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器件制备技术及器件物理

STN-LCD残影显示的原理分析及实验研究

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摘要： 影像残留显示现象存在于各类LCD中,大多为离子效应所引起。针对这一问题,分析了不同配向膜对自由离子电荷的吸附情况,以及选用合适的配向膜搭配不同液晶材料、盒内自由离子电荷的浓度情况等对残影显示的影响。实验发现,选用合适的配向膜,增加重配向时间,有利于消除残影现象;在一定配向膜基础上,选用低阈值液晶或选用添加抗静电剂液晶,更容易消除残影现象。不过,在实际运用中,重配向时间的增加会影响液晶陡度;低阈值液晶会使液晶陡度变差同时使响应速度变慢,且容易出现显示不均;抗静电剂液晶也会导致显示不均。因此在实际运用中,必须平衡以上各条件,才能在不影响其他性能前提下,更有效地改善残影现象,提高STN-LCD的显示质量。

关键词： 超扭曲向列相液晶显示器 残影显示 离子效应

Research of Image-Retention Phenomenon in STN-LCD

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Abstract: Image-retention phenomenon which exists in different kinds of LCDs is mostly caused by ionic charge effect. This thesis focuses on free ionic charge adsorption of alignment layer and free ionic charge density of different liquid crystal materials. We can further eliminate image-retention phenomenon by choosing appropriate materials. The experimental results indicate that with appropriate alignment layer. the more time of realignment the easier to avoid image-retention phenomenon. With certain alignment layer,it's easier to avoid image-retention phenomenon when choosing liquid crystal at low threshold voltage or with anlistatig. However,in practical application,the increasing realignment time will have a bad effect on liquid crystal steep and response time, and it's easier to make LCDs display unevenly. In conclusion,only by balancing all the conditions above it can improve Image-Retention Phenomenon more effectively,and increase displaying quality of STN-LCD.

Keywords: STN-LCD image retention display ionic charge effect

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