Emeritus Scientia Professor Michael Nicholas Paddon-Row

The degree of Doctor of Science *(honoris causa)* was conferred upon Emeritus Scientia Professor Michael Nicholas Paddon-Row at the Faculty of Science graduation ceremony held at 9.30am on 22 May 2009.

The Chancellor Her Excellency Professor Marie Bashir AC CVO with Emeritus Scientia Professor Paddon-Row after conferring the honorary degree, *photo, copyright Memento Photography*.

Citation

Chancellor, I present Michael Nicholas Paddon-Row for admission to the degree of Doctor of Science (honoris causa).

Michael Paddon-Row studied Science at the University of London, King's College and graduated with a B.Sc. Honours degree in 1963. He then came to the Research School of Chemistry at the Australian National University, and received his Ph.D. in 1967.

After post-graduate work in universities in Canada and the USA, he returned to the ANU in 1970. His subsequent distinguished career as an academic Physical Organic Chemist has been entirely in Australia, for the most part at the University of New South Wales, where he became Head of the Department of Organic Chemistry in 1994 and Head of the Chemistry School in 1996. Although since 2003 he has been an Emeritus Scientia Professor, he continued his research programme with his usual vigour, strongly supported now as over his entire career by the Australian Research Council.

Amongst many significant honours are his election as a Fellow of the Australian Academy of Science in 1999 and the granting of its most senior award for research in the field of Chemistry, the Craig Medal, in 2001.

Professor Paddon-Row occupies a unique place in contemporary Australian chemical research, in that his work combines skills in synthesising unusual and complex organic molecules, computational quantum molecular and molecular dynamics calculation to design the engineering of their structures and of their physical properties, and extensive experimental physico-chemical, mainly spectroscopic, investigations. The aim of this focussed threefold attack is to gain quantitative insight into fundamental chemical problems, particularly of the nature of pathways by which reactions proceed (i.e., mechanisms) and the rates at which they do so (dynamics).

Some chemical processes whose basic nature he has successfully explored theoretically and experimentally have been classic organic reactions, such as the Diels-Alder, which is of great industrial importance. However, a continuing interest has been in possibly the most fundamental of chemical reactions, the transfer of electrons from one molecule to another or between different parts of the same molecule. Oxidation, such

as the rusting of metals, is ultimately of this type. Photosynthesis and oxidation-reduction processes in the human body (such as those involving cytochromes) also fall into this category.

Professor Paddon-Row's most important contribution to the understanding of such processes has been the design and synthesis of molecules in which an electron is transferred usually as in photosynthesis under the action of light, between a donor and an acceptor via a precisely atomically engineered pathway. Measurements of the rates of transfer under these precisely engineered conditions using a variety of state-of-the-art physical techniques have enabled him to show at a fundamental level how electrons can be transferred over long distances, as occurs in many biological processes. This has transformed our basic knowledge of this highly important field,

The knowledge gained from this fundamental work has many potential applications. One amongst many by Professor Paddon-Row and collaborators in 2003 is the design of electrochemical DNA and enzyme biosensors.

Professor Paddon-Row's research career is an outstanding example of the success that can be achieved through a combination of synthetic skills of the highest order guided by fundamental theory targeted on the solution of basic scientific problems.

Chancellor, I present Michael Nicholas Paddon-Row for admission to the degree of Doctor of Science (honoris causa) and I invite you to confer the degree upon him.