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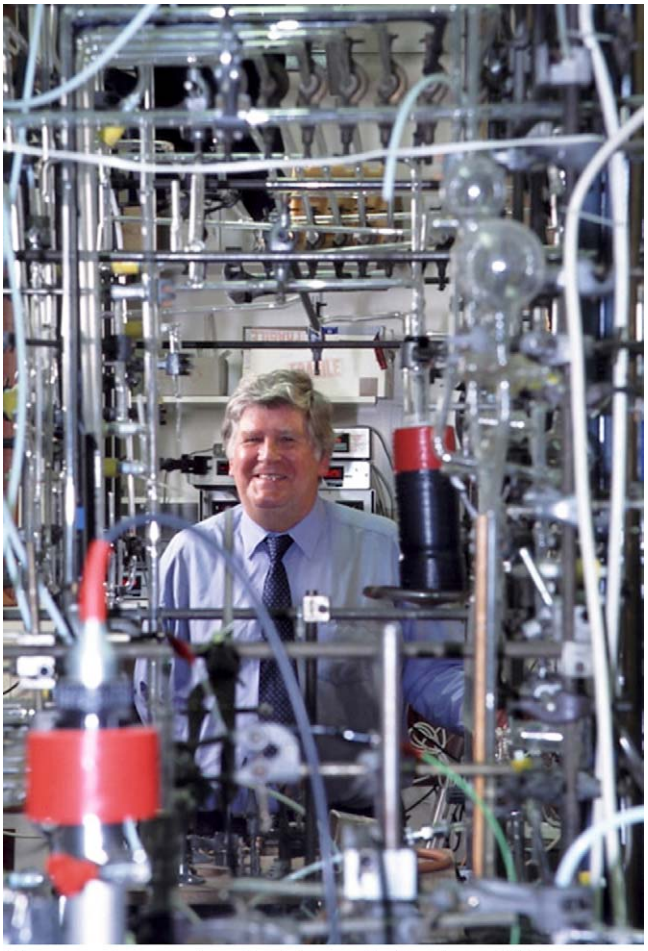
Biography

Professor Richard P. Wayne
Dr Lee's Reader in Physical Chemistry, Christ Church, Oxford



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Richard P. Wayne took his undergraduate degree from Trinity College, Cambridge, in 1959, and followed this with postgraduate research in Physical Chemistry, under the supervision of Nobel Laureate, Prof. R.G.W. Norrish. The main topic of Richard's research was the photochemistry of ozone, which at that time was puzzling some of the best gas-phase photochemists on account of its elusive complexity. He also worked with Prof. B.A. Thrush and the late M.A.A. Clyne on the chemiluminescent reaction of NO with ozone, producing electronically excited NO_2, which has formed the basis for measurement of atmospheric nitrogen oxides for the past 35 years.

After Cambridge, Richard took a post-doctoral position in Liverpool with Prof. C.H. Bamford in 1963, working on Polymer Chemistry. In 1965, Richard was appointed the University Lecturer at Oxford and Fellow of Christ Church, and started his long record of active and productive research on a wide range of topics of photochemistry and reaction kinetics. In the late 1960s he did a spell at the University of California, Riverside, in the Department headed by Prof. James N. Pitts, where he worked on reactions of singlet molecular oxygen, leading to several papers and reviews on this topic. This was Richard's first encounter with atmospheric chemistry. He contributed energetically to the Air Quality Standard documents for the California Air Resources Board, an early initiative in bringing science into regulatory policy for air pollution abatement.

In the following years, Richard published numerous papers on ozone photochemistry. A key contribution, together with his student Ian Jones, being the measurement of the quantum yield for $O(^1D)$ production in the Hartley–Huggins band. This paper showed the fall off on the quantum yield with wavelength, resulting from energetic constraints dictated by formation of the spin-allowed coproduct, $O_2(^1\Delta)$. The formation of $O(^1D)$ is a critical process in the production of tropospheric OH.

The 1970s saw a large increase in the activity in atmospheric photochemistry with the issue of stratospheric ozone depletion, and Richard was very active both in his individual research contribution as well as development of the national and international research programmes aimed at scientific understanding of the issues. At this time he started the measurements of the kinetics of reactions of free radicals, using the discharge flow technique and also started a long productive research effort on nitrate radical photochemistry and kinetics.

In 1972, Richard was promoted to the Dr Lee's Readership in Physical Chemistry at Christ Church, the position he still holds. At about the same time he became the first Editor of the newly published *Journal of Photochemistry*, which has attracted high-quality scientific articles over a broad range of the discipline.

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Richard has continued in this role and overseen the development and success of this journal over the past 30 years.

The 1980s saw a growth of European initiatives in atmospheric chemistry stimulated by environmental issues, such as acid rain and photochemical oxidants and the fate of CFC replacement compounds in the troposphere. Richard's ideas and advice contributed to the success of EUROTRAC and the EC stratospheric research programme, which developed in the early 1990s. He also led a number of outstanding reviews of key scientific topics, such as the Chemistry of the Nitrate Radical and Halogen Oxide Kinetics and Spectroscopy. His research has continued to contribute to the underpinning kinetics and photochemistry needed for understanding the stratospheric and tropospheric composition. His work on radical reactions with complex organic compounds and on the kinetics and mechanisms of halogen oxide reactions have been particularly noteworthy, with many good students carrying the flag of physical chemistry into the more interdisciplinary areas.

Richard's research is characterised by a high degree of ingenuity in experimental investigation of difficult and complex kinetic systems. His profound knowledge of photochemistry continues to constrain the more wild speculations on photochemical reactions among environmental scientists. His style in scientific debate is direct and memorable.

Richard has also contributed in an extraordinary way to the teaching of gas-phase chemical kinetics, photochemistry and atmospheric chemistry. Those of us who had the pleasure of witnessing his unique demonstrations of fast reactions through light emission from a flow tube, the reaction (sometimes explosive!) of ozone with natural organics, and have used his definitive textbook, 'Chemistry of Atmospheres' as a teaching aid, appreciate his skills in inspiring generations of young scientists.

Richard's love of science (and life) is contagious and a joy to behold. Scientific discussions are often accompanied with social discourse and sometimes outrageous frivolity, as those who have had the privilege of visiting Richard at his home in 37 St Giles', can attest. Scientific and social interactions with Richard have inspired us, motivated us and enriched our experiences as we work together to uncover the secrets of photochemistry.

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