, and active matrix displays. NCD support multiple colors without the need for filters and support reversible and irreversible coloring operation.

The low sub 1 V operation allows for the ready integration of driver functionality into low cost micro-controller. They can be powered by Radio Frequency (RFID/NFC) systems.

NCD designs are compatible with industry cold and hot lamination processes and may be integrated with complementary systems such as RFID components, batteries, and discrete and integrated electronics on the same substrate.

This makes NCD technology perfect for functional media: Smart and bankcards, labels and tags, disposable sensors, games, personal electronic devices, household appliances, electronic shelf edge labels, and numerous industrial applications. They can be used for security application ranging from one-time password, two-factor authentication to watermarking to the capture of exceptional events.

The presentation will cover the principles of NanoChromics™ technology, some of the key printed architectures and the functionality they allow. We will highlight power requirements, ease of manufacturing, tradeoffs between manufacturing efficiency/yield and aesthetics, and integration with low power and low cost electronics. We will report on recent activities conducted with printing partners and highlight the company's roadmap.

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NTERA is the leading developer of advanced printable electrochromic materials, driving electronics, electrochemical assemblies and related technologies enabling stored value cards and smart labels, icon and indicator displays, electronic skins for personal devices, bank cards and security applications.