Specific TN liquid crystal mixture tailored for 3D active glasses

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3D technology [1] as a form of visualization is available to a wide audience nowadays. Majority of displays that support 3D technology are manufactured using stereoscopic methods. These methods require use of special glasses (polarizing, shutter or anaglyph) which function is to alternately select one of two specific pictures for a chosen eye. 3D imaging technology using active (shutter) glasses base on twisted nematic (TN) electrooptical effect, plays a leading role on the retail consumer market. To obtain a liquid crystal materials with optimal parameters, appropriate for 3D active glasses we have to consider four basic groups of features [2]: the extinction ratio/contrast; residual light/color; response times and viewing angles. The most important parameters are: the extinction ratio, which is standard sufficient for TN effect in normal white conﬁguration; residual light – percent of transmitted light for glasses based on TN effect is low because of using of polarizers (for standard active glasses T < 37%); response times and colour characteristic of transmitted light.

New nematic liquid crystal mixtures with low viscosity and wide range of nematic phase were obtained at the Institute of Chemistry of the MUT, Warsaw, Poland. For these mixtures we evaluated electrooptical and optical properties such as: response times, threshold voltages, contrast, residual light and colour characteristic of transmitted light in 2,5 μm thick cells with twisted nematic normal white conﬁguration. Material, optical and electrooptical parameters have been discussed in the context of a specific application of the mixture for the fabrication of a glasses used at 3D technology.

References:

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