



INTERNATIONAL Convention on Colorants - 2007



Session 3: Paper 2

ABSTRACT VALUE ADDITION THROUGH FUNCTIONAL COLORANTS

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Over the past few years, in addition to the traditional area of aesthetic colors, one of the fastest growing areas in color chemistry is that of functional colors. As the name suggests, these are colors, which add value to a product through their function, not just their appearance. Naturally, this is a fairly diverse field with applications in the areas of security, data storage, indicators, etc. This talk, while covering some general applications, will focus on a few selective uses of functional colorants to add value to plastics materials.

One such intriguing application has been “Limited Play DVD”. Consumers of DVD movies had expressed a desire to have an alternative to rental DVDs. The challenge here was to invent a chemistry based solution to limit the playing time of the DVD to a normal rental period, e.g. two days. This solution needed to be robust, applicable in different climatic conditions, and not easily defeatable.

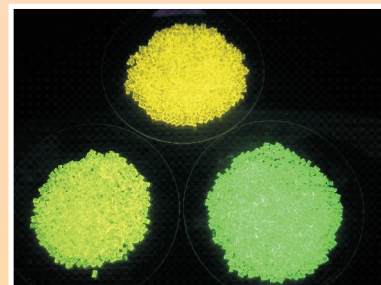
There are various applications for functional colors in the area of secure authentication. Of course, some of the most widely used are in currency notes, where “hidden” chromophores can be detected after exposure to a variety

of stimuli.

In plastics, there are various potential applications where long Stokes' shift dyes can be used as covert authentication devices.



In the coming years, some of the key challenges for the design of functional colors will be in some exciting frontier areas, including holographic data storage, which has the potential to lead to terabytes of storage on an optical disk.



Adil Dhalla is Technical Director of Chemistry & Characterization team at GE India Technology Center in Bangalore. He did a 5 year Masters' degree from IIT Bombay, and his doctorate from Cornell University, Ithaca, NY, USA. He worked in R & D at Ciba Specialty Chemicals in Mumbai, where he led teams working on discovery of new colorants, and was subsequently promoted to Senior Manager. Since joining GE he was

instrumental in building and leading the Colors Center of Excellence, which has made significant contributions to various key programs viz. Limited Play DVD, Holographic Data Storage, and Functional Colors. He also led a team working on GE Plastics' key monomer, the efforts of which have led to innovation in the area of process chemistry and catalysis, and accrued significant productivity gains for the company. In June 2005, he was promoted to Technical Director of the Chemistry & Characterization Lab, which consists of various Centers of Excellence. He is one of the Center-wide Champions for Environmental Health & Safety. In Nov 2006, he was among the first winners of the first GE India President's Awards, in the area of Expertise. While at Cornell University, Adil won the DuPont Teaching Award. Adil has co-authored 16 US Patent Applications and various international publications.

