LCD Optimization and Modeling

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Nowadays Liquid Crystal Display (LCD) becomes a trend in the display market. It offers significant advantages of greater compactness, lower power consumption and lower operating voltage and the growing development in picture quality and reliability. Its applications have extended from calculators and digital watches to other products such as televisions.

Our project is to improve the quality of the LCD in order to achieve a high-definition display. Viewing angles, transmittance and wavelength dependence are the main characteristic to influence the quality of displays.
Simulation software is very important in the production process of a display. For the reason of high of manufacturing cost, simulation program provides an efficient and cheap way to construct a virtual model. In this project, we use MOUSE-LCD, which is provided by our supervisor, as our modelling software.

In our project, we use the simulation software Mouse-LCD to optimize the outcome performance of viewing angle.
By using the method of altering the LC parameters of the liquid crystal cell and inserting the compensators, the viewing angle of LCD can be improved.

After optimization, the contrast ratio at oblique angle of the TN, STN, VAN can be improved.