Microscopic Stress-Induced Retardationbetween amorphous SiNx and IZO

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To reduceblack luminance in LCD panels fabricated using polymer stabilized verticalalignment (PS-VA) mode, the optical retardation near the micro slits on pixelelectrodes formed by amorphous indium zinc oxide (a-IZO) staked on amorphoussilicon nitride (a-SiNx) is investigated. Analyzing microscopic images obtainedby retardation measurement, the mismatch of stresses between the two layers isfound to be induced after the photo lithography of the a-IZO layer. The 3Dsimulation results, imposed with shear stresses also support the experimentalresults. We suggest that the retardation could be minimized by stressoptimization between the a-IZO and a-SiNx, which improves the contrast ratio upto over 10 % of the LCD panel.