Emeritus Professor Noel Hush AO

The degree of Doctor of Science *(honoris causa)* was conferred upon Emeritus Professor Noel Hush AO at the Faculty of Science graduation ceremony held at 9.30am on 22 May 2009.

The Chancellor Her Excellency Professor Marie Bashir after conferring the honorary degree upon Emeritus Professor Hush, *photo, copyright Memento Photography*.

Citation

Chancellor, I present Noel Hush for admission to the degree of Doctor of Science (honoris causa).

Noel Hush was appointed in 1971 to the first Chair of Theoretical Chemistry in Australia and its creation had a major impact on the academic direction of the School of Chemistry in Sydney as well as in the development of Australian chemistry as a whole. Noel Hush is one of the world's eminent chemists, recently recognized (2007) by the award of the Welch Prize, second only to the Nobel Prize as an honour in Chemistry. His international recognition includes the Fellowship of the Royal Society of London, recipient of the Royal Society of Chemistry Centenary Medal and election as one of the few Foreign Members of the American Academy of Arts and Sciences.

His most renowned achievement is the development, commencing in the 1960's, of a model for electron transfer, which is often referred to as "Marcus-Hush Theory". Closely related theories were developed simultaneously and independently by Hush and Marcus, and it is widely acknowledged that their contributions are commensurate. The (US) Electrochemical Society stated in their list of all-time greats of the 20th century in Theoretical Developments, after Einstein's photoelectric effect: Dogonadze, and Marcus and Hush for work on electron transfer.

In his theory of electron transfer, Professor Hush is one of the very few scientists to have actually produced what can be truly described as a new paradigm: that of a delocalized mixed-valence ion that enables us to understand processes such as the essential steps in photosynthesis. The lucidity of his theoretical insights and his interaction with experimentalists on electron transfer processes has led to unified understanding of fields as diverse as homogeneous redox reactions and biological electron transfer. His great scientific achievement in this latter field holds out considerable potential benefit to humanity, in its two applications to photosynthesis and to molecular electronics:

Better understanding of photosynthesis opens the way to using sunlight to generate energy and basic foods (such as starch) by synthetic imitations of the natural processes. This could lead to future reduction of greenhouse gas emissions, more food for humanity, and the potential to let farmland revert to natural forest.

The developments in molecular electronics will revolutionize information technology over the next decade. This is the ultimate way to overcome the looming problem of the limits on the size of electronic components.

It provides the ultimate nanotechnology, whose practical goal is to enable computing by molecular- scale devices, a goal realised as essential by leading computer chip manufacturers.

Professor Hush is truly a great Australian scientist, a unique intellect, and is a wonderful presence in our University.

Chancellor, I present Emeritus Professor Noel Hush for admission to the degree of Doctor of Science (honoris causa) and I invite you to confer the degree upon him.