Session V: High Performance Pigments

Pigments for Display Applications

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Dr Ger de Keyzer studied chemistry at the State University of Leiden in the Netherlands with Inorganic Chemistry as the principal subject and organic photo chemistry as the ancillary subject with Prof Groeneveld. He finished the study in 1982 with an investigation about the coordination chemistry of triazole derivatives with the first group of transition metals under the guidance of Prof Reedijk. He joined Philips Cathode Ray Tubes development centre and began work on the predevelopment of luminescent materials for television and computer screens. He became Head of Chemical Process Development group at Philips CRT in 1986. From 1987 to 1997 he was responsible for the development of the colour filter process at Philips Flat Panel Display, a start-up company for the development of LCD television. He joined Ciba Specialty Chemicals (BASF from 2009) in 1997 where he was responsible for the development of materials for LCD. His work has focused on the optimisation of not only colour filter pigments (Red DPP pigments, Blue and Green CuPc and blue dye-based pigments, yellow shading components for red and green etc), but also other LCD materials like monomers for photo resists and, recently, the development of dichroic dyes as anisotropic materials for a new type of polarisers (In-cell polariser). In 2003 he was awarded a technical fellowship as recognition of his work on DPP for colour filter application.

Dr Ger de Keyzer holds over 20 patents for colour filter materials, mostly for pigments and latent pigments and also for colour filter materials that can be applied at low temperatures and for electrophoretic pigments for E-paper.

Abstract:

After a short introduction about how an LCD is built up and functions, the presentation will focus on the colour filter, the main component for generating colour in a display. The process of making a colour filter will be shown as well as some technical issues that were dealt with in the past will be discussed. While pigments are mostly used for building up colour filters, these have certain disadvantages in comparison to dyes and need special treatments. Techniques will be shown how to make it possible to use pigments and some special examples will be shown in detail.

At the end some new trends for the optimisation of colour filters will be discussed as well.