# Session I: Functional Colorants

## Photochromic colorants

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Dr. Andrew Towns has worked in organic colorant chemistry R&D, both in industry and academia, since gaining his doctorate in colour chemistry from the University of Leeds (UK) fifteen years ago. He initially spent two years undertaking postdoctoral research at the university investigating thermochromic colorants, and then left for South Korea to join LG Chem as a chemist working in their dyestuffs division on textile colorants. After a year abroad, he returned to the UK to become a lecturer, teaching applied chemistry and researching dyes with biomedical applications for eighteen months. HeI then worked as a chemist at Holliday Dyes and Chemicals in Huddersfield (UK) for two years on colour-related projects involving dyes for electronic imaging, textiles and fuel-marking, before transferring to a sister company, James Robinson Ltd., also in Huddersfield, which became Vivimed Labs Europe Ltd in April 2010. Over the last ten years spent in the R&D department of the company, Dr Towns has been engaged as a chemist and latterly as a research manager working on colorant-based product research and process development projects. While these have been focused primarily on photochromic dyes as well as colorants for hair, other areas have included fluorescent colorants, infrared dyes, and materials for organic electronics. He has also worked on the scale-up of products at the kilo scale and above, especially concerning photochromic dyes and their intermediates. He is Editor-in-Chief of the journal *Coloration Technology* and a member of the Editorial Board of *Dyes & Pigments*. Dr Towns has co-authored reviews and papers on various areas of colorant research.

## Abstract:

Photochromism is an attention-grabbing phenomenon in which light triggers a reversible colour change in a material. Organic photochromic molecules are used as colorants to create striking effects when exposed to light. Such dyes are well established, particularly for the production of ophthalmic lenses, but they are still attracting great interest from scientists and technologists. The industrially important classes of photochromic dye will be described in terms of their properties and chemistry. The applications in which their photochromism is employed commercially will be also be the subject of discussion along with the technical features behind their success. In addition, recent developments in the technology will be outlined. Photochromic colorants continue to be researched intensely as key components in high-tech applications. If one such outlet fulfilled its potential, it would become the most commercially important use for photochromism. Those colorant types being explored will therefore be discussed together with possible avenues in which their development may be exploited.