

Preface

This special issue of CIENCIA is in honour of Professor Carlos De La Cruz who was Executive Editor of this journal from 1999 until 2002 and later its Honorary Editor from 2003 to 2006. Editors are the unsung heroes of the scientific world because on their meticulous work to ensure that papers published are of good standard depends the status of science within the worldwide community. They are chosen from amongst their colleagues for their scientific reputation and their good judgement, for they frequently have to adjudicate between the views of the authors of a paper and those of critical peer reviewers.

Professor De La Cruz's scientific career started exceptionally strongly. He applied to join my research group at the University of East Anglia in 1982 and I suggested that for his Ph.D. he continue work on a difficult research problem which my group had been grappling with for some 25 years. The field of work was a pioneering one, namely the use of infrared spectroscopy to attempt to identify the molecular structures of new surface species which result from the chemisorption of molecules onto catalytically-active surfaces; in this case the reaction of hydrocarbons with metals. Previous members of my group had obtained some good spectra but the problem was to interpret these in chemical terms in a convincing fashion. Dr. De La Cruz wrote an outstanding Ph.D thesis with fine new experimental results the interpretation of which in molecular structural terms was at last clearcut. In England we do not award the additional category of Cum Laude to Ph.D. theses as is done in some countries but had this been possible such a recognition would have been justified. His thesis showed three of Professor De La Cruz's characteristics as a research scientist which were to become repeatedly evident during his research career. Firstly a capacity to find and fully evaluate previous research literature relevant to the problem in hand; secondly to apply fine and imaginative experimental skills to the problem itself; and thirdly to pursue the problem with great determination through set-backs to a successful outcome. He tells me that his very successful Ph.D. research was much helped by a friendly attitude within my research group and by the skills of our technical staff.

It is a rare but very satisfying experience in science when a piece of evidence drops into place which solves a long-standing problem so that suddenly everything about the outcome is clear-cut. Mr. De La Cruz, as he then was, had been studying the interaction of ethylene with a classic type of platinum-hydrogenation catalyst and monitoring the resulting infrared spectra as the sample warmed up over a range of temperatures. When one of the several overlapping spectra was observed to transform into another it was immediately clear what these two surface species were related. From this conclusion it followed that several previously tentatively-formulated hypotheses were also correct; that one of the species present was indeed ethylidyne, previously questionable because such a surface species had not been postulated by non-spectroscopic chemists; that a 'metal-surface selection rule' relevant to flat metal surfaces does indeed apply to the spectra of species on particles of such metal catalysts; and that this in turn implied that at any one temperature three different surface species, at least two of which are catalytically active and now identified, were present on alternative sites on the surfaces of the platinum particles. In due course these clear-cut results led to much further related work at Professor De La Cruz's own hands, by other members of my research group, and - in friendly rivalry - in other laboratories such as those of Professors Michael Trenary of the University of Illinois, Chicago, John Yates of the University of Pittsburgh, and Gabor Somorjai of the University of California, Berkeley. A few years ago Professor De La Cruz and I collaborated on an extended

review of this whole field of research. Professor De La Cruz's high standing is shown by the fine quality of the papers offered for this special issue in his honour. The research papers also show that a fine tradition in catalysis research has become established in Venezuela.

Details of Professor De La Cruz's career are given in his Curriculum Vitae which follows. They show that he is a man of many strengths. At the University of Zulia he coordinated the Physical Chemistry Sector from his return from England with a Ph.D. and in only five years he became Chairman of the Chemistry Department with a Full Professorship from 1993. He was also the Founding Director of the Laboratorio de Espectroscopia Molecular y Atómica (LEMA) within the University.

His Foreign Membership of the New York Academy of Science and Visiting Senior Fellowship from the Royal Society of London speak to his international reputation. Within Venezuela his Vice-Presidency of the Chemistry Commission and Permanent Membership of the Commission of Human Resources of CONICIT show that his expertise and advice are highly appreciated. When I visited Venezuela for the First Venezuelan Congress on Chemistry, which was held in Merida in 1993, I realised that Professor De La Cruz was very much in demand from his colleagues for his advice and for his personal characteristics. Although we are here concerned with his scientific achievements it should be remembered that he also enjoys writing poetry and that a collection of his poems, *Breve Antología Poética*, was published in 2005. I personally have benefited greatly from Carlos's friendship and scientific collaboration over nearly 25 years and send him my love and very best wishes.

Norman Sheppard, FRS



Carlos and Norman, Norwich, 1998. Photo by Mary Paz Martin.