

Advanced liquid-crystal materials and processing for the polymer-sustained vertical aligned mode of TV displays

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The polymer-sustained vertical aligned (PS-VA) mode is an advanced technology based on the vertically aligned mode applied in liquid crystal displays (LCD). With high transmission, high contrast and fast switching combined with scalable, cost-effective manufacturing, it has become the dominant LC mode in the TV industry. The technology relies on specially developed liquid crystal mixtures and reactive mesogens that form a polymer layer inside the LCD cell in UV curing steps. We review some of the highlights of the transformation that takes place inside the LCD cell during processing. Examples are given how a systematic investigation of critical steps helps to understand impact of structure-property relationship of the reactive mesogen and interaction with the LC mixture to reach the challenging targets of LCD panel manufacturers, such as TACT time, quality and reliability.

Speaker Biography

[Leo Weegels](#) received M.Sc. Ph.D. degrees in Applied Physics from Eindhoven University of Technology, The Netherlands, in 1988 and 1992 respectively specializing in III-V semiconductors. In 1993 and 1994 he was a Postdoctoral Fellow at NTT Basic Research Laboratories in Japan investigating cleaning processes of GaAs surfaces. He joined Philips Research in the Netherlands in 1995 dealing with research, development and manufacturing of visible and near-infrared laser diodes for optical recording and printing. From 1999 he is involved with display technology, mainly dealing with liquid crystal displays (LCD) ranging from small to large sizes and engaging in almost every aspect of research and development of LCD modules in various positions. Since joining Merck KGaA in 2006, he focuses on the reliability and application of state the art and high performance liquid crystal materials for display applications with special interest in polymer stabilized vertical alignment. He spent working and living in Asia in total of 12 years.