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## Dyes and Pigments

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## Editorial

## Concepts and strategies for molecular photoswitches

Photoresponsive materials undergo changes in their optoelectronic properties when stimulated with light owing to modifications in the structure of the constituent molecules. Photochromic variants are particularly attractive due to the fact that the chemical transformations involved are reversible and several classes of such compound have been developed over the years. These materials have earned special attention as they can potentially be used in numerous applications from information to health-related technologies. Through systematic investigation and subsequent rational design of the photochromic frameworks using state-of-the-art organic synthetic methodologies, it is now possible to tailor the properties of photochromic systems for use as 'molecular switches' capable of performing a variety of different functions.

The 4th International Workshop on Organic Photoswitchable Multifunctional Molecules and Materials was held between 25th and 27th October 2009 in East China University of Science & Technology (ECUST), Shanghai. This workshop offered a unique opportunity for researchers in this exciting area to exchange ideas and share in the recent achievements of organic functional materials. The Centre National de la Recherche Scientifique (France) joined ECUST to host this workshop on novel photoswitchable multi-functional molecules and materials, which carried on the tradition of the successful series of workshops on this topic – Japan–France (Shonan, 2006), France–Russia (Saissac, 2007) and France–Japan (Arras, 2008). The workshop was presided over by Professors Yu Pei and He Tian, who hosted more than 50 experts and 50 Ph.D. candidates from Canada, China, France, Germany, Hong Kong, Italy, Japan, Singapore, South Korea, Sweden and the USA to present and discuss their latest research findings. The personal and interactive style of the workshop provided a perfect environment for the interpretation of fundamental results and the creation and sharing of ideas on the future of organic, photoswitchable, multi-functional materials. We are pleased to share some of the workshop's excitement with this *Dyes and Pigments* special issue.

The articles that follow offer you the opportunity to learn about recent advances and views from some of the leading experts in the

field of organic photoswitches. The topics covered in this issue are widespread and include the use of various photoresponsive systems (diarylethenes, spiropyrans and spironaphthoxazines, azobenzenes, *N*-phenyl-2-aminotropones, anthracene, coumarin and other heterocyclic dimers) either alone or in conjunction with other organic chromophores, metal ions and nanomaterials (carbon nanotubes, nanorods, nanocrystals) to regulate properties such as colour and fluorescence, and chirality. The articles will highlight how such systems could be used in solution, in thin films (sol-gels, organogels), and as a component of polymers and micelles for multi-functional switching applications, as chemical logic systems and sensors.

Editing this special issue for *Dyes and Pigments* has been both an honour and pleasure. Obviously, the progress on organic photoswitchable functional materials cannot be comprehensively covered in a single journal issue and we apologize sincerely to those who might feel their work has been omitted. We are going to take this opportunity to express the greatest thanks to Professor Stephen Burkinshaw, the Editor-in-Chief of this journal and to all referees. Nevertheless, we hope that this cluster of papers has been able to capture the excitement and challenges that pervade the study of molecular photo-switches.

Enjoy!

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