Dedication

This Special Topic issue of SYNTHESIS on Organic Photochemistry is dedicated to Professor Howard E. Zimmerman, a pioneer in the area of mechanistic and synthetic photochemistry, on occasion of his 75th birthday.

Editorial

Dear Readers,

photochemistry as a tool in modern organic synthesis has had a first period of prosperity in the early fifties of the 20th century when numerous light-induced reactions were discovered. Subsequently, expectations were high and the actual output in fact remarkable as chemists became aware of the reactivity potential of electronic excited states of a molecule. Indeed, photochemistry means in many cases a triplication of reactivity options, i.e. in addition to the ground state, excited singlets and triplets exist which all show different chemical behaviour and often differ so remarkably that they behave as completely new molecules. If you do not want to use them, however, they simply disappear again (the holy Grail of *green chemistry* – by the way).

In spite of these exceptional advantages, light-induced reactions were only little accepted by the synthetic organic community. Up to 1995, only about one percent of the procedures in *Organic Syntheses* and in *Organic Reactions* dealt with photochemistry. In my opinion this resulted from two major problems: first, photochemistry is always linked to photophysics – the nature of the excited state, its lifetime, its deactivation paths have to be considered (and to be optimized) in order to design a productive light-induced process – which makes things less easy. Second, photochemical processes require an appropriate equipment, a fact which often discouraged the potential user. Meanwhile, interdisciplinary research became more and more essential and photochemistry (as the perfect example) became a powerful bridge between chemistry and physics, between material science and synthesis.

Until recently, photochemistry has not focussed on stereoselective synthesis, one of the major challenges in modern organic synthesis. This situation has clearly changed in the last decade and highly chemo-, regio-, diastereo- as well as enantioselective reactions and also AAS (absolute asymmetric synthesis) processes have been developed. Chemists all over the world became aware of the fascinating synthetic opportunities of electronically excited molecules and definitely this will lead to a new period of prosperity. Photochemical reactions can be performed at low temperatures, in the solid or liquid state or under gas-phase conditions, with spin-selective direct excitation or sensitization and even multi-photon processes start to enter the synthetic scenery.

In this Special Topic Issue, twenty-five publications from research groups all over the world describe the use of preparative organic photochemistry. Hopefully this can also stimulate non-photochemists to use this fascinating technique in order to disclose new applications for organic synthesis.

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Axel G. Griesbeck