

平行水平配向液晶盒的穩定性研究

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摘要



在液晶顯示器應用以及學術研究方面，液晶盒穩定性研究有其重要性與需求。本論文討論投影機光源、紫外燈光源及熱源對液晶盒的影響，並進一步討論其對液晶和 PI 配向膜的個別影響。實驗中我們以液晶盒的預傾角、液晶和 PI 配向膜的 UV-Visible 及 FTIR 吸收頻譜曲線是否改變來當作穩定的依據。我們發現在長時間的強光照射及高溫環境下，的確會加速液晶盒的老化。另外，實驗中我們提出一個量測液晶盒大預傾角的方法，同時也可求得液晶盒厚度。

Study of a Parallely Planar – Aligned Liquid Crystal Cell


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Abstract

The logo of National Chiao Tung University is a circular emblem. It features a blue outer ring with the university's name in Chinese and English. Inside the ring, there is a shield-like shape containing the letters 'ES' and 'A' in a stylized font. Below the shield, the year '1896' is inscribed.

Study on the stability of a liquid crystal cell is an important issue not only in scientific research but also in LCD technology. In this thesis, we discussed the influences of the light sources of projectors, the ultraviolet light source and the annealing system on liquid crystal cells respectively. Moreover, we analyzed the influences on liquid crystal and polyimide thin film separately. In our experiments, the changes of pretilt angles of liquid crystal cells, UV-Visible absorption spectrum of LC and PI, and FTIR absorption spectrum of LC and PI were treated as the basis of stability. We found that the irradiation of intense light and the higher annealing temperature treatments would accelerate the decay of liquid crystal cells. In addition, we proposed a method to measure the larger pretilt angles of LC cells in our experiments, and also obtained the cell gaps of LC cells.