

FAST-SWITCHING LCDs I

Tuesday, May 22 / 2:00 – 3:30 pm / Room 104BC

Chair:

Philip E. Watson, 3M Corp., Saint Paul, MN, U.S.A.

Co-Chair:

Tatsuo Uchida, Tohoku University, Miyagi, Japan

12.1: Color-Sequential LCDs Using High-Birefringence LC (2:00)

S. Gauza, X. Zhu, S.T. Wu
University of Central Florida, Orlando, FL, U.S.A.

W. Piecek, R. Dabrowski
Military University of Technology, Warsaw, Poland

High birefringence ($0.3 < \Delta n < 0.4$) and relatively low-viscosity liquid-crystal mixtures containing isothiocyanato tolane and isothiocyanato terphenyl liquid crystals were developed. A color-sequential LCD with a 1.2-msec response time using a 1.6- μm TN cell was demonstrated.

12.2: Large Negative-Dielectric Anisotropy and High-Birefringence Liquid Crystals (2:20)

H. Xianyu, Q. Song, S. Gauza, S-T. Wu
University of Central Florida, Orlando, FL, U.S.A.

New laterally fluorinated biphenyl tolane liquid crystals with a large negative dielectric anisotropy ($\Delta\epsilon \sim -8$) and a high birefringence ($\Delta n \sim 0.34$) were developed. By doping 15 wt.% of such a compound to MLC-6608 (a negative $\Delta\epsilon$ LC mixture), the overall figure of merit doubled.

12.3: LCOS Panel Using Novel Color-Sequential Technology (2:40)

K-H. Fan-Chiang, C. C. Yen, C. H. Wu, C. J. Chen,
B. J. Liao, Y. Y. Ho, C. Y. Liu, Y.C. Chen
Himax Display, Inc., Tainan, Taiwan, ROC

A 0.59-in. SVGA LCOS panel has demonstrated a color gamut that is larger than 120% NTSC and a reflectance of 70%. Frame-buffer-like pixels exclude the period of data addressing in the sub-frame and relax the design rule of the electric circuit and the LCOS panel. Implementation of reset voltage enables 360-Hz operation.

12.4: Distinguished Student Paper: Passive-Matrix-Driven Field-Sequential-Color LCD (3:00)

Y. W. Li, L. Tan, S-Y. Yeung, H. S. Kwok
Hong Kong University of Science and Technology,
Kowloon, Hong Kong

A new fast-response LCD mode has a configuration that is similar to that of the TN and STN modes. The optical response time can be as fast as 1.5 msec with a 5- μm cell gap. It also demonstrates some bistable properties. A 16 \times 16 passive-matrix field-sequential display has been demonstrated.

12.5L: Late-News Paper: Fast-Switching STN-LCDs Doped with Silver and Palladium Nanoparticles (3:20)

Y. Toko

Stanley Electric Co., Ltd., Kanagawa, Japan

S. Yokoyama, S. Takigawa, S. Nishino

UBE Industries, Ltd., Yamaguchi, Japan

N. Toshima, S. Kobayashi

Tokyo University of Science, Yamaguchi, Japan

A metal nanoparticle doping technology for STN-LCDs, effective in realizing fast response times, particularly at low temperatures, has been reported for the first time. The ratio of Ag and Pd for a metal nanoparticle doped in the liquid crystal was changed, and a condition suitable for direct multiplexed dot-matrix driving was found. An improved switching speed of a factor of 3 for an STN-LCD was demonstrated, particularly at low temperatures, e.g., -30°C .

AUTHOR INTERVIEWS

(3:30–4:20)