

Editorial

Introduction: “In search of light”

I have been asked by Frantisek Hartl and Tony Vlcek to write the introduction to this volume dedicated to Derk Jan Stufkens, better known to us as Dick Stufkens, on the occasion of his superannuation in 2001. I was honoured by their request and it gives me a great pleasure to write this introduction, which I would have liked to give the title “In Search of Light” for a friend and colleague, with whom I have had a very good cooperation in the last three decades of the last century. This proposed title refers of course to his upbringing in Zeeland, a God fearing province of The Netherlands, and to his interest in the use of light in his research.

He spent his school years in Middelburg, the principal city of Zeeland, from which in former times seafarers set out to fight and trade with countries all over the world. Not so Dick Stufkens, who escaped Zeeland in the fifties to study chemistry in the Faculty of Science of the University of Amsterdam. His interest was soon focused on Inorganic Chemistry, in particular on the investigation of inorganic complexes by spectroscopic methods. He carried out his PhD research under the supervision of Professor Gerding, my predecessor. Professor Gerding was unique in The Netherlands in that he used at a very early time Raman spectroscopy for the study of inorganic complexes. As a result Dick Stufkens thought it worthwhile to focus his attention on halide complexes. In 1971 he finished his PhD thesis titled: ‘Vibrational Spectroscopy and Structures. Halide complexes of elements of groups VB and VIB’. This unique combination of inorganic chemistry and of sophisticated spectroscopic methods during his PhD, which at the time was not at all usual in The Netherlands, turned out to be a very fruitful starting point for his whole scientific career in our Laboratory of Inorganic Chemistry. When I became, in 1971, the successor of Professor Gerding, the research of the laboratory became very much focused on coordination complexes and organometallic compounds. One of the best moves of my life in my opinion was to ask Dick and at the same time his contemporary Ad Oskam to use their

extensive knowledge of IR and Raman spectroscopic methods to investigate the new and exciting complexes in this rapidly extending area of Coordination- and Organometallic Chemistry, which in the beginning of the 70s was mainly studied by NMR. Our collaborations turned out to be very fruitful indeed, as witnessed by our combined scientific output. Examples are the work on azo and imino compounds of Pt(II), Ir(I) and Rh(I), for which we observed insertions of the metal atom in C–H bonds, which subject at the time had been scarcely investigated. An extensive investigation was carried out on the electronic and steric influences of these C–H activation reactions. Our interests further veered to pseudo-olefinic complexes involving sulphur diimines $RN=S=NR$ and very quickly to compounds containing the isolobal diimine ligands $RN=C(H)-(H)C=NR$, which turned out to be a golden choice, as these ligands have a host of exciting properties when coordinated to metal atoms or metal clusters. Still today a large part of our laboratory uses these very versatile, unusual and interesting ligands.

In the meantime Ad Oskam had become Reader and later Professor in our laboratory and we all considered it wise that Dick would cooperate with Ad in their combined subjects. This move was really again at the very right moment, as they invested heavily in UV photoelectron spectroscopy for the study of electronic structures of complexes and for photochemical reactions involving metal carbonyls in noble gas matrices. Much attention was further spent on the development and optimization of methodologies and techniques to investigate short-lived intermediates in photochemical reactions occurring in noble-gas solutions and matrices at low temperature. Later, these results were extended to nano- and picosecond flash photolysis. During the last 15 years Dick’s research mainly concerned the photochemistry and photophysics of metal–metal and metal–alkyl bonded alpha-diimine complexes of Mn, Re, Ru and Os. These complexes have the peculiar property that their excited states vary strongly from one complex to another, from extremely long lived for

$\text{Ru}(\text{SnPh}_3)_2(\text{CO})(\text{diimine})$, to very reactive with formation of radicals in the case of e.g. $\text{ReR}(\text{CO})_3(\text{diimine})$ or of biradicals and zwitterions in the case of the triangular clusters $\text{Os}_3(\text{CO})_{10}(\text{diimine})$. A great part of these studies was performed in collaboration with other groups and involved, apart from sophisticated calculations of excited states, the use of many time-resolved spectroscopic techniques, such as ns time-resolved absorption, emission, EPR, IR, resonance Raman and microwave conductivity. A spin-off of these studies was the application of several of the radical-producing complexes as visible-light photoinitiators of polymerisation reactions. Space precludes me from highlighting all the exploits which have brought Dick in the international scientific lime-light. However, I would like to mention that he has been for the last 4 years a very stimulating scientific director of the graduate school the 'Holland Research School of Molecular Sciences' (HRSMC). One of his successes is that he managed to organise a binational Dutch–German collaboration of the HRSMC with the Graduiertenkolleg of the University of Münster. Highly deserved, he became, too late in my humble opinion, Professor in our laboratory, from which he will soon officially depart on his 65th birthday. Formally that is, because he, like Ad Oskam and I myself, are to some extent still involved in research. Our successors Professor

Kees Elsevier and Professor Luisa De Cola are now the people in charge of the research on organometallic/homogeneous catalytic chemistry and on photonic materials, respectively. Looking at the past and at the present, I conclude that our very fruitful combination of both synthesis and advanced spectroscopy in the broadest sense of the word, so successfully started in 1971, is going on unabated 30 years later in 2001 and for certain also afterwards, albeit in new and different directions. I, as Dick's collaborator in science, want to thank him for all the beautiful research he carried out himself, for the fine research he did together with Ad and also for some part with myself. I want to thank him personally for all the research support he has given my group on matters of spectroscopy. Finally, I wish Dick a very healthy and successful life in the future, during which much light may shine on his endeavours.

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