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The formation of highly orientated liquid crystals (LCs) is of great importance for a basic understanding of interfacial phenomena. Moreover, it is key technology to produce high resolution, high performance information display. The requirements of microelectronics technology for LCDs have generated increasing interest in using various materials as alignment layer, so that a better understanding of the interfacial properties between LCs and alignment surface is required.

The alignment is influenced by local interactions at the surface of the alignment layer. We need to understand the role of the upper molecules of the alignment layer.

We characterized surface morphology and optical characteristics of polyimide film. The film was modified by NaOH aq. solution. The modified surface was examined by FT-IR, ellipsometry and contact angle measurement. We transformed the modified polyimide surface with photo-reactive reagents for the application of liquid crystal alignment layer and carried out the photochemical process. The several linear dye molecules have been deposited on the photo-treated polyimide layers, thus forming the oriented thin films. The orientation order has been estimated from the dichroism in their polarized UV-vis absorption and FT-IR spectra. We observed that the pre-aligned molecules on the top polymer surface affected the order of deposited dye molecules. Polymer film orientation was studied with surface plasmon spectroscopy.

#### References

1. N.F.A. van der Vegt, *J. of Chemical Physics*, 115, 9935 (2001)
2. A. Rastegar, M.Skarabot, B.Blij and Th. Rasing, *J. of Applied Physics*, 89, 960(2001)
3. P.Damman et al., *Macromolecules*, 35, 2 (2002)